MIGRATION AND TRUST:
EVIDENCE FROM WEST GERMANY AFTER UNIFICATION

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Abstract

This study uses the German socio-economic panel data to investigate the effects of mass migration of East Germans on the generalized trust of West Germans who experienced the aftermath of the unification. Results suggest that West Germans' trust is negatively correlated with migration, but the persistent effect is only confined to participants in the labor markets at the time. The subsequent analysis finds that perceiving migrants as labor market competitors is a possible channel through which trust is negatively affected.

Keywords: Trust, Migration, Germany, Unification

JEL codes: A13; J15; O15; P20

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1. Introduction

Numerous empirical studies have revealed that trust in other people is conducive to growth (Knack and Keefer, 1997; La Porta et al., 1997; Narayan and Pritchett 1999; Akçomak and Ter Weel, 2009; Dearmon and Grier, 2009; Algan and Cahuc, 2010; Nunn and Wanchekon, 2011). [1] Several channels are found through which trust exercises a positive influence on growth. These channels include investments (Zak and Knack, 2001), financial development (Guiso et al., 2004), trade (Guiso et al., 2008), human capital (Dearmon and Grier, 2011), and entrepreneurship (Kim and Kang, 2014).

By contrast, inconsiderable literature has explored how trust is formed or destroyed. The majority of the works have examined how historical or inherited factors determine trust. Algan and Cahuc (2010) find that immigrants' trust is significantly affected by inherited ancestors' trust from the origin countries. Historical experiences, such as slavery (Nunn and Wanchekon, 2011), the socialist regime (Lichter et al., 2015), and ethnic diversity (Dinesen and Sønderskov, 2015), also influence trust. These results imply that trust has been formed over many generations and is persistent, rather than being quickly created and then disappears.[2]

This study uses the German Socio-Economic Panel data (SOEP) to analyze the generalized trust of West Germans who experienced the mass migration of East Germans after the reunification. For a more detailed description, this study examines the effects of migration on the trust of West Germans when receiving migrants, investigates a channel through which migration affects trust, and addresses how long the unification shock lasts on trust. This study,

[1] The type of trust we discuss throughout the paper is trust in other people as a whole, which is also called generalized trust or social trust. There are other types such as trust in institutions, which has been discussed albeit less frequently in works such as Keele (2007), Newton and Zmerli (2011), and Tao et al. (2017).

[2] The formation of trust among heterogeneous groups is largely unexplored. The early literature finds some evidence of convergence if different groups are in the same environment. For example, the trust of first-generation immigrants shows signs of convergence to the trust level of the host country (Dinesen, 2012).

in this way, deals with not only how quickly trust falls as mass migration occurs, but also how persistent such changes are on trust.

This study complements the existing literature as follows. First, we fill a gap in the literature by exploring the effect of migration on the trust of the people receiving migrants. The literature, albeit its importance, has paid limited attention to the relationship between migration and trust. Migration has increasingly become a critical subject among researchers and policy makers (Borjas, 1994; Hatton and Williamson, 1994; Massey et al., 1998; Borjas, 2014; Abramitzky and Boustan, 2017). Reflecting this trend, numerous works about the effects of migration on the economy of recipient countries have emerged.[3] However, to the authors' best knowledge, the trust of people accepting numerous migrants has yet to be discussed.

Second, we uncover a channel through which migration influences trust. One main concern of native workers against immigration appears to be a possibility that immigrants take jobs away from them, despite that the existence of such an effect at a national or a regional level is still controversial (Scheve and Slaughter, 2001; Borjas, 2003; Card and Peri, 2016). For instance, a poll by Gallup shows that those who perceive immigrants as competitors in the labor markets prefer to limit the number of migrants in their countries (Esipova et al., 2015). Indeed, Scheve and Slaughter (2001) and Mayda (2006) find that the extent to which the jobs of the natives are negatively affected by immigrants exerts influence on attitudes on immigration. However, the labor market channel through which migration affects trust has not been explored in the existing literature.

Third, this study discusses whether or not trust deteriorates in a relatively short time, which is less explored in the literature. Only a small number of works claim that trust significantly changes in a short period by large shocks, such as military conflict (Rohner et al., 2013) and natural disaster (Yamamura, 2016). Unlike military conflict and natural disaster, the

[3] Refer to Borjas (2014) for a recent review and a critical review by Card and Peri (2016).

mobility of people in the form of migration is a common phenomenon in a modern economy.[4] Hence, the findings of this study are expected to provide wider implications than the previous literature.

Fourth, this study explores how persistent shocks are on trust. Numerous studies have advocated the persistence of trust, with some arguing that a detrimental impact on trust has prolonged effects lasting as long as 400 years (Nunn and Wantchekon, 2011). Using the fact that trust is transmitted across generations, Algan and Cahuc (2010) measure the inherited trust by variations among different immigrant groups in the United States and empirically show that trust promotes economic growth. However, most of the works about the contemporaneous effect of shocks on trust have failed to look how long such changes last. Unless we understand the extent to which these changes persist, a gap will still remain between their instantaneous impacts on trust and its inherited nature. In this study, we used an integrated analysis to examine not only the impact of a migration shock, but also the duration of such shock on trust.

This study is based on the following identifications and estimation strategies. First, German unification is an exogenous shock to West Germans, thus orthogonal to the preferences of ordinary West Germans. The exogeneity assumption of German unification was the basis of multiple works (Fuchs-Schündeln and Schündeln, 2005; Redding and Sturm, 2008; Burchardi and Hassan, 2013). We link mass migration mainly in the early 1990s to trust in the 2000s; thus, the exogeneity assumption is easy to hold. Second, we apply equations that aim to identify the impacts on trust to subgroups as classified by ages, which can be viewed as a proxy indicating the extent to which the respondent was exposed to labor market competition during mass migration. We conduct robustness checks by using variables related to the degree of labor market competition, such as income, occupation types, and skill levels. A further robustness

[4] Dinesen (2012) is an exception for looking at the effect of immigration on trust but it focuses on immigrants, not on people receiving them.

check is made by using the sample of East Germans, who migrated to West Germany, to identify the little effects on their trust, which is in stark contrast to the case of West Germans.

We find that the trust of West Germans is negatively affected by the mass migration of East Germans through the labor supply shock. In addition, such shock is persistent but only confined to participants in the labor force at the time. This finding indicates that the negative effect of receiving many migrants on trust lasts for several decades. The subsequent analysis with various subgroup samples finds that West Germans' perception of heightened competition with migrants from East Germany in the labor markets is a possible channel through which trust is negatively affected.

The rest of this paper is outlined as follows. Section 2 discusses the related literature and the migration from the East to the West after the German unification to motivate our work. Section 3 describes our data and used variables in the estimations. Sections 4 and 5 report the regression results and check their robustness, respectively. Section 6 concludes the paper.

2. Migration from the East to the West, Labor Markets and Trust

During the German reunification, migration from the East to the West exploded due to economic and political reasons. Approximately 30,000 East Germans fled to West Germany annually in the late 1980s, and the number of East German migrants increased tenfold during 1989 as the Hungarian borders opened in May and the Berlin Wall collapsed in November, rendering migration between the East and the West regions officially free (Bauer and Zimmermann, 1997). The annual total outflow of East Germans has been estimated to be 2.5% of the entire East German population in the years 1989 and 1990 (Hunt, 2006). When the mass movement subsided in 1991, approximately 230,000 East Germans had migrated to the West (Fuchs-Schündeln and Schündeln, 2009).

This mass-migration was the source of fear among West German workers at the time. The literature on post-reunification Germany conveys the negative perception that West Germans had toward the East German migrants. For instance, the labor unions in the West pressured to raise the wage level in the East. The fear of continuing large-scale emigration substantially influenced the decision to enter into a monetary and economic union with the GDR (German Democratic Republic) in February, 1990 (Akerlof et al., 1991). Considering this context in which many West German workers opposed the mass migration of East German workers, we conjecture that if determinants of trust have persistent factors, West Germans' current trust in others would still be affected by this event in the early 1990s.

