

Schneider, Lutz; Hyll, Walter

**Conference Paper**

## Social Comparisons and Attitudes towards Foreigners - Evidence from the 'Fall of the Iron Curtain'

Beiträge zur Jahrestagung des Vereins für Socialpolitik 2016: Demographischer Wandel -  
Session: Social Norms, No. F23-V1

**Provided in Cooperation with:**

Verein für Socialpolitik / German Economic Association

*Suggested Citation:* Schneider, Lutz; Hyll, Walter (2016) : Social Comparisons and Attitudes towards Foreigners - Evidence from the 'Fall of the Iron Curtain', Beiträge zur Jahrestagung des Vereins für Socialpolitik 2016: Demographischer Wandel - Session: Social Norms, No. F23-V1, ZBW - Deutsche Zentralbibliothek für Wirtschaftswissenschaften, Leibniz-Informationszentrum Wirtschaft, Kiel und Hamburg

This Version is available at:

<https://hdl.handle.net/10419/145605>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

## **Social Comparisons and Attitudes towards Foreigners**

Evidence from the 'Fall of the Iron Curtain'

### **Abstract**

We exploit the natural experiment of German division and reunification to address the question whether individuals who feel distress from social comparisons in terms of income reveal more negative attitudes towards foreigners. Our empirical approach rests upon individuals from the German Democratic Republic, who have West German peers. We use the variation of wealth of West German peers shortly after the fall of the Berlin Wall in 1989 to identify a causal effect of distress from social comparisons on attitudes among East Germans. We find robust evidence that East Germans expose strong negative attitudes towards foreigners if they worry about their economic status compared to better-off peers in West Germany. Our analysis also reveals that this adverse effect of upward social comparisons is more pronounced towards foreigners stemming from low-wage countries.

*Keywords:* Social Comparisons; Attitudes towards Foreigners; Natural Experiment

*JEL classification:* D31; D63; C93; J15; J61; Z13

## 1. Introduction

In recent years, 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 peer group. Scholars highlight the importance of those social comparisons in explaining, for example, happiness (Luttmer, 2005; Ferrer-i-Carbonell 2005; Clark et al., 2008), health (Basla 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). In this paper, we bring social comparisons into economic analysis when considering political attitudes, namely attitudes towards foreigners. We show that people expose strong negative attitudes towards foreigners if they worry about their economic status compared to better-off peers. Our analysis also reveals that this adverse effect of upward social comparisons is more pronounced towards foreigners stemming from low-wage countries.

Empirically disentangling the effect of social comparisons on attitudes and behavior is typically deterred by conceptual issues and data limitations. From a conceptual point of view, comparisons are *endogenous* with respect to most outcome variables. The reference point of social comparisons might be deliberately chosen. To whom a person belongs, to which peer group someone compares could itself be driven by the outcome variable or by unobserved common factors. Even if a peer group is exogenously determined, the income rank a person holds within the relevant social group, i.e. the relative economic status, is affected by unobserved factors that could be correlated with the outcome variable. Concerning data restrictions, most papers do not have information to whom someone actually compares and which income status the person holds within the relevant peer group. Thus, the definition of the peer group and relative economic status remains for the most part hypothetical. A promising strategy to deal with those problems 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 social 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 social 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 West German peers. We use the variation of wealth of West German peers shortly after the breakdown of the communist system to identify the effect of social 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 social comparisons to West German peers. This distress, in turn, is instrumented by the relative wealth gap compared to the better-off West German peer group. Strictly speaking, we instrument a person’s psychological burden of social comparison by the relative wealth gap that person is facing.

The specific historical situation in 1989/90 provides a unique setting for justifying the major assumption that the variation of the wealth gap compared to West German peers is exogenous with respect to xenophobic attitudes. First, we argue that the West German peer group of an East German was for the most part exogenously given. Since the German division was believed to be permanent, staying in touch with individuals across the inner German border was driven by family or consumption motives but not by political, or even xenophobic reasons. Second, for East Germans, the income gap compared to their West German peers 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. Third, due to the very low number of immigrants and the political obstacles of getting in contact to these few immigrants in the GDR, we can rule out that East Germans’ attitudes were driven by unobserved interactions with foreigners.

Our analysis joins other empirical papers using recent German history as a natural experiment. The ‘first generation’ of these papers compares East and West Germans and addresses the question how communism has shaped preferences and behavior (Ockenfels and Weimann, 1999; Alesina and Fuchs-Schuendeln, 2007; Rainer and Siedler, 2009; Heineck and Suessmuth, 2013). The ‘second generation’ uses variation *within* East or West Germany

to identify other effects than communism – usually by the fact that *some* East Germans and/or *some* West Germans are subject to an exogenous treatment from the other side of the wall. For example, scholars exploit variation in East Germany with respect to availability of West German television (Kern and Hainmueller, 2009; Hyll and Schneider, 2013; Hennighausen, 2015; Bursztyn and Cantoni, 2016) or to the introduction of the West German education system (Fuchs-Schuendeln and Masella, 2016), and/or the variation of West Germans’ social ties to East Germans (Burchardi and Hassan, 2013). To identify the effect of social comparisons on attitudes towards foreigners, we join the second generation of strategies and use the variation of wealth of peers in West Germany for instrumenting the East Germans’ distress caused by upward social comparisons to them.

Our analyses is mostly related to the empirical literature on determinants of attitudes towards foreigners and/or immigrants.<sup>1</sup> Generally speaking, some scholars find that negative attitudes toward foreigners are correlated with 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 emphasize non-economic factors, particularly nationalism and cultural distance (O’Rourke and Sinnott, 2006; Dustmann and Preston, 2007; Card et al., 2012b). 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 (native) peer

---

<sup>1</sup> 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 focus on the effect of unemployment on right-wing extremism.

group. Yet, in empirically disentangling this effect, we also take into account potential determinants of xenophobic attitudes explored in previous studies.

