Online Appendix

'The Economic Effects of Social Ties: Evidence from German Reunification'

Konrad B. Burchardi
Tarek A. Hassan

A The Effect of Direct and Indirect Expellees on Economic Growth

This appendix describes in detail the placebo test comparing the economic effect of the presence of direct expellees to that of expellees via the Soviet sector in Section IV.D. Both groups of expellees arrived from the parts of pre-war Germany that were annexed by Poland and Russia, and ultimately settled in West Germany. The placebo experiment uses direct expellees as a control group of migrants who have the same geographic origin as expellees via the Soviet sector, but who did not have the opportunity to form social ties to East Germany.

A.1 Direct Expellees as a Control Group

In the following, we argue that direct expellees are a good 'control group' for the effect of expellees via the Soviet Sector for three reasons.

First, the two groups of expellees look similar on observable socio-economic characteristics, such as educational attainment, occupational structure, and labor force participation. Appendix Table III shows the relevant descriptive statistics for both groups taken from the 1971 census, which is the last census in which the two groups are separately identified.

Second, the economic integration between the unified Germany and other Eastern European countries remained low in the early 1990s, such that the economic value of social ties to the regions of origin of the direct expellees must have been low relative to the economic value of social ties to East Germany. Within four years exports from West Germany to East Germany rose from DM 7bn in 1988 to DM 69bn in 1994. Exports to East Germany thus rapidly exceeded exports to France (DM 67bn in 1994), which had been the number one export market of West German firms prior to the fall of the Berlin Wall. Compared to East Germany, both the rise and the total volume of exports to Poland and the Czech Republic remained small, rising from around 2.5bn in 1988 to around 7.5bn in 1994.[41] In this sense, the trade response to the fall of the Berlin Wall is a prime example of the "Border Effect" (McCallum (1995)), which posits that the volume of trade within a country is an order of magnitude larger than trade across countries.

Third, the extent to which migration results in the establishment of social ties across regions depends crucially on the share of the population that remains in the region of origin. While it is difficult to estimate the share of the 1939 population and their descendants that remained

[41] Data on exports to East Germany as well as to Poland and Czech Republic before 1989 are from Nitsch (2002). Data for exports to Poland and Czech Republic post 1989 from *Statistisches Bundesamt*.

residents of the same region, it seems clear that this share is close to one in East Germany whereas it is close to zero for Pommern, Schlesien, and East Prussia. As a consequence, we expect the probability that a given direct expellee would have relatives or friends in Poland or the Czech Republic to be an order of magnitude lower than the probability that a given expellee via the Soviet sector would have relatives or friends in East Germany.

In sum, we expect expellees to be much less likely to retain social ties to to Poland and the Czech Republic than to East Germany and expect any surviving ties to be less relevant for economic exchange due to persistent barriers to trade across borders prior to EU accession in 2004. For this reason we are not surprised that the effect of direct expellees on changes in the growth rate of income per capita between 1989 and 1995 is statistically indistinguishable from zero once we control for the share of expellees via the Soviet Sector. While the settlement of both direct expellees and expellees via the Soviet sector predicts firm investment in Poland and the Czech Republic, this effect is much smaller than the effect on investment in East Germany and may have occurred post 2004 rather than post 1989.

A.2 Systematic Differences between Regions with Concentrations of Direct and Indirect Expellees

A potential concern with our placebo test is that regions with differential concentrations of direct and indirect expellees might be systematically different in other ways, which might correlate with differential economic growth post 1989.

Appendix Table IVb explores this possibility by regressing seven region characteristics in 1989 on the share direct and indirect expellees in 1961 and our standard region level controls (distance to East, income in 1989, income growth between 1985 and 1989, and state fixed effects). Each line of the table corresponds to one regression. The table reports the dependent variable, the coefficients on the two groups of expellees, as well as the p-value corresponding to the null hypothesis that the two coefficients are equal. We cannot reject this hypothesis at the 5% level in any of the seven specifications.