An important assumption in this study is that the mass migration of East Germans after reunification was an exogenous shock to trust preferences. This empirical strategy is motivated by previous studies that similarly regard German division after World War II and abrupt reunification in 1990 as a natural experiment. For instance, Redding and Sturm (2008) investigate how West German cities were affected by border changes due to World War II and the reunification in Germany. They find that the loss of trading partners caused by the division of Germany after World War II hampered population growth, and reunification also contributed to the relative decline of border cities compared to interior Western cities. Burchardi and Hassan (2013) examine West German households who have East German friends or family before reunification, and find that these households have higher income growth rates after reunification than households without such ties. In addition, Fuchs-Schündeln and Schündeln (2005) leverage the unique labor institutions in former East Germany, where choice of occupation was independent to risk aversion. Although civil servants generally tend to be risk averse, the authors argue East German civil servants were not self-selected on risk aversion, because political restrictions made occupational assignments more or less exogenous. By comparing the amount of precautionary savings between the civil servants and

other workers in the reunified Germany, they estimate the proportion of precautionary wealth without the selection-bias.

We hypothesize that the historical shock of German reunification affects the trust levels of individuals living in West Germany and use the variation of net migration rates across West German states immediately after reunification as the proxy of the shock. Our hypothesis is closely related with Herreros and Criado (2009), which finds that high trust leads to more positive attitudes towards immigrants. In contrast to their work, however, trust is an outcome instead of a cause in this paper.

We build on a series of empirical papers that document the lasting effects from various shocks on people's perceptions, including their trust. For instance, Fernandez et al. (2004) use the mobilization rate of men across the United States during World War II as an exogenous shock on female labor supply, which increased from the shortage of male workers drafted for the war. The authors find that the sudden increase in women's participation in the labor market resulted in not only the higher participation of women in the labor force at the time, but also a shift in the norms held by the next generation who were raised by working mothers. Nunn and Wantchekon (2011) similarly find that the extent of transatlantic slave exports still affects the trust levels of ethnic groups, whose ancestors were forcibly traded 400 years ago. In addition, Lichter et al. (2015) use regional variation in the density of spies in East Germany to uncover the negative impact of surveillance on interpersonal trust, institutional trust, and entrepreneurial activities. Giuliano and Spilimbergo (2013) use macroeconomic shocks and infer that people who experienced a recession in their teens tend to support redistributive government policies, vote for the left-wing parties, and believe that luck is more important than effort in determining economic success in life. Yamamura (2016) reports that Kobe residents significantly increased voluntary community-building work after the 1995 Kobe earthquake in Japan, while minimal, notable differences were found in other areas pre- and post-earthquake.

We further hypothesize that labor market competition is a key channel through which the mass migration of East Germans affected the trust of West Germans. The economics of migration suggests that migration decisions are made based on earnings differentials in labor markets between the origin and the destination (Massey et al., 1993). Native workers may consequently oppose immigration to keep their labor markets from becoming more competitive. In support for this notion, Scheve and Slaughter (2001) and Mayda (2006) find that concerns about the negative impact of immigration on wages and employment prospects generate anti-immigrant attitudes. In more detail, Scheve and Slaughter (2001) use survey measures of preferences on immigration policies over the three waves of the U.S. National Election Studies. Their results show that less-skilled workers are significantly more likely to prefer closed borders. Mayda (2006) compiles cross-country datasets, such as the International Social Survey Programme and the World Values Survey, to see whether the correlation exists across multiple countries. She finds that non-economic factors also explain immigration attitudes, and notable cross-country variation exists in the relationship between skills and preferences: skills and pro-immigration preferences are positively correlated in countries with economic prosperity, but negatively correlated in countries with low per capita GDP. These works imply that individual economic standing affects one's own perception of labor market competitiveness, which can lead to anti-immigrant attitudes. This aligns with the economic theories of immigration, such as the Hecksher–Ohlin (HO) and factor-proportions analysis (FPA) models, predicting that attitudes toward immigration are dependent upon one's evaluation of labor market competitiveness.[5] That is, the skill level of the natives is negatively correlated with anti-

[5] According to the HO model, unskilled workers prefer policies against immigration inflows if the output of a country influences the world prices. The FPA model, which assumes no factor price insensitivity, naturally predicts the same; with more immigrant workers, firms hire more unskilled workers because of lower relative wages. An important assumption of these models is that natives view immigrants as non-skilled workers.

immigrant attitudes. Consequently, there may be heterogeneous effects on the generalized trust of natives in reaction to a large inflow of immigrants.

While East German migrants in West Germany during the early reunification period is a unique instance of mass migration, this case still shares characteristics with migration in other countries. Their reasons for migrating were predominantly economic, as they are for most international immigrants, and while East Germans were not technically foreign immigrants, they were likely viewed as such by West German natives. The West Germans perceived the East Germans with negativity or arrogance, and initially had closer social ties with other West or South Europeans than with East Germans (Hahn, 1993; Bower, 2016). Generally, natives believe there are greater cultural, religious, and economic divides between themselves and immigrants than there actually are (Alesina et al., 2018).

Nevertheless, East Germans migrants still shared the same language and cultural heritage as the West German natives, and the divide between the two lasted for just four decades. Still, there are many cases where foreign migrants share similarities with natives and in fact choose their destination countries with large immigrant communities or same languages (Massey et al., 1993; Docquier et al., 2014; Chiswick and Miller, 2015). Ultimately, one may argue that given their cultural and linguistic similarities, the effect of East German migrants on the trust level of the native West Germans is mitigated than in general cases of international immigration. Hence our findings may be interpreted as a lower bound of the negative effect of immigration on trust and its duration, if any.

Over time, the trust level of the natives and immigrants may converge. The trust of first-generation immigrants shows signs of converging to the general trust level in the host country (Dinesen, 2012), and the trust gap between the East and West Germans is indeed narrowing (Heineck and Süssmuth, 2013). However, the changes are often very slow. In another dimension of preferences, Heineck and Süssmuth (2013) find no convergence in sense of

cooperation. Rainer and Siedler (2009) report an increase in institutional trust for East Germans but little change in generalized trust after reunification, and Alesina and Fuchs-Schündeln (2007) find that the convergence between East and West German preferences for state intervention takes several decades.

In sum, we propose the following hypothesis supported by the aforementioned series of studies. West Germans may have perceived East Germans as immigrants and potential labor market competitors who could undermine their welfare. The mass migration of East Germans into their communities during the 1990s may have induced further intergroup alienation and reduced West Germans' generalized trust. As many papers have documented the persistence of generalized trust, the impact of the migration shock may still remain among people who were of working-age during reunification.

3. Data and Variable Descriptions

The SOEP data, which are the longest running longitudinal survey in Germany, are used for this study. The SOEP data started in 1984 with a total of 6,000 households in West Germany, added East German households in 1990, and have conducted surveys with over 12,000 households annually. The measure of trust, contained in the waves in 2003, 2008, and 2013, is a four-scale response from strong disagreement to strong agreement to the survey statement, "In general, you can trust people." We collapsed the four-scale into a binary variable for easier interpretation. We used the initial sample of West German households, which were added in 1984, and subsequent refreshment samples to avoid too much loss of observations. For the refreshment samples added after 2003, only those respondents who have lived in the same residence since childhood were included to ensure that they experienced the shock in the early 1990s. Thus, the sample in this study consists of non-immigrant respondents or West

Germans living in Western states and are born before or in 1985.[6] The sample size was 8,667 for the 2003 wave, 7,401 for the 2008 wave, and 6,264 for the 2013 wave. Appendix Table A.1 reports the summary statistics.

In this study, distinctions between age groups were often made because of the conjecture that a labor market shock can affect individuals heterogeneously depending on their standings in the labor market. On the basis of age during the reunification, age cohorts that were distinguished by a ten-year unit are generated. These cohorts were grouped into three: the Young, the Prime-age (Prime), and the Middle-age (Middle). More details are in Table A.2. The distinction between the Young and the Prime was based on whether the respondent was an adult (18 or older) in 1990. The Prime group was designed to contain individuals who were less than retirement age until 2013. Although these distinctions may seem arbitrary, interesting and different results among these three groups were found.