We advance the existing literature in several respects. First, we link social comparisons to attitudes towards foreigners and propose an alternative economic explanation for xenophobic feelings, namely adverse repercussions on relative economic status of individuals. Second, our data set enables us to determine the social group someone compares to more accurately than previous papers; to observe the distress a person experiences from upward social comparisons; and, to assess the relative economic status compared to one's peer group. Third, the historical setting of our empirical analysis allows us to apply an IV approach avoiding a potential endogeneity bias concerning social comparisons. 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. By the way, even from a present political point of view, our findings might be useful for enlightening the prevailing East-West differences in xenophobic attitudes which appeared dramatically in the course of the current refugee crises in Germany as well as the European Union.

## 2. Social comparisons and attitudes towards foreigners

Several scholars emphasize that relative income concerns or social comparisons impinge significantly on an individual's sense of wellbeing and on his or her behavior (for a review, see Clark et al., 2008). The primary tenet of this literature is that individuals derive disutility when they do less well than members of their peer group. 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). Eibner and Evans (2005), Luttmer (2005), Stark et al. (2009), Gaechter and Thoeni (2010) or Cohn et al. (2014) are recent examples of empirical studies that demonstrate the importance of one's relative economic status within the social group a person compares to.

At the first glance, concerning an explanation of negative attitudes towards foreigners, this line of reasoning seems to contradict the relevance of social comparisons. Since foreigners typically do not enter a native's peer group, a notable impact of social comparisons on attitudes towards foreigners seems to be implausible. By contrast, if foreigners affect a *native* individual's relative economic standing compared to the *native* peer group, social comparisons come into play. In accordance to the empirical literature on determinants of negative attitudes towards foreigners 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 (Scheve and Slaughter, 2001; Mayda, 2006) those native individuals might face downward pressure on wages or increasing unemployment whereas other members of the same social group do not. In turn, the 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 also might affect the relative economic status of natives compared to the *relevant* peer 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 peers. Note that such sentiments do not require an *actual* deterioration in one's income ranking. Negative sentiments should 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 well 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 German peers. 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 peer group. Hence, we hypothesize that for East Germans in 1990 social comparisons to better-off West German peers 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 the 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).<sup>2</sup> 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 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 and the contacts between East Germans and their West German peers 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

---

<sup>2</sup> See Staritz (1996) for a comprehensive analysis of the political, economic, and social history of the GDR and Wollé (1998) for an illuminating portrait of many aspects of daily life under the totalitarian rule during the Honecker era between 1971 and 1989.

of a re-unified Germany was dismissed. Still in summer 1989, the partition of Germany was generally believed to be permanent, either from East or 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.<sup>3</sup> 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 better-off peers 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 West German peers 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 peers. In validating the IV approach we, first, have to justify a significant 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 social 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 several advantages.

---

<sup>3</sup> 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]."

First, the period allows us to focus on a group of people – East Germans – with an exogenously given peer 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 peer 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.<sup>4</sup> In particular, we can rule out that East Germans who were, for whatever reason, highly sensitive for social comparisons cut ties to well-off West Germans because of distress from social 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 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 German peers.<sup>5</sup> Hence, selection or sorting effects concerning social ties to West Germany should be negligible. If such effects existed at all they should be not systematically related to xenophobic attitudes. Note that contacts with individuals across the inner German border were not motivated by political reasons but by consumption related benefits for East Germans. Any political dimension of private East-West contacts was prevented by the rigorous control apparatus of the state security service that monitored and sanctioned politically motivated (inter-)actions in a dramatic manner (Ghouas, 2004) – a fact that was common knowledge both in West and in East Germany.

Second, for East Germans, the wealth gap compared to their West German peers 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

---

<sup>4</sup> 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.

<sup>5</sup> For a related argument concerning the noneconomic reasons for maintaining social ties across the inner German border, see Burchardi and Hassan (2013).

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 peer group. Moreover, during the German separation, West Germans could not benefit from their contacts to East Germans (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 their East German peers beyond the mentioned small “Westpaket” parcel presents.<sup>6</sup>

Third, 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 some concerns still remain. Most important, richer West Germans might have different attitudes towards foreigners and immigrants than relatively poor West Germans due to different education, labor market status or interactions with foreigners. Then, even if the variation of West Germans' wealth would have been completely random to their peers in the GDR, West Germans could “export” their attitudes directly to East German relatives and friends. In this case, we would wrongly attribute the effect caused by peer

---

<sup>6</sup> 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).

interaction to a social comparison effect. Due to our historical setting strong political influence of peers could not have emerged before the fall of the Berlin wall in 1989 which clearly reduces this issue. However, we address that concern in the extension section 4.2.

In the extension section, we also focus on other remaining concerns that might challenge the IV strategy. First, we control for underlying personality traits that might affect the perception of wealth gaps as well as xenophobic attitudes. Second, we test whether East Germans experiencing a high wealth gap compared to West German peers differ in fundamental attributes to East Germans experiencing a low wealth gap. Third, we also check whether both groups have systematically divergent *perceptions* of actual differences in income or wealth. We argue that those concerns do not affect the credibility of our IV approach.

### **3.3. Data and Measurement**

In explaining how distress from social 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.<sup>7</sup> 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. 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 peers, but also more general aspects, as education and employment, personality and values, social relationships, political orientation and voting behavior, and, important in the present context, xenophobic attitudes.

The survey contains records on 1,307 individuals aged between 15 and 86 years.<sup>8</sup> Since our research question requires survey information on the wealth of East Germans’ peers 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

---

<sup>7</sup> 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 A6 for a comparison.

<sup>8</sup> For descriptive statistics, see Appendix table A1.

sample reduces to almost 950 observations depending on the particular 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 of identifying *strong* negative attitudes towards foreigners are applied. *First*, survey respondents are asked whether they are against political rights for foreigners in Germany, namely voting rights. 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 foreigners.<sup>9</sup> In our survey, almost 42 per cent of East Germans are against political rights for foreigners.

*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 political 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). 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.<sup>10</sup> 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.