However, we reject the null hypothesis that regions with a larger share of direct expellees have the same share of their workforce employed in the agricultural sector at the 10% level. We therefore control for the employment share in agriculture and the employment shares of the three other sectors when implementing the placebo test.

A.3 Placebo Test

The placebo test makes the following argument: If we misinterpret our key region level results and the effects we document are driven by some omitted variable which determined both wartime destruction and changes in post 1989 income growth, or if there was something special about expellees per se that gave them access to business opportunities post 1989, we would expect to find that both groups of expellees have an identical effect on income growth post 1989.

Appendix Table V shows the placebo test in which we relate growth in income per capita post 1989 simultaneously to the share of expellees via the Soviet sector and to the share of direct expellees, again conditional on our standard region level controls (not shown). Column 1 gives the results from an OLS regression. While the coefficient on expellees via the Soviet Sector is positive, statistically significant at the 1% level, and very similar to the estimates from Table III (2.131, s.e.=0.701), the coefficient on the share of direct expellees is negative and statistically

indistinguishable from zero. In columns 2 and 3 we add additional controls for the share of the population employed in agriculture (column 2) and for the share of the population employed in the other three sectors (column 3). Both make little difference to the results.

In columns 4-6 we repeat this exercise using our instrumental variables strategy. To compare the causal effect of direct expellees and expellees via the Soviet sector on income growth post 1989 we require two instruments which give us differential leverage in identifying the exogenous components in the settlement patterns of both groups. In Panels B and C we re-run our standard first stage regression from Table II column 2, but include both the share of housing destroyed and the volume of rubble per capita in 1946. (We again do not report covariates in the interest of space.) Panel B gives the results for expellees arriving via the Soviet sector and Panel C gives the results for direct expellees. In the case of the former, the share of housing destroyed is significant with a negative sign and rubble is insignificant across all three specifications. In the case of the latter, the size of the effect of the share of housing destroyed is roughly preserved, though it is less precisely estimated. Importantly for us, the coefficient on the amount of rubble is negative and significant. Our two measures of wartime destruction thus give us differential leverage in identifying the exogenous components in the settlement patterns of both groups.

This feature of the data may be related to the timing of the arrival of the two groups of expellees. The direct expellees arrived immediately after the war, whereas the expellees via the Soviet sector arrived between 1945 and 1961. We therefore suspect that rubble per capita measures a dimension of wartime damage which was more important in the immediate aftermath of the war but was then cleared away relatively quickly, while the destruction of the housing stock had longer-lasting effects.

The Kleibergen-Paap rank test allows us to formally test whether the two instruments induce sufficient differential variation in the endogenous variables (the unconditional correlation between the two instruments is 0.799). The Kleibergen-Paap LM statistic is 3.95. Hence, we reject the null that the matrix of reduced form coefficients is underidentified at the 5% level.

Using both instruments, we are thus able to separately estimate the causal effects of expellees via the Soviet sector and of direct expellees on differential income growth after 1989. Columns 1-3 of Panel A present the results. While the coefficient on the share of expellees via the Soviet sector is again positive, similar in magnitude to the estimates obtained earlier (3.422, s.e.= 1.809 in column 1), and statistically significant at the 10% level, the coefficient on the share of direct expellees is close to zero and statistically insignificant. The two coefficients are statistically significantly different in the specification shown in column 1 (p-value: 0.008). In the instrumental variable specification of column 4 the p-value is 0.117.

B Robustness of Region Level Results

B.1 Regional Growth Betas

A potential concern with our region level results is that West German regions with a high concentration of expellees via the Soviet sector might for some reason have a larger exposure to the West German business cycle. To address this concern we use our data on income per capita prior to 1990 (we have data for 1982, 1984, 1986, 1987, and 1989) to estimate a "growth beta" for each West German region by regressing its growth rate in income per capita on country level income growth in each year between 1982 and 1989. In a second step (reminiscent of a Fama-MacBeth procedure) we include this estimate of the growth beta in our standard specification.