The Federal Statistical Office of Germany provided migration-related statistics, which include East Germany starting from October 1990. The statistics on net migration considered the inflows and outflows of the individuals of each state. As East German migrants were the primary interest, the number of internal migrants within Germany was used rather than that of migrants from foreign countries. By dividing net migrants by the mid-population of the year, which was calculated as the mean value between the population at the end of the previous year and the end of the current year, we constructed the annual net migration rates of each German state since 1990.[7]

Figure 1 demonstrates that mass migration immediately occurred before and after the official reunification. The flows from the East and the West were in stark contrast. The

[6] This age restriction ensures that the youngest individuals in the sample reach adulthood by 2003.
[7] For convenience, we used the population statistics of the first day after 1990, instead of using the statistics of the last day of 1990. For instance, the mid-population of 1990 was calculated by deriving the average of the population as of January 1, 1990 and the population as of January 1, 1991.

population of Germany shifted to the Western regions in the early 1990s. When the political climate was unstable in 1989, migrants from East Germany spiked to approximately 390,000 from 43,000 in 1988 (The Statistical Office of Germany, 1992). The internal migration in Germany during reunification was dominated by East German migrants. After the peak in 1991, the flow from the East to the West dropped until the second peak in 2001. Meanwhile, the flow from the West to the East gradually increased during the 1990s until the third peak in 1997. The internal migration remained stagnant throughout the 2000s and 2010s. Although the East–West and West–East flows are almost balanced in the 2010s, the East–West flow dominated the West–East flow during the entire period, which has been observed for 25 years.

[Figure 1 about here]

West German states' mean net migration rates in 1990 to 1991 have been used as the proxy for the shock since the peak of the East–West migration occurred in the early 1990s. We linked the state's net migration rate in 1990 to 1991 to each individual's state of residence to examine the rate's impact on the respondents' trust.[8] This study has a similar approach to other studies linking state-level variation to labor market outcomes, such as Acemoglu et al. (2004), Fernandez et al. (2004), and Coile and Levine (2007). Although mass-migration prevalently occurred between 1989 and 1990 (Figure 1), statistics on inter-state migration about the flows between East and West have been available since October, 1990. Thus, the net migration rate

[8] The migration rate should be assigned by the respondent's state of residence in 1990. However, many respondents are not observed in the 1990 wave because we used the waves in the 2000s and the 2010s for the analysis. This resulted in much loss of the sample size, especially with a loss of respondents in two Western states, Saarland and Bremen, due to the survey design. We checked the interstate migration cases and found that approximately 95% of the respondents still stay in the state they were initially surveyed in during the 2003 wave. Thus, we assumed that most respondents were affected by the shock in their state of residence.

in 1990 is obtained through multiplying the migration rate in the 4th quarter—from October to the end of the year—by four.[9]

[Figure 2 about here]

The West German states exhibit quite a variation in migration rates, spanning from the net negative inflow to the net positive inflow. From Figure 2, the states with the positive net migration rates tend to be the home states of the most populated cities in Germany: Hamburg, Bavaria (home to Munich), Hessen (Frankfurt), Baden-Wüttemberg (Stuttgart), and Nordrhein-Westfalen (Cologne and Düsseldorf). However, the inflow is not exactly proportional to the population. The state with the highest relative inflow of East Germans is Rheinland-Pfalz, the 7th biggest state in terms of population in Germany before the reunification, based on the 1987 census.

Table A.3 reports the annual average migration rates by state. We excluded observations in Berlin because of this state's unique situation of being East and West Germany, and, more importantly, several official statistics exclude migration from and to Berlin. According to the statistics in Table A.3, population in the Western states in 1990, excluding Berlin, increased by 0.25%, while more than 5% of the East German exited from the East in the same year. Considerable emigration continued until 1993, appeased for a brief period

[9] The net migration rate in 1990 is likely to be underestimated, as many East Germans started to migrate even before the official mark of the reunification starting from 1989. The peak migration period was between 1989 and the early 1990 (Akerlof et al., 1991). However, we found that the interstate migration flow patterns in the fourth quarter of 1990 and the year 1991 are fairly similar in terms of relative size between the states. Also, the interstate migration patterns in the year 1989, while they only account for West Germans, are similar in terms of migration flow rankings between the states. Although we do not know the true relative size of East German migration during the first three quarters in 1990, we find it reasonable to assume that the relative size between states during the first three quarters in the year 1990 were similar to that of the fourth quarter. We found robust results with altered proxies for migration shock, such as summing the values of the fourth quarter of 1990 and of the year 1991, or averaging the values of the fourth quarter of 1990 and of the year 1991.

afterward and restarted in 1999 when the Eastern economy went into a recession. West's net migration rates in 1990 and 1991 were well above its average rate from 1990 to 2013. Therefore, arguing that a sufficient impact of migration inflow to the Western states exists, especially during the early 1990s, is acceptable.

4. Empirical Strategy and Results

4.1 Empirical Strategy

The following equation estimated the relation between trust and migration:

$$TRUST_{ist} = \beta Shock_s + X'_{ist}\gamma + S'_{st}\delta + State_s + Year_t + \varepsilon_{ist}$$

where TRUST is the indication of trust of *i* in state *s* at year *t* and $Shock_s$ is the average net migration rate of the respondent's state in 1990 to 1991. Vector X'_{ist} denotes a set of individual-level covariates, which include age, age-squared, gender dummy, marital status dummies, education dummies, occupation fixed effects—using the 1988 International Standard Classification of Occupations code, and the log of per capita household income.[10] S'_{st} is the vector of state characteristics, that is, the growth rate of the state's real GDP, unemployment rate, and the average net migration rates for the past five years of year *t*, $State_s$ is the state fixed effects, $Year_t$ is the year fixed effects, and ε_{ist} is the error term. The coefficient of interest is β, which captures the impact of the migration shock. We used the random effects probit estimation model[11] given that the dependent variable is a binary variable.

[10] The education variables denote the following levels: (1) lower than university qualification (Arbitur), (2) qualified for university (Arbitur), and (3) college degree or higher. The marital status dummies are (1) married, (2) single, and (3) others (divorced, widowed, and separated). The job dummies are (1) labor force non-participants (including retirees, people on military/community service, and students), (2) legislators, managers, and professionals, (3) technicians and associate professionals, (4) clerks and service workers, (5) skilled agriculture/fishery and craft workers, (6) plant/machine operators and elementary occupations, and (7) the unemployed. For specific occupations within the category, see the document in the following address (http://ec.europa.eu/eurostat/documents/1978984/6037342/ISCO-88-COM.pdf).

[11] We have checked the main results using the pooled probit model and found that these results are robust.

4.2 Baseline Regressions

Table 1 reports the probit marginal effects with other covariates at the mean when the dependent variable is an indicator whether the respondent trusts most people in general. Column (1) presents the results based on all respondents and Columns (2) to (4) present the results by subgroup. The subgroup is generated on the basis of the age at the reunification in 1990 (Appendix Table A.2). In Column (1), the marginal effect of a percent point increase in 1990–91 net migration rate leads to a decrease in trust by 0.084. The impact is quite substantial as the most of a decline in trust of West Germans from 1990 to 2008 can be accounted for by this mass migration, based on the assumption that the trend of a decrease in trust from 1990 to 2003 is the same as that from 2003 to 2008.[12]

[Table 1 about here]

Trust is also affected by recent migration rates with the average net migration rate over the past five years. A percentage increase in the recent migration rate leads to a 0.045, which is about half of the effect of migration in 1990-91, decrease in trust, but the coefficient is only statistically significant at the 10% level. Trust of West Germans increases with education levels, stability of job (the positive coefficient of being a white-collar worker), and income. Female respondents have higher trust than male respondents, and married and single individuals have higher trust than divorced respondents.

[12] We find that the mean trust of West Germans living in the West decreased from 0.631 in 2003 to 0.625 in 2008. Assuming a linear change in trust over time, trust decreased by 0.0012 per year, and thus by 0.0216 in total from 1990 to 2008. According to the regression results, the migration shock reduced West Germans' trust by 0.019, which is obtained by multiplying the coefficient of net migration rate in 1990-91 by its mean. Hence, the migration shock explains 88% of the decrease in trust over the period of 1990-2008.

The subgroup analysis demonstrates that not all respondents were affected by the 1990 to 1991 shock when broken down by group in Columns 2 to 4. The Young group (5 to 12 years old), and the Middle group (38 to 57 years old) in 1990 were unaffected. Meanwhile, the Prime group (18 to 37 years old) was significantly affected. This result indicates the persistence of migration shock on trust. Mass migration occurred in the early 1990s, but trust is still lower despite 20 years have passed after the shock.[13] However, such persistence is only confined to the respondents at the Prime working age at the time, suggesting heterogeneity in the effect of the shock across age groups. Based on the age composition of previous East German migrants, the Prime group is most likely to have been exposed to the labor market competition immediately after the reunification. According to the internal migration statistics in 1991, approximately 45%, 24%, and 24% of the migrants coming from the East German territory to the West were aged between 18 to 30 years, 30 to 50 years, and under 18 years, respectively (Figure A.1). East German migrants whose ages were 50 years old or older were merely 7% of the population (Federal Statistical Office of Germany, 2000). This finding suggests that the East German migrants were searching for opportunities in the West German labor market. West Germans belonging to the Prime group appear to have faced the strongest competition due to mass migration of East German peers.