*Third* and probably most promising, the survey entails questions addressing the attitude towards foreigners *directly*. Persons are asked to express their sympathy for foreigners on a sympathy scale between minus five and plus five. Moreover, in answering these questions, respondents have to distinguish between attitudes towards *specific* nationalities.<sup>11</sup> Since our hypothesis suggests that East Germans should be more hostile to potential immigrants from

---

<sup>9</sup> Results remain robust when applying the original scale. See robustness section and table A4 in the appendix.

<sup>10</sup> Results remain robust when applying the original scale. See robustness section and table A4 in the appendix.

<sup>11</sup> The addressed foreigners comprise nine nationalities, namely Vietnam, Turkey, Cuba, Romania, Russia, Poland, USA, France, and Austria.

low-wage countries, we construct a variable averaging the attitude towards foreigners from *low-wage countries*.<sup>12</sup> Technically, we construct a binary variable set to one if the expressed value of sympathy is negative and falls within the lower third on the sympathy scale (lower than minus two). This threshold is chosen to identify attitudes towards foreigners, which are strongly negative.<sup>13</sup> In the survey, 13 per cent of East Germans take extremely hostile views towards foreigners from low-wage countries.

### ***Endogenous regressor: Distress from Social Comparisons***

In the empirical analysis, negative attitudes towards foreigners are explained by the distress individuals' experience from upward social 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 the closest West German peers: '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.

### ***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 peer group for instrumenting the regressor of distress. Our survey data provides information on the self-assessed 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 and/or friends in the West in comparison to your status?' – 'Much higher', 'somewhat higher', 'equal', 'somewhat lower', 'much lower'. According to the survey, 49 per cent report a much higher economic status, 35 percent

---

<sup>12</sup> The low-income 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).

<sup>13</sup> 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.

perceive a somewhat higher status, 14 per cent observe no difference, and the remaining 1.5 percent find a lower economic status of the West German peer group. 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 social comparisons on negative attitudes towards foreigners, we control for a rich set of variables covering the main socio-demographic characteristics (age, sex, partnership status, and children), labour market status, qualification, and regional information. Moreover, we take into account the self-assessed economic situation of the interviewee. Equally crucial, we are able to consider the effect of nationalistic values by observing how strong the respondents identify themselves as Germans.

In the extended section (chapter 4.2), we also control for the strength of contacts to the West German peer group. The corresponding variable is also supposed to represent the extent to which an East German person might be influenced by beliefs and attitudes of the West German relatives or friends. For constructing this variable, we use the available information on peers in the Federal Republic of Germany: ‘Do you have relatives in the other part of Germany?’ – ‘Yes, with close contact’, ‘Yes, no close contact’, ‘Yes, but no contact at all’, ‘No’.

Since sympathy for foreigners as well as distress from social comparisons are measured on the attitudinal level, the respondents’ personality might affect both variables. To exclude systematically biased effects (see chapter 4.2) we account for well-established traits of one’s personality, namely self-confidence and neuroticism. Self-confidence is measured via the question whether one is able to deal with the major problems of life; neuroticism reflects the frequency of feeling depressed.



## 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 social comparisons. In analyzing the effect of social comparisons on attitudes towards foreigners, we first focus on the opposition to political rights for foreigners 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 peers they are more likely against political rights for foreigners. 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 foreigners 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 percent points.

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-tests of weak instruments. According to the first stage results and in line with our prediction, a higher wealth gap compared to West German peers significantly increases the personal distress caused by the corresponding social comparison.

In sum, we find evidence for a strong effect of distress experienced by social comparisons on attitudes towards foreigners: East Germans who sense more distress with respect to their West German peers 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.

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

	Against political rights for immigrants (1)	Right-wing political attitude (2)	Antipathy towards foreigners from low-wage countries (3)
Social Comparison Distress	0.791*** [0.008]	1.659*** [0.000]	0.947*** [0.009]
<i>Marginal effect</i>	<i>0.278</i>	<i>0.353</i>	<i>0.204</i>
Age	-0.003 [0.538]	0.014*** [0.001]	-0.009 [0.117]
Male	0.198** [0.019]	0.048 [0.610]	0.107 [0.304]
Living in a Partnership	-0.009 [0.931]	-0.243** [0.048]	-0.178 [0.181]
Having Children	0.276* [0.053]	-0.196 [0.184]	0.039 [0.817]
Labour market status (Base group: <i>No workforce</i> )			
<i>(Self-)Employed</i>	-0.008 [0.951]	0.017 [0.902]	-0.194 [0.233]
<i>Unemployed</i>	0.130 [0.573]	0.284 [0.273]	-0.182 [0.551]
Education (Base group: <i>Unskilled</i> )			
<i>Still in training</i>	-0.200 [0.468]	-0.330 [0.303]	-0.728** [0.024]
<i>Skilled</i>	-0.096 [0.666]	-0.246 [0.305]	-0.563** [0.019]
<i>Academic</i>	-0.279 [0.218]	-0.299 [0.237]	-0.837*** [0.001]
Economic situation (Base group: <i>Poor</i> )			
<i>Average</i>	0.144 [0.289]	0.150 [0.301]	0.265 [0.105]
<i>Good</i>	0.299* [0.057]	0.387** [0.011]	0.183 [0.362]
Living in a City	-0.295*** [0.001]	-0.105 [0.311]	-0.276** [0.020]
Nationalist Identity	0.298*** [0.003]	0.160 [0.210]	0.305** [0.016]
2SLS F-test	41.47***	34.13***	41.19***
Instrument (First stage)	0.175***	0.165***	0.175***
Observations	962	864	947

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets; constant not reported. Instrument: Wealth gap relative to West German peers. First-stage results are displayed in Appendix table A2. F-test refers to the 2SLS estimation of the models.

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

##### *Direct peer effects of West Germans*

A potential concern with our IV strategy is that the instrument might be correlated with an unobserved factor that also affects attitudes towards foreigners. In our context, one could easily imagine that the direct influence of peers on attitudes might be such an unobserved channel. 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. Regression results are depicted in table 2. The inclusion of contact intensity has no impact on the effect of distress on attitudes towards foreigners.