Appendix Table VI tabulates the results. Column 1 shows results from an ordinary least squares regression (corresponding to column 2 of Panel A in Table III). Columns 2 and 3 show results from instrumental variable regressions (corresponding to column 3 of Panel A in Table III), where column 3 additionally weights each observation with the inverse of the standard error of the estimate of its growth beta. The coefficient estimate on the growth beta is close to zero and negative in all columns. It is statistically significant only in the weighted specification in column 3, while the coefficients of interest are virtually unchanged relative to the estimates in Table III. It thus appears that the growth beta has little additional explanatory power for income growth in the period between 1989 and 1995 once the pre-trend in income growth is controlled for. The regional economic expansion which we attribute to the pattern of social ties existing in 1989 is thus unrelated to the loadings of different regions on the West German business cycle.

B.2 Systematic Differences between Regions

We test for systematic differences between regions with high and low wartime destruction by regressing seven region characteristics in 1989, including the average educational attainment, the share of the population who are entrepreneurs, the unemployment rate, and the sectoral composition of the workforce on the share of housing destroyed in 1946 and our standard region level controls. The results in Appendix Table IVa show that the pattern of wartime destruction is not significantly correlated with any of these observable region characteristics. Each line of the table corresponds to one regression. It reports the dependent variable, the coefficient on *Share Housing Destroyed '46*, as well as the p-value corresponding to the null hypothesis that the coefficient is equal to zero. We cannot reject this hypothesis at the 5% level in any of the seven specifications.

B.3 Restitutions

A final concern for which we cannot control explicitly at the regional level is that expellees via the Soviet sector might be more likely than 'native' West Germans and direct expellees to have restitution claims to property expropriated in East Germany. Under the reunification treaty, former owners of assets located in East Germany could apply for restitution or compensation providing that they had not received compensation from the East German government and that the assets they were claiming still existed at the time of filing. This meant that practically all individual claims filed related to real estate or firms. While compensation payments by law did not begin until 1996 (Southern, 1993), the restitution of assets began in the early 1990s and could potentially confound our measure of income per capita. However, we can be confident that any bias they may induce in our estimates is quantitatively small.[42]

First, the Mikrozensus asks about household income in a usual month and respondents select an income bracket (with the highest category being DM 7000 in 1995), so that one-time inflows of cash have no impact on our measure of income per capita. The only potential concern for our results is therefore any flow income that may be generated by restituted assets (or by assets purchased from proceeds of sales of restituted assets).

[42] According to the government agency handling restitutions, half of all approved claims were settled by compensation payments, and the total sum of compensation payments made between 1996 and 2009 was EUR 1.4 bn. (Personal correspondence with Dr. Händler, press liaison of the *Bundesamt für zentrale Dienste und offene Vermögensfragen*.)

Second, the volume of restitutions was orders of magnitude smaller than the effect on income per capita we document in the main text. For example, the average East German rental unit generated a monthly cash flow of DM 240 in 1995. (Average rent paid in East Germany per month in 1995 excluding utilities is DM 437 (fur Wirtschaftsforschung, 1996). According to a survey of large operators of rental apartments and houses (GdW Bundesverband deutscher Wohnungs- und Immobilienunternehmen, 1994), maintenance and renovations accounted for 45% of rental revenues in 1993 such that we may estimate the cash flow per unit as (.55) 437 = 240.) If we estimate that about 300,000 apartments and houses were returned to former West German owners by 1995[43] and made the extreme assumption that all of these units went to expellees via the Soviet sector, the average expellee would experience a rise in her monthly income of DM $240\frac{300{,}000}{2{,}800{,}000}$ = DM 25.71. A one standard deviation increase in the share of expellees (0.019) would then be associated with a rise in income per capita at the regional level of DM 0.49 (or 0.03%). Similarly, a reasonable estimate of the total value of the 1,571 firms restituted to their former owners by 1994 is DM 9.7bn.[44] If we again made the extreme assumption that all of these firms were restituted to expellees via the Soviet sector, and that they immediately generated an annual cash flow of 10% (which they almost certainly did not as the average recipient of a firm had a contractual obligation to make investments amounting to two times the estimated firm value in the five years following privatization (Lange and Pugh, 1998, p. 73)), the average expellee would experience a rise in her monthly income of DM $\frac{9.7bn}{2{,}800{,}000}\frac{0.1}{12}$ = DM 28.87. A one standard deviation increase in the share of expellees would then be associated with a rise in income per capita of a mere 0.03%. The volume of restitutions made before 1995 was therefore orders of magnitude too small to induce a meaningful bias in our estimates.