The different impact of the net migration rate by age group can be shown by the magnitude and statistical significance of the coefficients of the interaction terms between age group dummies and the migration shock. When the age-cohorts, grouped in 10-year intervals, are interacted with the migration shock, the Prime group's trust is the most negatively affected by the size of the coefficient and the Middle group's trust is also negatively and statistically

[13] When we observed the change of trust by age group throughout the three waves, we found that trust do not change for the Middle group, and it increased very slowly by 0.003 annually for the Prime group. Meanwhile, trust increased by 0.006 annually for the Young group, regarded as Germany's new generation who had less exposure to the political division.

significantly affected, although less so (Figure 3). By contrast, the trust of the Young group does not have a statistically significant interaction effect with the migration shock.

[Figure 3 about here]

The baseline results indicate that the historical shock in the early 1990s only affected those who were in the labor market, especially the Prime workers. If the effect was inherited to the subsequent generations, the Young would also demonstrate a negative coefficient on the migration variable in 1990 to 1991. However, results show that this statement was not the case for the generation of the post-reunification period, indicating the minimal effects of a decrease in trust of the prime age group on their children. We investigated this issue more directly by such effect within families.

5.2 Persistence of Trust across Generations

We examined whether the respondents as children of the Prime group are affected by the shock. From previous analyses, we could infer that the younger generation is unaffected by the migration shock in the early 1990s. However, trust, similar to other social norms, transmits through generations. Therefore, we investigated whether the trust of respondents, who have parents that belong to the Prime group, is affected by the shock. A total of 691 observations were utilized in the SOEP dataset whose fathers' age belongs to the Prime group and 1,104 observations whose mothers' age belongs to the Prime group. Only the respondents with their parents' trust observed were included for the analysis, but the results were robust when relaxing sample restrictions of the respondents without information on their parents' trust.

[Table 2 about here]

Table 2 reports the estimation results for the respondents' as children of those who belong to the Prime group. Column (1) presents results for the respondents whose fathers belong to the Prime group, while Column (2) presents results for the respondents whose mothers belong to the group. The coefficient of the net migration in the early 1990s is not statistically significant in both cases. Moreover, the coefficients of the year dummies indicate that trust rises in time for this generation. Compared with the reference year (2003), the predicted probability of trust is higher in 2008 and even more so in 2013 for both columns. This finding does not imply that the younger group's trust is unaffected by their parents' trust. Instead, it indicates that, for this generation, the impact of the migration shock in the early 1990s is not transmitted through their parents although the correlation between the respondents' trust and their parents' trust is positive and statistically significant, which is in line with Dohmen et al. (2011)'s findings.[14] This also corroborates the fact that the trust of West Germans increased from 0.625 in 2008 to 0.65 in 2013 as the share of the age cohorts negatively affected by migration of East Germans became smaller in terms of its share of total population.[15] This finding suggests that social capital is not always long lasting across generations and can be confined to certain generations.

5. Robustness Checks

5.1 Subgroup of West Germans: Income, Occupation Status, and Skill Levels

[14] The results that the respondents' trust and their parents' trust are positively associated are available upon request.
[15] The trust level of East Germans living in the East gradually increases over time while the trust level of West Germans in the West fluctuates during the period from 2003 to 2013. That is, the level of trust of East Germans in the East tended to converge to that of West Germans in the West as the former catches up with the latter over time. In more detail, the gap in the trust of the two groups reduced from 0.1 in 2003 to 0.09 in 2008, and further to 0.05 in 2013.

From the baseline regression results, individuals who are more exposed to labor market risks are more likely to be negatively affected by the migration inflow. If trust is influenced by labor market risks, then those who are in the lower income group or those who have less job security would also be more affected by the labor supply shock. As a robustness check, whether heterogeneity is observed across different groups based on the level of relative income and the occupation type is tested.

Dummies for each category of income quartiles, calculated with the respondent's annual household per capita income, interacted with the migration shock. The interaction terms with the migration rates measure differences in the magnitude of the shock for each income groups. Table 3 reports the results.

[Table 3 about here]

The Young group is unaffected by the migration shock, regardless of income in Column (1). By contrast, all income groups of the Prime group are negatively affected by the shock in Column (2), in which the impact is generally bigger to lower income groups. The two lowest income tiers' trust is more sensitive to the migration shock compared to higher income groups' trust. Given 0.38% point (one standard deviation) of migration shock, the difference of trust between the lower income and higher income groups becomes almost 0.01. This accounts for approximately 13.3% of difference in trust between the two groups, using the mean trust values of the top 50% income group and the bottom 50% income group, 0.677 and 0.602 respectively.[16] For the Middle group, only the trust of the bottom tier is negatively interacting with the shock at the 10% significance level.

[16] The coefficients of the interaction variables are statistically significantly different from each other at the 5% significance level.

Table 4 reports the results when the shock is interacted with job dummies. The interaction terms with the migration rates measure differences in the magnitude of the shock by the occupation group. People who are not in the labor force are dropped for this exercise.

[Table 4 about here]

When broken down by age group, the Young and the Middle groups' interaction terms are not affected by the past migration shock in Columns (1) and (3). Among the Prime group, the most affected group is the clerks and service workers, who are likely to be easily replaced when faced with new influx of competitors in Column (2). The group of technicians and associate professionals, the plant/machine operators and holders of the elementary occupation are also negatively interacting with the migration shock. By contrast, the coefficients of interaction terms of relatively skilled job holders, such as legislators, managers, professionals, skilled industry, and craft workers, are not statistically significant. These results support the labor market competition hypothesis.

The previous two tables demonstrate that the higher the socioeconomic status, the less negative impact of the historical shock on West Germans' trust. Thus, the trust of West Germans, who are more exposed to labor market risks, are more negatively affected by the mass migration of East Germans.

5.2 Trust of East German Migrants

Table 5 reports the results of the baseline specification applied to the East German respondents living in the West as an additional robustness check. If the labor market is a channel through which trust is negatively influenced by mass migration, it should apply to West Germans facing higher competition from it, not to East Germans who decided to

immigrate to West Germany. The East German sample includes the initial East German household sample recruited in 1990 and the subsequent refreshment samples in 1998, 2000, 2006, 2011, and 2012. Only the respondents who answered that they were in the East German territory in the year 1989 are included in the analysis. The migration shock should not affect their trust according to our hypothesis given that most of these respondents resided in the East when the migration shock occurred and moved to the West afterward. If the results demonstrate that the respondents' trust is affected by migration rates, then several confounding factors, which influence West Germans and East German migrants, might exist and explanations based on the labor market competition would not be plausible.

[Table 5 about here]

For all age groups, the past migration shock does not have an effect on the trust of East Germans living in the West, supporting our hypothesis in Columns (1)-(4). The recent migration also does not have a significant impact on their trust.

5.3 Attitudes towards East Germans

We test whether the effect of unemployment on attitudes towards East Germans is found at the district level. A significant effect at such a level might reinforce our previous finding tested at the state level. In other words, our hypothesis that the sudden inflow of East Germans negatively affected the trust of West Germans can be strengthened by looking into the relationship between the attitudes towards East Germans/Germany and labor market outcomes. If a negative labor market shock is correlated with negative sentiments towards the East, the underlying mechanism from a migration shock to trust can be inferred. We utilize the German

General Social Survey, also known as ALLBUS, which contains information that reflect respondents' attitudes towards East Germans or East Germans after the reunification. Specifically, two waves of ALLBUS, 2006 and 2010, having the variables of interest and corresponding to the period in this study, were selected for the analysis.