Table 2: Controlling the strength of contacts to West German peers (IV-PROBIT)

	Against political rights for immigrants (1)	Right-wing political attitude (2)	Antipathy towards foreigners from low-wage countries (3)
Social Comparison Distress	0.774** [0.012]	1.666*** [0.000]	1.094*** [0.001]
Strength of peer contacts (Base group: <i>None</i> )			
<i>Low</i>	0.044 [0.679]	-0.151 [0.212]	-0.042 [0.742]
<i>High</i>	0.091 [0.370]	-0.016 [0.895]	-0.097 [0.420]
Controls	Yes	Yes	Yes
2SLS F-test	39.13***	30.29***	38.73***
First stage Instrument	0.171***	0.158***	0.171***
Observations	944	848	929

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets; constant not reported. Instrument: Wealth gap relative to West German peers.

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 West German peers 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 West Germans in general and better-off West Germans in particular are characterized by more friendly attitudes towards immigrants from low-wage countries. Thus, peer effects, if any, confronts East Germans facing a high wealth gap with relatives or friends showing warmer feelings towards immigrants than other peers should do. Table 3 depicts the results of the regression. As dependent variable we utilize a question on attitudes towards labor immigration from non EC countries as Turkey or Yugoslavia. Those attitudes are 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. It can be seen that West Germans in general show significantly more pro-immigration views than East Germans. Similar important, the sign of the interaction coefficient suggests that, if at all, the effect is more pronounced for West Germans with high economic status. Therefore, if West German peers indeed influence East Germans’ attitudes towards foreigners, our main findings could be biased downwards. Then, the true effect arising from distress should be even stronger. However, since the potential West German impact on xenophobic attitudes practically could only work during the few months after the fall of the iron curtain, the effects should be of marginal relevance.

Table 3: Attitudes towards immigrants from low-wage countries – East Germans vs. West Germans vs. Better-off West Germans (ALLBUS 1991, ORDERED PROBIT)

Sample: East & West Germans	‘Against labour immigration from Non-EC countries (e.g. Turkey, Yugoslavia)’
West German	-0.202*** [0.001]
Interaction: Good Personal Economic Status * West German	-0.107 [0.102]
Observations	2,678

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets; cutoff points not reported.

### ***Underlying personality traits***

We next investigate if the distress effect is driven by specific aspects of someone's personality. Thus, we take into account information on essential personality traits, namely neuroticism and self-confidence. We proxy neuroticism in making use of the information whether individuals experience feelings as depressed mood. Self-confidence is measured by the confidence to meet the challenges of life. These variables are also proxies for common traits, which could affect the perception of the gap between the respondent's and the relatives' or friends' standard of living and attitudes toward foreigners. In table 4, results are displayed when variables accounting for personality traits are added. We find that neuroticism does not matter in all three specifications. Self-confidence has an impact on right-wing attitudes and political rights for immigrants. Our estimates of distress from social comparisons, however, are not affected by the inclusion of these variables.

Table 4: Accounting for personality traits (IV-PROBIT)

	Against political rights for immigrants (1)	Right-wing political attitude (2)	Antipathy towards foreigners from low-wage countries (3)
Social Comparison Distress	0.794** [0.010]	1.687*** [0.000]	1.110*** [0.001]
Personality traits			
<i>Neuroticism</i>	-0.088 [0.555]	-0.059 [0.727]	-0.107 [0.551]
<i>Self-confidence</i>	0.160* [0.070]	0.288*** [0.006]	-0.041 [0.716]
Strength of peer contacts (Base group: <i>None</i> )			
<i>Low</i>	0.032 [0.761]	-0.177 [0.146]	-0.039 [0.762]
<i>High</i>	0.074 [0.475]	-0.046 [0.697]	-0.099 [0.416]
Controls	Yes	Yes	Yes
2SLS F-test	38.73***	30.04***	38.20***
First stage Instrument	0.170***	0.157***	0.170***
Observations	944	848	929

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets; constant not reported. Instrument: Wealth gap relative to West German peers.

### ***Group differences in unobserved characteristics***

In order to infer the link of distress from social comparisons on attitudes towards foreigners by using IV estimation, we ideally need very similar groups of individuals that varied only in their wealth gap to the West German peer group. That is, our identification strategy relies on the assumption that differences in attitudes towards foreigners between individuals with different distress are not determined by (unobserved) factors beyond the mere effect of the wealth gap.

One way of testing whether there are systematic variations between East Germans characterized by different wealth gaps is an analysis of the distribution of observable characteristics. For ease of presentation, we compare observable characteristics only for the two most crucial groups in our sample, i.e. individuals indicating a *much* higher relative standard of living of their closest West German peers (55.1 percent of the sample, “high wealth gap”) with those individuals stating a *somewhat* higher relative standard of living (39.8 percent of the sample, “low wealth gap”). According to table 5 (col 1-2), there are differences between the group of persons with a high and with a low wealth gap. However, the differences seem to be mainly driven by a dissimilar age structure (and correlated variables). Thus, in table 5 (col 3-4) we depict descriptive statistics of both groups after dropping young persons (the lower third of the age distribution) of the analysis. By comparing observable characteristics of the age-adjusted group with a high and with a low wealth gap, no fundamental differences are indicated. We re-estimate our main models for the age-adjusted subsample; results are depicted in table 6. We find that restricting our sample does not harm our results, although we lose a considerable amount of observations. Most importantly, controlling for age in our main regressions should already remedy the age-related dissimilarities between the groups in our sample. In sum, we find some age-related differences in observables between groups differing in their wealth gap; yet, results remain robust after adjusting the sample. Thus, at least on the basis of observable attributes, we find no indication that systematic differences between groups drive our main findings.