B.4 Proximate Interpretations

A remaining concern with the interpretation of our results is that migrants arriving from East Germany may have had an unobservable emotional affinity to the East that direct expellees did not share. Such an emotional affinity may have prompted them to accept lower expected returns when investing in the East and, by pure chance, realized returns may have been so much higher than expected that they resulted in a rise in income per capita at the regional level. Conceptually, we cannot rule out this possibility. However, the idea that realized returns of investing in the East were a large positive surprise would be grossly at odds with the dominant narrative that economic performance of the East post reunification was a significant disappointment (see for example Paque (2009)).

Relatedly, some of the patterns we document may be explained if migrants from the East had permanently different consumption preferences than 'native' West Germans and if these preferences were more similar to the consumption preferences of East Germans post reunification (Atkin (2010) documents such long-lasting differences in preferences for India). However, we have found no mention of such differences in the literature on inner-German migration, and

[43](Hubert and Tomann, 1993) estimate that a maximum of 1,3m apartments and houses were affected by restitution claims. Approximately 60% of all restitution claims were made by West Germans (Thimann, 1996, p. 147). By the end of 1993, 20% of rental properties which had been claimed by former owners had been restituted GdW Bundesverband deutscher Wohnungs- und Immobilienunternehmen (1994).

[44]The *Treuhandanstalt*, the government body administering the privatization of East German firms, generated a total of DM 60bn in revenues from the sale and liquidation of 10,428 firms (or DM 6.2m per firm). Assuming that the 1,571 restituted firms had the same average value and that they were returned to their former owners for free, the total value of firm restitutions amounts to DM 9.7bn (Lange and Pugh, 1998, p. 73).

the literature on German Reunification actually suggests the opposite: that East Germans immediately abandoned East German consumption brands in favor of West German brands (Sinn and Sinn, 1992). In line with this view, East and West German CPI are today calculated using identical weights.

C Robustness of Household Level Results

C.1 Additional Controls

We add the share of households who are employed in the government sector as an additional control to our standard specification in Panel A of Appendix Table IX. The coefficient of interest rises slightly to 0.061 (s.e.=0.021) and remains statistically significant at the 1% level. The following columns add the household head's years of education and years of education squared in 1989 and a dummy variable for whether the household head is an entrepreneur in 1989. These additional controls remain insignificant, and induce almost no change in the coefficient of interest.

While social ties to East Germany may generate significant economic benefits to West German households post 1989, they may also entail a moral obligation to financially support these relatives in the long term. Indeed, households with social ties to the East report paying significantly higher transfers to relatives between 1989 and 1995, but do not receive higher transfers from relatives than comparable other households (see Panel B of Appendix Table X). Consistent with this observation, our results remain unchanged when we control for the volume of the transfers received from relatives between 1990 and 1995 (Panel A of Appendix Table IX).[45]

C.2 Restitutions

In Panel B of Appendix Table IX we check the robustness of our results using a restricted sample of households which excludes all households who may potentially have received restitutions of assets from the East: It excludes all households who have rental income in 1995 as well as all households who owned firms in 1995 but not in 1989.[46] Throughout the panel, the coefficient estimates are statistically significant at the 1% level and very similar to those we obtain in the full sample. The data are thus consistent with the view that the effect of restitutions on income growth, particularly pre 1995, is economically small.