The variables reflect the level of agreement to the following statements; *"Reunification has brought more advantages than disadvantages for people in the new federal states [East Germany], "What in the end becomes of the people in the new federal states depends mainly on how hard they are prepared to work, "The people in the new federal states should show more patience as far as improving their situation is concerned,"* and *"Many people in the new federal states are not up to coping with the pressure to perform in a market economy."* The answers for each question can be either *"Completely agree," "Tend to agree," "Tend not to agree,"* or *"Completely disagree."* For the ease of interpretation, we recode thee answers in the reverse order. Although agreeing to these statements may not directly translate to that people have negative sentiments towards the East, we think that it reveals demand for more responsibility or integrity from the East German side, which implies that those who agree think that the post-reunification situations are unfair for West Germans.

The ALLBUS data specify the respondents' residence at the regional district (*Bezirk* in German) level, which is one-level lower than the state-level. There are thirty different values of regional districts for the former West German regions in the dataset. We examine whether the unemployment rate at the regional district level has a statistically significant relationship with the attitudes towards the East. The results are presented in Table A.5. For the ease of interpretation, the linear model results are presented, as we find that non-linear models produce very similar results. The results indicate that a higher unemployment rate is associated with a higher probability of agreeing that unification has brought more advantages for East Germans, the future in the East depends on East Germans' dedication, and the East Germans are not

coping with the pressure to adjust in the capitalistic environment (Columns (1), (2), and (4), respectively). On the other hand, the regional unemployment rates are not significantly correlated with the argument that the East should have more patience although the coefficient is positive (Column (3)). Overall, these results imply that higher unemployment rates at the district level lead to more negative perceptions towards East Germans. This might reveal an underlying connection between trust of West Germans and mass migration of East Germans causing higher unemployment rates.

6. Conclusion

We investigated whether West Germans were affected by the mass migration of the East Germans immediately after reunification in the early 1990s. The situations at this time were severe enough to make researchers wonder whether consequences in people's trust were present from the migration shock. This study provides evidence that the migration shock negatively impacted West Germans' trust. To the best of the authors' knowledge, this is the first study that examined the impact of a migration shock on trust, with a proxy for the migration flows.

As migration was mostly driven in labor markets in the early 1990s, analyses were conducted by dividing the sample into various subgroups to look for possible channels through which the shock affects trust, the labor market competition, or the perception of it. The regression results of the sample were divided on the basis of the respondent's age from 1990 until the present. The trust of individuals belonging to the Prime group during the reunification was indeed harmed by the migration shock. By contrast, people who did not reach adulthood were not affected by the shock. Additional analyses by the income group, occupation, and skill

level serve as evidence that the decrease in trust is caused through the channels in the labor market, possibly through the perception of increased competition.

This study finds that a historical shock can last over two or three decades in affecting the trust, which leads to the conclusion that determinants of trust do contain persistent components. However, the impact of the shock does not survive to younger generations, at least for this particular shock in Germany. This study has a mixed stance in persistence, that is, the shock is persistent for a long period of time or three decades, but not persistent enough to be passed onto younger generations. This stance may be due to the relatively temporal characteristics of the labor shock. For younger generations, contemporaneous factors seem to be more important, at least from the labor market perspective, in shaping trust. If this perspective also applies to the younger generations of East Germans, which are born after reunification, then the current gap between East and West would narrow down faster for new generations compared with the estimate by the previous literature. This gap will need further investigation to identify factors causing long-lasting impacts on social norms, such as trust and those factors that do not have such impacts.

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Table 1. Migration shock and trust

	(1) All	(2) Young	(3) Prime	(4) Middle
Net migration 90-91 (%)	-0.084***	-0.017	-0.120***	-0.069
	(0.030)	(0.069)	(0.044)	(0.051)
Recent migration (%)	-0.045*	0.019	-0.053	-0.057
	(0.026)	(0.067)	(0.038)	(0.044)
Male	-0.032***	0.014	-0.036***	-0.049***
	(0.008)	(0.020)	(0.012)	(0.013)
Age	-0.004**	-0.023	0.004	0.031**
	(0.002)	(0.015)	(0.008)	(0.013)
Age-sq.	0.000**	0.000	-0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Education dummies (ref: Lower than university qualification)				
University qualified	0.067***	0.089***	0.069***	0.063***
	(0.012)	(0.029)	(0.021)	(0.018)
Higher education	0.149***	0.199***	0.157***	0.123***
	(0.015)	(0.037)	(0.024)	(0.024)
Job dummies (ref: Labor force non-participants)				
Legislators, managers and professionals	0.064***	0.030	0.079***	0.092***
	(0.013)	(0.030)	(0.020)	(0.022)
Technicians and associate professionals	0.017	-0.018	0.049**	-0.000
	(0.012)	(0.026)	(0.019)	(0.025)
Clerks and service workers	-0.003	-0.048*	0.020	0.023
	(0.012)	(0.026)	(0.018)	(0.025)
Skilled agricultural/fishery workers and craft workers	-0.011	-0.042	0.018	-0.042
	(0.015)	(0.033)	(0.022)	(0.034)
Plant/machine operators and elementary occupations	-0.058***	-0.091***	-0.044**	-0.035
	(0.015)	(0.034)	(0.022)	(0.027)
Unemployed	-0.071***	-0.087**	-0.093***	0.005
	(0.020)	(0.042)	(0.029)	(0.036)
Marital status dummies (ref: Married)				
Single	-0.018	0.008	-0.029*	-0.046
	(0.012)	(0.021)	(0.016)	(0.031)
Divorced/separated/widowed	-0.065***	-0.137***	-0.053***	-0.076***
	(0.010)	(0.045)	(0.015)	(0.016)
Log of household income	0.035***	0.006	0.025**	0.070***
	(0.008)	(0.017)	(0.011)	(0.014)
Unemployment rate (%)	0.021**	0.063***	0.016	0.010
	(0.009)	(0.023)	(0.013)	(0.015)
Growth rate (%)	-0.017***	-0.015	-0.017**	-0.019**
	(0.005)	(0.013)	(0.007)	(0.008)
Observations	22,332	3,632	10,633	8,067

Notes: The dependent variable is an indicator whether the respondent trusts most people in general. The state-fixed effects, and year-fixed effects are included in the regression but are not reported in the table. The coefficients denote marginal effects when the other controls are evaluated at their mean values. Robust standard errors in parentheses account for clustering at the individual-level. *** Significance at 1 percent level. ** Significance at 5 percent level. * Significance at 10 percent level.

Table 2. Intergenerational transmission of migration shock

	(1) Father Prime	(2) Mother Prime
Net migration 90-91 (%)	0.014	-0.001
	(0.154)	(0.117)
Recent migration (%)	0.004	-0.046
	(0.157)	(0.112)
Male	-0.027	-0.011
	(0.051)	(0.039)
Age	-0.017	0.021
	(0.050)	(0.034)
Age-sq.	0.000	-0.001
	(0.001)	(0.001)
Education dummies (ref: Lower than university qualification)		
University qualified	0.073	0.012
	(0.057)	(0.045)
Higher education	0.208**	0.143**
	(0.092)	(0.073)
Job dummies (ref: Not in labor force)		
Legislators, managers and professionals	0.158**	0.054
	(0.075)	(0.059)
Technicians and associate professionals	0.036	-0.028
	(0.060)	(0.046)
Clerks and service workers	0.056	-0.025
	(0.059)	(0.047)
Skilled agricultural/fishery workers and craft workers	0.024	0.023
	(0.069)	(0.053)
Plant/machine operators and elementary occupations	-0.106	-0.102
	(0.077)	(0.064)
Unemployed	-0.042	-0.079
	(0.090)	(0.069)
Marital status dummies (ref: Married)		
Single	-0.008	-0.053
	(0.060)	(0.048)
Divorced/separated/widowed	-0.104	-0.305**
	(0.176)	(0.125)
Log of per capita household income	-0.016	0.008
	(0.044)	(0.035)
Survey Year = 2008	0.329**	0.247**
	(0.146)	(0.114)
Survey Year = 2013	0.346**	0.296**
	(0.160)	(0.124)
Observations	691	1,104

Notes: The dependent variable is an indicator whether the respondent trusts most people in general. State fixed effects and characteristics are in the equation but the coefficients are not reported. The coefficients denote marginal effects when the other controls are evaluated at their mean values. Robust standard errors in parentheses account for clustering at the individual-level. *** Significance at 1 percent level. ** Significance at 5 percent level. * Significance at 01 percent level