Table 5: Differences between persons with high vs. low wealth gap

Variable	Original sample		Age-adjusted sample	
	Wealth gap		Wealth gap	
	High (1)	Low (2)	High (3)	Low (4)
Age (years)	41.3	34.2***	48.5	46.6
Male	0.458	0.484	0.469	0.536
Living in Partnership	0.623	0.521***	0.744	0.800
Having children	0.748	0.574***	0.918	0.898
Labour market status:				
<i>No workforce</i>	0.329	0.367	0.269	0.224
<i>(Self-)employed</i>	0.614	0.593	0.687	0.761*
<i>Unemployed</i>	0.058	0.040	0.044	0.015*
Qualification:				
<i>Unskilled</i>	0.048	0.024*	0.051	0.034
<i>Still in training</i>	0.119	0.215***	0.013	0.005
<i>Skilled</i>	0.452	0.460	0.474	0.512
<i>Academic</i>	0.381	0.301**	0.462	0.449
Economic Status:				
1 <i>Poor</i>	0.144	0.120	0.128	0.098
2 <i>Average</i>	0.527	0.468*	0.533	0.537
3 <i>Good</i>	0.329	0.412**	0.339	0.366
Living in a City	0.275	0.314	0.282	0.341
Nationalist Values	0.756	0.660***	0.831	0.795
Strength of Peer Contact:				
0 <i>None</i>	0.331	0.314	0.344	0.332
1 <i>Low</i>	0.294	0.306	0.269	0.288
2 <i>High</i>	0.375	0.380	0.387	0.380
Neuroticism	0.110	0.069**	0.123	0.088
Self-confidence	0.556	0.566	0.572	0.585
Observations	520	376	390	205

Notes: T-test significance levels for differences in high vs. low wealth gap subsample means: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . Statistics for the variables is based on the regression sample ('Against political rights for foreigners' table 4).

Table 6: Re-estimation based on the age-adjusted sample (IV-PROBIT)

	Against political rights for immigrants (1)	Right-wing political attitude (2)	Antipathy towards foreigners from low-wage countries (3)
Social Comparison Distress	0.896** [0.049]	1.789*** [0.000]	1.498*** [0.000]
Strength of peer contacts	Yes	Yes	Yes
Personality traits	Yes	Yes	Yes
Other controls	Yes	Yes	Yes
Observations	634	579	613

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets. Instrument: Wealth gap relative to West German peers.

### ***Perception bias in self-assessed wealth gap***

Finally, our results might suffer credibility if East Germans facing a high wealth gap show systematic differences in *perceiving* and *assessing* the economic status of their peer group. If an unobserved personal factor simultaneously causes overestimation of someone's wealth gap and adverse attitudes towards foreigners our basic findings could be biased. Since we also control for personality traits this issue might be of minor importance. However, we also prove the reliability of the IV-approach by another test relating information of someone's *actual* income to the *assessment* of his or her economic status. Since we have information on the personal net income (in Deutschmark) in our sample as well as the self- assessment of economic status we check if the correlation between self-assessed economic status and actual net income is different for individuals experiencing a high wealth gap compared to West German peers.

Table 7: Self-assessed economic status and actual net income (ORDERED PROBIT)

Economic status (Poor/Average/Good)	Interaction High wealth (1)
Actual personal net income (relative to sample mean)	0.055*** [0.000]
Interaction: Actual net income * high wealth gap	0.010 [0.577]
Strength of peer contacts	Yes
Personality traits	Yes
Other Controls	Yes
Observations	922

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets. Net income in 100 DM.



As shown in table 7 we find that given the actual personal income position, individuals with a high wealth gap do not differ to other individuals in assessing their own economic status on the basis of a given net income. That is, since irrespective of the wealth gap to their West German peers individuals perform similarly in predicting their own economic status based on their actual income, we see no reason for a systematic assessment bias of the wealth gap.

#### 4.3. Validating the low-wage country effect

Results in table 1, column 3, suggest that individuals characterized by distress from social 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.<sup>14</sup>

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

	Low-Wage Countries		Low- and High-Wage Countries (3)
	Non-communist [PL, RO, TR] (1)	European [PL, RO, RU, TR] (2)	
Social Comparison Distress	1.076*** [0.000]	0.996*** [0.004]	0.529 [0.564]
Strength of peer contacts	Yes	Yes	Yes
Personality traits	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	930	930	927

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets.  
Instrument: Wealth gap relative to West German peers.

<sup>14</sup> 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.

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.

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 peers. 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. 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 based on the original scales of our dependent variables. Thus, we performed an IV ordered probit regression (Sajaia, 2009) for the first variable ('Against political rights') using all response categories. Moreover, IV-2SLS was performed for the other variables ('right-wing political attitude' ranging from 1 to 10 and 'antipathy concerning low-wage countries' ranging from +5 to -5). Table A4 in the appendix provides evidence that our main findings are not affected by the choice of scale.

In addition, IV ordered probit regressions are performed that explicitly take into account the ordinal nature of the endogenous regressor of distress from social comparisons. When the models are estimated using the bivariate ordered probit model (binary coded dependent variables regressor / ordinaly coded endogenous regressor) all result remain highly robust (see table A5 in the appendix).

## 5. Conclusion

Relative concerns affect behavior in many dimensions. Our findings provide strong evidence that individuals exhibiting distress from upward social comparisons also have more negative attitudes towards foreigners. Negative attitudes towards foreigners 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. These findings are in line with our theoretical predications. Since East Germans are less economically well off than their West German peers, immigration from low-wage countries likely worsens the relative standing of the East German individuals' compared to their West German reference group. In sum, immigration that harms the relative standing will decrease utility and likely will result in attitudes and actions against immigration.

Our findings are in line with previous studies suggesting that supposed labor market threats caused by immigration might trigger sentiments against specific groups of foreigners within a society. However, findings suggest that not only worries about an individual's own income but a relative degradation of the economic status within an individual's peer group contribute to this result.

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, it seems to be not implausible that negative sentiments towards asylum seekers in East Europe are triggered by fears of falling behind (in terms of income) to West Europeans.

## References

- Akerlof G. A., Rose, A. K., Yellen, J. L., & Hesselius, H. (1991). East Germany in from the Cold: The Economic Aftermath of Currency Union. *Brookings Papers on Economic Activity* 22(1), 1-106.
- Alesina, A., & Fuchs-Schuendeln, N. (2007). 'Good Bye Lenin (or not?)' The Effect of Communism on People's Preferences. *The American Economic Review* 97(4), 1507-1528.
- Balsa, A., M., French, M., & Regan, T. (2014). Relative deprivation and risky behaviors. *Journal of Human Resources* 49(2), 446-471.
- Barrell, R., & Te Velde, D. W. (2000). Catching-up of East German Labour Productivity in the 1990s. *German Economic Review* 1(3), 271-297.
- Blum, U. (2013). Eastern Germany's economic development revisited: path dependence and economic stagnation before and after reunification. *Post-Communist Economies* 25(1), 37-58.
- Boeske, K. (2000). 'Selbstverständlich kein ständiger Begleiter des Sozialismus' – Der Intershop. In: Härtel, Chr., & Kabus, P. (eds.). *Das Westpaket: Geschenksendung, keine Handelsware*. Berlin: Chr. Links, 213-229.
- Burchardi, K. B., & Hassan, T. A. (2013). The Economic Impact of Social Ties: Evidence from German Reunification. *The Quarterly Journal of Economics* 128(3), 1219-1271.
- Burda, M. C., & Hunt, J. (2001). From reunification to economic integration: productivity and the labor market in Eastern Germany. *Brookings Papers on Economic Activity* 2001(2), 1-92.
- Burszty, L., & Cantoni, D. (2016). A tear in the iron curtain: The impact of Western television on consumption behavior. *The Review of Economics and Statistics*. Online first DOI: 10.1162/REST\_a\_00522.
- Card, D., Mas, A., Moretti, E., & Saez, E. (2012a). Inequality at work: The effect of peer salaries on job satisfaction. *The American Economic Review* 102(6), 2981-3003.

- Card, D., Dustmann, C., & Preston, I. (2012b). Immigration, wages, and compositional amenities. *Journal of the European Economic Association* 10(1), 78-119.
- Clark, A. E., Frijters, P., & Shields, M. A. (2008). Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and other Puzzles. *Journal of Economic Literature* 46(1), 95-144.
- Cohn, A., Fehr, E., Herrmann, B., & Schneider, F. (2014). Social comparison and effort provision: Evidence from a field experiment. *Journal of the European Economic Association* 12(4), 877-898.
- Corneo, G., & Gruener, H. P. (2002). Individual preferences for political redistribution. *Journal of Public Economics* 83(1), 83-107.
- Dornbusch, R., Wolf, H., & Alexander, L. (1992). Economic transition in eastern Germany. *Brookings Papers on Economic Activity* 1992(1), 235-272.
- Dur, R., & Glazer, A. (2008). Optimal contracts when a worker envies his boss. *Journal of Law, Economics, and Organization* 24(1), 120-137.
- Dustmann, C., & Preston, I. P. (2001). Attitudes to Ethnic Minorities, Ethnic Context and Location Decisions. *The Economic Journal* 111(470), 353-373.
- Dustmann, C., & Preston, I. P. (2007). Racial and Economic Factors in Attitudes to Immigration. *B.E. Journal of Economic Analysis and Policy* 7(1), 1-39.
- Eibner, C. E., & Evans, W. N. (2005). Relative Deprivation, Poor Health Habits, and Mortality. *Journal of Human Resources* 40(3), 591-620.
- Elsner, E. M., & Elsner, L. (1992). *Ausländer und Ausländerpolitik in der DDR*. Berlin: Gesellschaftswissenschaftliches Forum.
- Facchini, G., & Mayda, A. M. (2009). Does the welfare state affect individual attitudes toward immigrants? Evidence across countries. *The Review of Economics and Statistics* 91(2), 295-314.
- Falk, A., Kuhn, A., & Zweimueller, J. (2011). Unemployment and Right-wing Extremist Crime. *Scandinavian Journal of Economics* 113(2), 260-285.

- Ferrer-i-Carbonell, A. (2005). Income and well-being: An empirical analysis of the comparison income effect. *Journal of Public Economics* 89(5-6), 997-1019.
- Festinger, L. (1954). A Theory of Social Comparison Processes. *Human Relations* 7(2), 117-140.
- Frindte, W., Geschke, D., Haußecker, N., & Schmidtke, F. (2016). Ein systematisierender Überblick über Entwicklungslinien der Rechtsextremismusforschung von 1990 bis 2013. In: Frindte, W., Geschke, D., Haußecker, N., & Schmidtke, F. (eds.). *Rechtsextremismus und „Nationalsozialistischer Untergrund“*. *Interdisziplinäre Debatten, Befunde und Bilanzen*. Wiesbaden: Springer, 25-96.
- Fuchs-Schuendeln, N., & Masella, P. (2016). Long-Lasting Effects of Socialist Education. Forthcoming at *The Review of Economics and Statistics*.
- Gaechter, S., & Thoeni, C. (2010). Social comparison and performance: Experimental evidence on the fair wage-effort hypothesis. *Journal of Economic Behavior & Organization* 76(3), 531-543.
- Ghouas, N. (2004). *The Conditions, Means and Methods of the MfS in the GDR: An Analysis of the Post and Telephone Control*. Goettingen: Cuvillier Verlag.
- Hainmueller, J., & Hiscox, M. J. (2010). Attitudes toward Highly Skilled and Low-skilled Immigration: Evidence from a Survey Experiment. *American Political Science Review* 104(1), 61-84.
- Hainmueller, J., Hiscox, M. J., & Margalit, Y. (2015). Do concerns about labor market competition shape attitudes toward immigration? New evidence. *Journal of International Economics* 97(1), 193-207.
- Heineck, G., & Suessmuth, B. (2013). A different look at Lenin's legacy: Social capital and risk taking in the two Germanies. *Journal of Comparative Economics* 41(3), 789-803.
- Helbling, M., & Kriesi, H. (2014). Why Citizens Prefer High-over Low-skilled Immigrants. Labor Market Competition, Welfare State, and Deservingness. *European Sociological Review* 30(5), 595-614.