Table 3. Migration shock by income group

VARIABLES	(1) Young	(2) Prime	(3) Middle
Net migration 90-91 x Bottom 25%	-0.047	-0.120**	-0.113*
	(0.074)	(0.050)	(0.062)
Net migration 90-91 x 25-50%	0.011	-0.137***	-0.066
	(0.077)	(0.049)	(0.054)
Net migration 90-91 x 50-75%	-0.017	-0.111**	-0.090
	(0.081)	(0.050)	(0.058)
Net migration 90-91 x 75-100%	-0.067	-0.112**	-0.046
	(0.095)	(0.053)	(0.056)
Income dummies (ref: Bottom 25%)			
25-50%	-0.006	0.006	0.035*
	(0.024)	(0.015)	(0.019)
50-75%	0.044	0.033*	0.052***
	(0.027)	(0.017)	(0.020)
75-100%	0.026	0.022	0.087***
	(0.032)	(0.019)	(0.022)
Recent migration (%)	0.013	-0.053	-0.060
	(0.067)	(0.039)	(0.044)
Education dummies (ref: Lower than university qualification)			
University qualified	0.083***	0.071***	0.062***
	(0.029)	(0.021)	(0.018)
Higher education	0.192***	0.160***	0.122***
	(0.037)	(0.024)	(0.024)
Job dummies (ref: Labor force non-participants)			
Legislators, managers and professionals	0.026	0.081***	0.093***
	(0.030)	(0.020)	(0.022)
Technicians and associate professionals	-0.025	0.050***	0.003
	(0.026)	(0.019)	(0.025)
Clerks and service workers	-0.051*	0.020	0.023
	(0.026)	(0.018)	(0.025)
Skilled agricultural/fishery workers and craft workers	-0.047	0.018	-0.043
	(0.033)	(0.022)	(0.034)
Plant/machine operators and elementary occupations	-0.094***	-0.044**	-0.034
	(0.034)	(0.022)	(0.027)
Unemployed	-0.087**	-0.096***	0.003
	(0.042)	(0.029)	(0.035)
Observations	3,632	10,633	8,067

Notes: The dependent variable is an indicator whether the respondent trusts most people in general. Age, age-squared, marital status dummies, the gender dummy, the state variables, and year fixed effects are included in the regression but are not reported in the table. The coefficients denote marginal effects when the other controls are evaluated at their mean values. Robust standard errors in parentheses account for clustering at the individual-level. *** Significance at 1 percent level. ** Significance at 5 percent level. * Significance at 10 percent level.

Table 4. Migration shock by occupation status

	(1) Young	(2) Prime	(3) Middle
Net migration 90-91 x Legislators, managers and professionals	0.040	-0.048	-0.077
	(0.106)	(0.056)	(0.106)
Net migration 90-91 x Technicians and associate professionals	-0.065	-0.106*	-0.027
	(0.096)	(0.055)	(0.098)
Net migration 90-91 x Clerks and service workers	0.050	-0.140**	-0.058
	(0.084)	(0.058)	(0.105)
Net migration 90-91 x Skilled agricultural/fishery and craft workers	-0.043	-0.097	-0.034
	(0.110)	(0.062)	(0.115)
Net migration 90-91 x Plant/machine operators and elementary occupations	-0.019	-0.113*	-0.076
	(0.104)	(0.060)	(0.112)
Net migration 90-91 x Unemployed	-0.150	-0.093	-0.196
	(0.125)	(0.074)	(0.122)
Job dummies (ref: Legislators)			
Technicians and associate professionals	-0.027	-0.021	-0.113***
	(0.037)	(0.020)	(0.035)
Clerks and service workers	-0.094**	-0.042*	-0.112***
	(0.038)	(0.022)	(0.038)
Skilled agricultural/fishery workers and craft workers	-0.065	-0.054**	-0.163***
	(0.045)	(0.025)	(0.045)
Plant/machine operators and elementary occupations	-0.118**	-0.112***	-0.163***
	(0.046)	(0.024)	(0.042)
Unemployed	-0.108**	-0.170***	-0.118**
	(0.055)	(0.032)	(0.050)
Observations	2,957	9,404	2,658

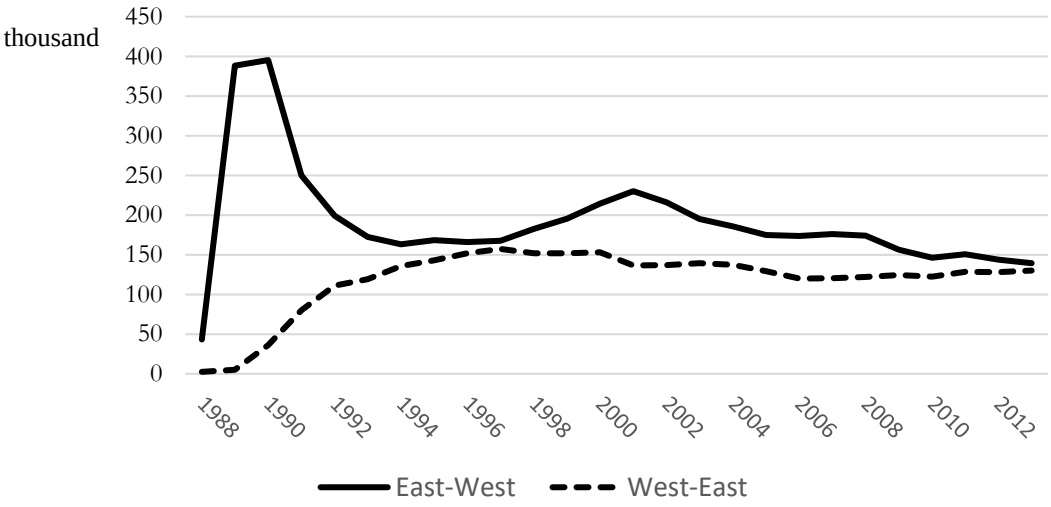
Notes: The dependent variable is an indicator whether the respondent trusts most people in general. The demographic variables (age, marital status, and gender), state variables, and year fixed effects are included in the regression but are not reported in the table. The coefficients denote marginal effects when the other controls are evaluated at their mean values. Robust standard errors in parentheses account for clustering at the state-year level. *** Significance at 1 percent level. ** Significance at 5 percent level. * Significance at 10 percent level.

Table 5. East Germans living in the West

	(1) All	(2) Young	(3) Prime	(4) Middle
Net migration 90-91 (%)	-0.010	-0.173	0.197	-0.300
	(0.105)	(0.176)	(0.181)	(0.262)
Recent migration (%)	0.136	0.259	0.055	0.053
	(0.123)	(0.210)	(0.190)	(0.261)
Education dummies (ref: Lower than university qualification)				
University qualified	-0.022	0.200*	-0.175*	-0.192
	(0.074)	(0.104)	(0.106)	(0.151)
Higher education	0.073	0.340***	-0.042	-0.159
	(0.085)	(0.125)	(0.128)	(0.208)
Job dummies (ref: Labor force non-participants)				
Legislators, managers and professionals	0.025	-0.069	0.223*	-0.031
	(0.064)	(0.098)	(0.118)	(0.184)
Technicians and associate professionals	0.025	-0.044	0.166	0.196
	(0.058)	(0.079)	(0.115)	(0.160)
Clerks and service workers	-0.049	-0.084	0.116	-0.068
	(0.062)	(0.084)	(0.114)	(0.262)
Skilled agricultural/fishery workers and craft workers	-0.074	-0.100	0.059	-0.317
	(0.079)	(0.115)	(0.133)	(0.235)
Plant/machine operators and elementary occupations	-0.014	-0.226*	0.160	0.131
	(0.063)	(0.117)	(0.110)	(0.136)
Unemployed	-0.182**	-0.085	-0.121	-0.068
	(0.088)	(0.175)	(0.129)	(0.179)
Marital status dummies (ref: Married)				
Single	-0.118**	-0.047	-0.281***	omitted
	(0.052)	(0.064)	(0.090)	
Divorced/separated/widowed	-0.025	0.015	-0.047	0.142
	(0.049)	(0.123)	(0.065)	(0.138)
Male	-0.026	-0.065	0.055	-0.117
	(0.041)	(0.061)	(0.069)	(0.143)
Age	-0.001	-0.117*	-0.001	-0.004
	(0.011)	(0.062)	(0.046)	(0.107)
Age-sq.	-0.000	0.002*	-0.000	-0.000
	(0.000)	(0.001)	(0.001)	(0.001)
Log of household income	0.093**	0.061	0.179***	0.155
	(0.037)	(0.039)	(0.067)	(0.116)
Unemployment rate	0.009	-0.055	0.063	-0.018
	(0.047)	(0.081)	(0.081)	(0.100)
Growth	0.057**	0.065*	0.046	0.013
	(0.022)	(0.034)	(0.037)	(0.056)
Observations	950	412	416	122