- Hennighausen, T. (2015). Exposure to television and individual beliefs: Evidence from a natural experiment. *Journal of Comparative Economics* 43(4), 956-980.
- Hirschman, A. O. (1993). Exit, Voice, and the Fate of the German Democratic Republic: An Essay in Conceptual History. *World Politics* 45(2), 173-202.
- Hyll, W., & Schneider, L. (2013). The causal effect of watching TV on material aspirations: Evidence from the “valley of the innocent”. *Journal of Economic Behavior & Organization*, 86(Feb), 37-51.
- Kern, H. L., & Hainmueller, J. (2009). Opium for the masses: How foreign media can stabilize authoritarian regimes. *Political Analysis* 17(4), 377-399.
- Krueger, A., & Pischke, J. (1997). A Statistical Analysis of Crime against Foreigners in Unified Germany. *Journal of Human Resources* 32(1), 182-209.
- Lindner, B. (2000). ‘Dein Päckchen nach drüben’: Der deutsch-deutsche Paketversand und seine Rahmenbedingungen. In: Härtel, Chr., & Kabus, P. (eds.). *Das Westpaket: Geschenkendung, keine Handelsware*. Berlin: Chr. Links, 25-39.
- Lubbers, M., & Scheepers, P. (2001). Explaining the Trend in Extreme Right-wing Voting: Germany 1989-1998. *European Sociological Review* 17(4), 431-449.
- Luttmer, E. F. P. (2005). Neighbors as Negatives: Relative Earnings and Well-being. *The Quarterly Journal of Economics* 120(3), 963-1002.
- Maddison, A. & Alton, T. P. (2011). *The German Democratic Republic’s Gross Domestic Product development between 1950 and 1989*. GESIS Data Archive, Cologne. ZA8387 Data file Version 1.0.0, DOI: 10.4232/1.10251.
- Mayda, A. M. (2006). Who is against Immigration? A Cross-country Investigation of Individual Attitudes toward Immigrants. *The Review of Economics and Statistics* 88(3), 510-530.
- Ockenfels, A., & Weimann, J. (1999). Types and patterns: an experimental East-West-German comparison of cooperation and solidarity. *Journal of Public Economics* 71(2), 275-287.

- O'Rourke, K. H., & Sinnott, R. (2006). The Determinants of Individual Attitudes towards Immigration. *European Journal of Political Economy* 22(4), 838-861.
- Rainer, H., & Siedler, T. (2009). Does democracy foster trust? *Journal of Comparative Economics* 37(2), 251-269.
- Sajaia, Z. (2009). *Maximum Likelihood Estimation of a Bivariate Ordered Probit Model: Implementation and Monte Carlo Simulation*. Washington, DC: World Bank.
- Scheer, U. (2014). Stasi im Alltag der DDR. In: Dümmel, C., & Piepenschneider, M. (eds.). *Was war die Stasi? Einblicke in das Ministerium für Staatssicherheit der DDR*. Sankt Augustin/Berlin: Konrad-Adenauer-Stiftung, 100-105.
- Scheve, K. F., & Slaughter, M. J. (2001). Labor Market Competition and Individual Preferences over Immigration Policy. *The Review of Economics and Statistics* 83(1), 133-145.
- Schulte Döinghaus, U. (2000). Eine „gesonderte Behandlung“ jenseits des Regellaufs. Der Paketverkehr unter Kontrolle von Stasi und Zoll. In: Härtel, Chr., & Kabus, P. (eds.). *Das Westpaket: Geschenkendung, keine Handelsware*. Berlin: Chr. Links, 65-80.
- Siedler, T. (2011). Parental Unemployment and Young People's Extreme Right-wing Party Affinity: Evidence from Panel Data. *Journal of the Royal Statistical Society (A)* 174(3), 737-758.
- Sinn, G., & Sinn, H. W. (1992). *Jumpstart*. Cambridge, MA: MIT Press
- Stark, O., Micevska, M., & Mycielski, J. (2009). Relative Poverty as a Determinant of Migration: Evidence from Poland. *Economics Letters* 103(3), 119-22.
- Stark, O., & Taylor, J. E. (1991). Migration Incentives, Migration Types: The Role of Relative Deprivation. *The Economic Journal* 101(408), 1163-1178.
- Staritz, D. (1996). *Geschichte der DDR*. Frankfurt a. M.: Suhrkamp.
- Veblen, T. (1899). *The Theory of the Leisure Class*. Reprints of Economic Classics. New York: Augustus M. Kelley, 1965.



Wolle, S. (1998). *Die heile Welt der Diktatur: Alltag und Herrschaft in der DDR 1971-1989*. Berlin: Chr. Links.

Zwengel, A. (2011). Kontrolle, Marginalität und Misstrauen? Zur DDR-Spezifik des Umgangs mit Arbeitsmigranten. In: Zwengel, A. (ed.). *Die 'Gastarbeiter' der DDR - Politischer Kontext und Lebenswelt*. Berlin: LIT-Verlag, 3-20.