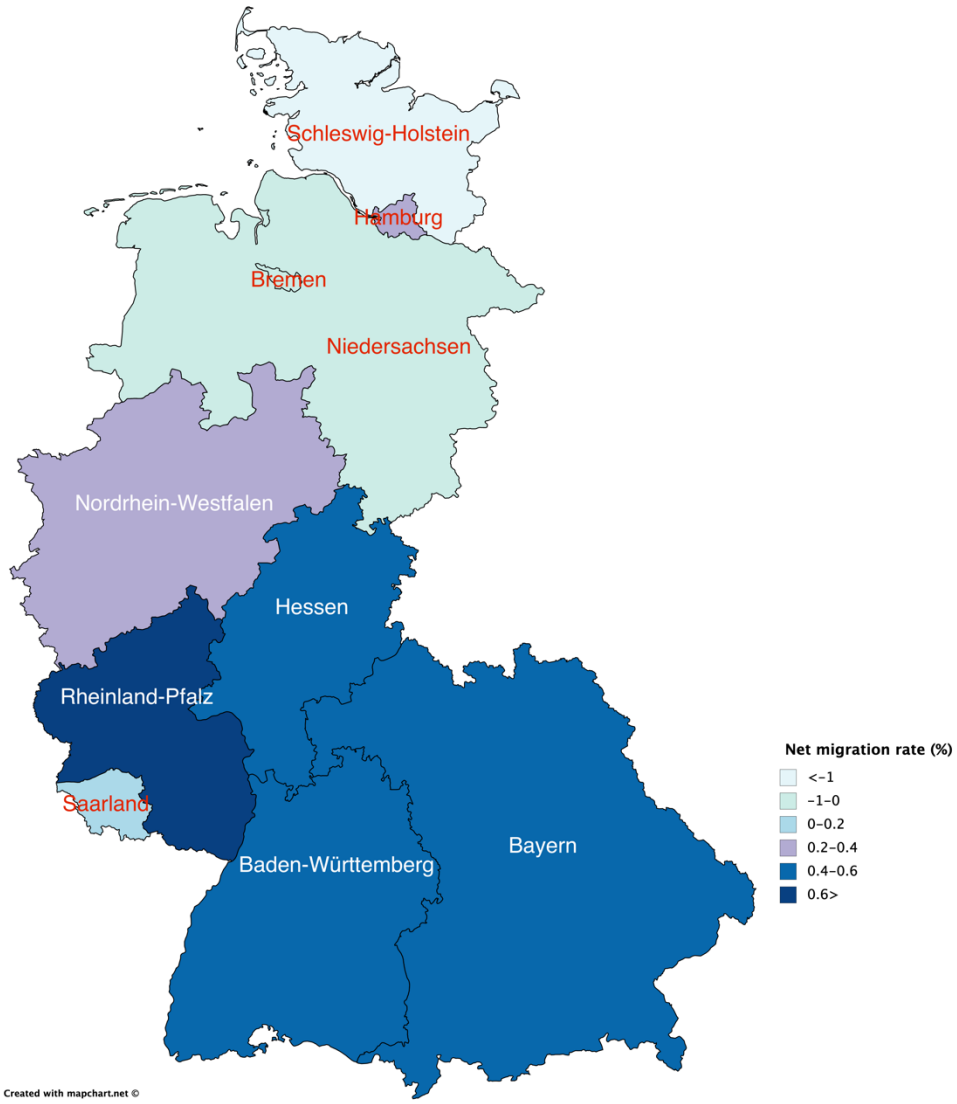
Notes: The dependent variable is an indicator whether the respondent trusts most people in general. State and year fixed effects are in the equation but the coefficients are not reported. The coefficients denote marginal effects when the other controls are evaluated at their mean values. Robust standard errors in parentheses account for clustering at the individual-level. *** Significance at 1 percent level. ** Significance at 5 percent level. * Significance at 10 percent level.

Figure 1. Migration between Eastern and Western states of Germany (1988-2013)



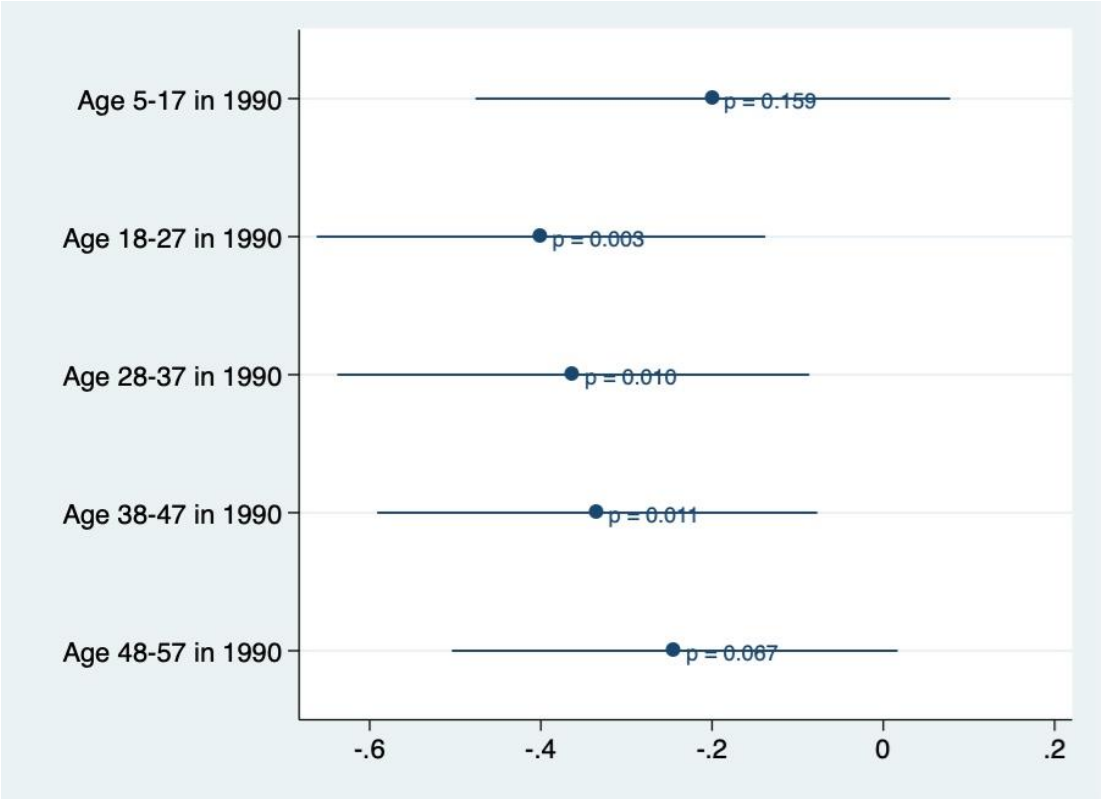
Notes: Data from Federal Statistical Office of Germany (2000-2015).

Figure 2. Net migration by state in West Germany in 1990-1991



Notes: Authors' calculations based on the data by the Federal Statistical Office of Germany. Net migration rate=100 x (Net flow/Mid-population).

Figure 3. The effect of the net migration rate in 1990-1991 on West German cohorts



Notes: The horizontal axis represents the coefficient values of the interaction terms between the age cohort dummies and West Germany's mean net migration rate in 1990-1991, based on the random effects estimator. The dependent variable in the regression is an indicator whether the respondent trusts most people in general. The figure presents the p-value for each coefficient. Age, age-squared, gender dummy, marital status dummies, education dummies, occupation fixed effects, the log of per capita household income, the growth rate of the state's real GDP, unemployment rate, the average net migration rates for the past five years, the state fixed effects, the year fixed effects were used as the control variables.

Appendix

Table A.1. Summary statistics

Sample size: 22,332

Variable	Mean	SD	Min	Max
Trusts most people	0.64	0.48	-	-
Age	49.38	14.46	18	80
Male	0.48	0.50	-	-
Net migration 90-91 (%)	0.23	0.38	-1.20	0.70
Recent net migration (%)	0.07	0.22	-0.65	0.42
Education: Less than university qualification	0.12	0.33	-	-
Education: University qualified	0.66	0.47	-	-
Education: Higher education	0.22	0.41	-	-
Job: Not in labor force	0.33	0.47	-	-
Job: Legislators, managers, and professionals	0.17	0.38	-	-
Job: Technicians and associate professionals	0.16	0.36	-	-
Job: Clerks and service workers	0.15	0.35	-	-
Job: Skilled agricultural/fishery and craft workers	0.08	0.27	-	-
Job: Plant/machine operators and elementary workers	0.08	0.27	-	-
Job: Unemployed	0.03	0.18	-	-
Marital status: Married/cohabiting	0.65	0.48	-	-
Marital status: Single	0.19	0.39	-	-
Marital status: Divorced/widowed/separated	0.15	0.36	-	-
Household income*	40092	22352	0	197000
Number of household members	2.65	1.22	1	13
Household income per capita*	16582	9531	0	195000

Notes: The observations with higher than 200,000 Euros of annual income are dropped. *Annual income in Euros

Table A.2. The birth years and ages at reunification and the time of survey by group

Group	Age Cohort	Age in 1990	Age in 2003	Age in 2008	Age in 2013
Young	Born 1973-1985	5-17	18-30	23-35	28-40
Prime-age	Born 1963-1972	18-27	31-40	36-45	41-50
	Born 1953-1962	28-37	41-50	46-55	51-60
Middle-age	Born 1943-1952	38-47	51-60	56-65	61-70
	Born 1933-1942	48-57	61-70	66-75	71-80

Table A.3. Annual average migration rates in Germany after reunification

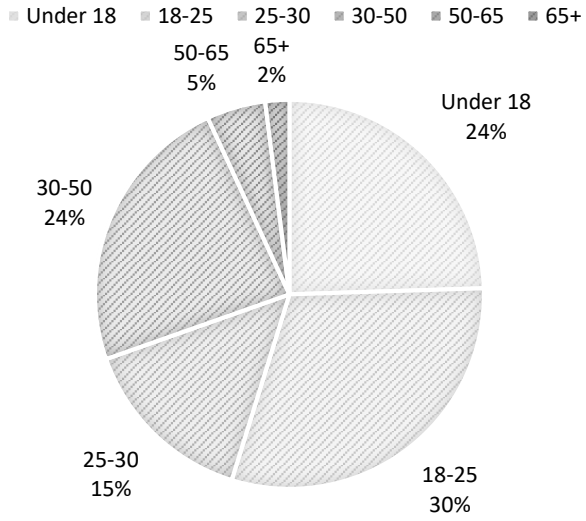
	Total	German	Foreign	Total	German	Foreign
Year	West excl. West Berlin			East excl. East Berlin		
1990	0.249	N/A	N/A	-5.346	N/A	N/A
1991	0.167	0.171	-0.004	-1.203	-1.182	-0.020
1992	0.056	0.054	0.003	-0.672	-0.658	-0.014
1993	0.035	0.030	0.005	-0.385	-0.368	-0.017
1994	0.000	-0.002	0.002	-0.184	-0.167	-0.017
1995	0.003	-0.004	0.006	-0.134	-0.120	-0.014
1996	0.021	0.010	0.011	-0.037	-0.002	-0.035
1997	0.008	0.003	0.004	-0.009	0.032	-0.041
1998	-0.006	-0.009	0.002	-0.135	-0.092	-0.043
1999	0.024	0.019	0.005	-0.266	-0.214	-0.053
2000	0.068	0.062	0.006	-0.590	-0.510	-0.080
2001	0.111	0.099	0.012	-0.670	-0.600	-0.070
2002	0.140	0.125	0.016	-0.573	-0.527	-0.046
2003	0.106	0.094	0.012	-0.399	-0.358	-0.040
2004	0.119	0.105	0.015	-0.353	-0.314	-0.039
2005	0.088	0.079	0.008	-0.353	-0.302	-0.050
2006	0.114	0.106	0.008	-0.441	-0.386	-0.056
2007	0.102	0.098	0.004	-0.469	-0.407	-0.063
2008	0.097	0.091	0.007	-0.461	-0.396	-0.065
2009	0.073	0.066	0.007	-0.317	-0.267	-0.050
2010	0.057	0.050	0.007	-0.247	-0.202	-0.045
2011	0.014	0.009	0.005	-0.225	-0.173	-0.052
2012	0.005	-0.005	0.010	-0.163	-0.109	-0.053
2013	-0.001	-0.013	0.012	-0.090	-0.034	-0.056
2014	-0.030	-0.042	0.012	0.007	0.061	-0.054
2015	-0.040	-0.051	0.010	0.021	0.102	-0.082
Mean	0.065	0.046*	0.007*	-0.647	-0.288*	-0.046*

Notes: The figures are expressed in the percentage of each state's net migrants divided by mid-population (the average between the population at the beginning and the end of each year). Berlin is omitted. West includes Baden-Württemberg, Bayern, Brandenburg, Bremen, Hamburg, Hessen, Niedersachsen, Nordrhein-Westfalen, Rheinland-Pfalz, and Schleswig-Holstein, and East includes Mecklenburg-Vorpommern, Saarland, Sachsen, Sachsen-Anhalt, and Thüringen. Since the statistics for the year 1990 exist only for the 4th quarter (from October 1st to the end of the year), 1990's migration rates are generated by multiplying the migration rate during the period by four.

*Averages from 1991 to 2015.

Source: The Federal Statistical Office of Germany. Figures calculated and compiled by the authors.

Figure A.1. Age composition of East German migrants in 1991



Notes: Data from Federal Statistical Office of Germany (2000)

Table A.4. Summary statistics by group

		Young (N=3632)		Prime (N=10633)		Middle (N=8067)	
		Mean	SD	Mean	SD	Mean	SD
	Trusts most people	0.63	0.48	0.63	0.48	0.65	0.48
	Age	28.81	5.38	44.69	6.79	64.83	6.82
	Male	0.46	0.5	0.49	0.5	0.49	0.5
	Net migration 90-91 (%)	0.24	0.35	0.24	0.36	0.22	0.39
	Recent migration (%)	0.07	0.23	0.07	0.24	0.07	0.23
	Household Income*	39201	22256	44541	22237	34627	21264
Education	Lower than university qualification	0.14	0.35	0.09	0.28	0.16	0.37
	University qualified	0.66	0.47	0.67	0.47	0.64	0.48
	Higher education	0.20	0.40	0.25	0.43	0.19	0.39
Job Status	Not in labor force	0.19	0.39	0.12	0.32	0.67	0.47
	Legislators, managers and professionals	0.19	0.39	0.23	0.42	0.09	0.29
	Technicians and associate professionals	0.20	0.40	0.21	0.41	0.07	0.25
	Clerks and service workers	0.19	0.39	0.19	0.40	0.06	0.25
	Skilled agricultural/fishery and craft workers	0.11	0.31	0.11	0.31	0.03	0.18
	Plant/machine operators and elementary workers	0.09	0.28	0.10	0.31	0.05	0.22
	Unemployed	0.04	0.20	0.04	0.19	0.02	0.15
Marital Status	Married/cohabiting	0.32	0.47	0.70	0.46	0.74	0.44
	Single	0.64	0.48	0.15	0.36	0.04	0.21
	Divorced/widowed/separated	0.04	0.19	0.15	0.35	0.21	0.41

*Annual income in Euros.

Table A.5. Attitudes towards the East and the regional unemployment rate

VARIABLES	(1) Unification advantageous for the East	(2) Future depends on hard work of East Germans	(3) East Germans should show patience	(4) East Germans are not up to pressure in market economy
Unemployment rate	0.052**	0.059***	0.032	0.053**
	(0.021)	(0.021)	(0.020)	(0.023)
Observations	2,938	2,955	2,981	2,841
R-squared	0.023	0.058	0.095	0.102

Notes: The dependent variable is the 4-scale level of agreement to the respective statement, with a higher value meaning more agreement. The unemployment rate is the weighted average of the district's unemployment rate, based on the municipal-level unemployment rates in the month of January of the survey year. The control variables include the respondent's age, age-squared, gender dummy, three education dummies, four marital status dummies, log of household income, time dummies, and state dummies. Robust standard errors are in parentheses. *** Significance at 1 percent level. ** Significance at 5 percent level. * Significance at 10 percent level.