## Appendix

Table A1: Descriptive statistics for regression samples

Variable	Scale	Variable	Share/Mean
Right-Wing Political Attitude	Binary	M08_0112	8.1%
Against Political Rights for Foreigners	Binary	M08_0011	43.4%
Antipathy towards foreigners from low-wage countries	Binary	M08_0065/ M08_0078	13.8%
Social comparison distress: <i>None</i>			72.8%
<i>Some</i>	Ordinal	M08_0141	22.0%
<i>High</i>			5.2%
Age (years)	Metric	M08_0114	38.41
Male	Binary	M08_0113	46.0%
Living in Partnership	Binary	M08_0115	59.0%
Having Children	Binary	M08_0116	68.3%
Labour Market Participation:			33.6%
<i>No workforce</i>			
<i>(Self-)employed</i>	Categorical	M08_0121	61.4%
<i>Unemployed</i>			5.0%
Qualification: <i>Unskilled</i>			3.6%
<i>Still in training</i>	Categorical	M08_0120	15.3%
<i>Skilled</i>			46.4%
<i>Academic</i>			34.8%
Economic Status: <i>1 Poor</i>			13.2%
<i>2 Average</i>	Ordinal	M08_0005	50.0%
<i>3 Good</i>			36.8%
Living in a City (>100,000 residents)	Binary	M08_0178	28.8%
Nationalist Values	Binary	M08_0012	71.7%
Strength of Peer Contacts: <i>0 None</i>			33.4%
<i>1 Low</i>	Ordinal	M08_0138	29.9%
<i>2 High</i>			36.8%
Neuroticism	Binary	M08_0103	9.1%
Self-confidence	Binary	M08_0102	56.3%
West German Wealth:			
<i>1 Much lower</i>			0.3%
<i>2 Somewhat lower</i>			1.5%
<i>3 Equal</i>	Ordinal	M08_0140	3.3%
<i>4 Somewhat higher</i>			39.8%
<i>5 Much higher</i>			55.1%

Notes: Statistics for the right-hand-side variables is based on the regression sample ('Against political rights for foreigners' table 4).

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

Endogenous regressor: Social comparison distress	Against political rights for immigrants (1)	Right-wing political attitude (2)	Antipathy towards foreigners from low-wage countries (3)
Wealth Gap	0.175*** [0.000]	0.165*** [0.000]	0.175*** [0.000]
Age	-0.006*** [0.001]	-0.005*** [0.003]	-0.006*** [0.001]
Male	-0.016 [0.658]	-0.009 [0.807]	-0.018 [0.634]
Living in a Partnership	0.026 [0.587]	0.041 [0.419]	0.032 [0.505]
Having Children	0.046 [0.435]	0.046 [0.459]	0.038 [0.528]
Labour market status (Base group: <i>none</i> )			
<i>(Self-)Employed</i>	-0.026 [0.649]	-0.009 [0.881]	-0.024 [0.672]
<i>Unemployed</i>	-0.189* [0.057]	-0.212** [0.046]	-0.229** [0.023]
Qualification (Base group: <i>Unskilled</i> )			
<i>Still in training</i>	0.017 [0.890]	0.025 [0.852]	0.008 [0.946]
<i>Skilled</i>	0.146 [0.139]	0.145 [0.179]	0.145 [0.144]
<i>Academic</i>	0.069 [0.498]	0.058 [0.598]	0.059 [0.559]
Economic situation (Base group: <i>Poor</i> )			
<i>Average</i>	-0.142** [0.012]	-0.135** [0.024]	-0.136** [0.016]
<i>Good</i>	-0.262*** [0.000]	-0.242*** [0.000]	-0.256*** [0.000]
Living in a City	0.077* [0.053]	0.096** [0.019]	0.075* [0.061]
Nationalist Identity	0.003 [0.946]	0.018 [0.687]	0.000 [0.995]

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets; constant not reported.

Table A3a: Antipathy towards specific low-wage countries

	Poland	Russia	Turkey	Vietnam	Romania	Cuba
Social comparison distress	0.847** [0.012]	0.968*** [0.009]	0.791** [0.020]	0.842** [0.034]	1.079*** [0.000]	0.809** [0.030]
Strength of Peer Contacts	Yes	Yes	Yes	Yes	Yes	Yes
Personality traits	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	934	933	932	933	931	932

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets; constant not reported. IV-PROBIT results. Instrument: Wealth gap relative to West German peers.

Table A3b: Antipathy towards specific high-wage countries

	USA	Austria	France
Social comparison distress	-0.034 [0.577]	-0.007 [0.768]	-0.028 [0.330]
Strength of Peer Contacts	Yes	Yes	Yes
Personality traits	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes
Observations	929	931	930

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets. IV-2SLS results. Instrument: Wealth gap relative to West German peers.

Table A4: Models with original dependent variable instead of binary coded variable

	Against political rights for immigrants (no/uncertain/yes) BIOPROBIT (1)	Right-wing political attitude (1...left to 10...right) 2SLS (2)	Antipathy – foreigners low-wage countries (-5 sympathy to 5 antipathy) 2SLS (3)
Social comparison distress	0.307** [0.012]	2.008*** [0.002]	1.186** [0.035]
Strength of Peer Contacts	Yes	Yes	Yes
Personality traits	Yes	Yes	Yes
Other controls	Yes	Yes	Yes
Observations	944	848	929

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets. Instrument: Wealth gap relative to West German peers. Note that in regression (3) the antipathy variable is adversely coded in comparison to the original survey variable ranging from -5 (antipathy) to 5 (sympathy).

Table A5: Models accounting for ordinal scale of endogenous regressor

	Against political rights for immigrants (0/1) BIOPROBIT (1)	Right-wing political attitude (0/1) BIOPROBIT (2)	Antipathy – foreigners low-wage countries (0/1) BIOPROBIT (3)
Social comparison distress (none/some/strong)	0.310** [0.020]	0.822*** [0.000]	0.480*** [0.002]
Strength of Peer Contacts	Yes	Yes	Yes
Personality traits	Yes	Yes	Yes
Other controls	Yes	Yes	Yes
Observations	944	848	929

Notes: Significance levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . P-value in brackets. Instrument: Wealth gap relative to West German peers.

Table A6: 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			
<i>Academic</i>	34.0%	39.2%	38.2%
<i>Skilled</i>	55.5%	53.0%	52.6%
<i>Unskilled</i>	6.2%	7.8%	4.0%
<i>Male</i>	49.1%	46.6%	46.2%
<i>Age</i>	46.0	45.4	41.1
<i>No Child (only women)</i>	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.