C.3 Propensity Score Matching

As an additional robustness check we re-estimate our results using a propensity score matching estimator. We estimate the propensity of treatment by running a probit regression of our dummy indicating ties to the East on the controls used in Table IX. We then calculate the predicted probability that each household in our sample has ties to the East and group our observations into 5 bins corresponding to 20 percentage point probability intervals. In a second step, we regress the growth of household income between 1989 and 1995 on a full set of fixed effects for each bin and on the interactions between these fixed effects and our dummy indicating ties to

[45] See Martinez and Yang (2007) for an example in which variation in the transfers paid by migrants to households in their regions of origin affect economic outcomes at the regional level.

[46] A total of 57 households in our sample acquired firms between 1989 and 1995, 17 of which had relatives in East Germany.

the East. The estimated average treatment effect across bins (weighted by the probability mass of households in each bin) is 0.048, which is only slightly smaller than our estimates in Table IX. If the conditional independence assumption holds, adding controls to this regression should have very little impact on the result. When we include the controls from Table IX as additional controls the estimated effect changes only slightly to 0.058.

References in Online Appendix

Atkin, D. (2010). Trade, Tastes and Nutrition in India. *Yale University Economic Growth Center Discussion Paper No. 986*.

fur Wirtschaftsforschung, D. I. (1996). *Wochenbericht 22*.

GdW Bundesverband deutscher Wohnungs- und Immobilienunternehmen (1994). Daten und Fakten 1993 der untenehmerischen Wohnungswirtschaft in den neuen Laendern. *Informationen*.

Hubert, F. and H. Tomann (1993). Wohnungspolitischer umbruch in ostdeutschland. *Nachdruck einer Studie im Auftrage des Bundesbauministeriums vom Februar 1993*.

Lange, T. and G. Pugh (1998). *The Economics of German Reunification*. Edward Elgar, Cheltenham UK and Northampton MA.

Martinez, C. and D. Yang (2007, August). Remittances and Poverty in Migrants' Home Areas: Evidence from the Philippines. *University of Chile, Department of Economics, Working Papers 257*.

McCallum, J. (1995). National Borders Matter: Canada-U.S. Regional Trade Patterns. *The American Economic Review 85*(3), pp. 615–623.

Nitsch, V. (2002). Border Effects and Border Regions: Lessons from the German Unification. *Hamburg Institute of International Economics Discussion Paper 203*.

Paque, K. (2009). *Die Bilanz: Eine wirtschaftliche Analyse der Deutschen Einheit*. Carl Hanser Verlag Muenchen.

Sinn, G. and H. Sinn (1992). *Jumpstart*. MIT Press, Cambridge MA.

Southern, D. B. (1993). Restitution or Compensation: The Land Question in East Germany. *The International and Comparative Law Quarterly 42*(3), 690–697.

Thimann, C. (1996). *Aufbau von Kapitalstock und Vermoegen in Ostdeutschland*. J.C.B. Mohr (Paul Siebeck) Tuebingen.

D Appendix Tables

Appendix Table I - Data Description and Sources

Variable	*Description*	*Source*
PANEL A: Original variables		
Share Expellees (Sov. Sector) '61	Share of the total region/district population in 1961 that is made up by expellees from the former Eastern territories of the German Reich *who settled in the Soviet sector* before arriving in Western Germany (the Western sectors). The exact census definition of this group is given in Statistisches Bundesamt (1961), p.4.	1961 Census
Share Expellees (Direct) '61	Share of the total region/district population in 1961 that is made up by expellees from the former Eastern territories of the German Reich *who did not settle in the Soviet sector* before arriving in Western Germany (the Western sectors). The exact census definition of this group is given in Statistisches Bundesamt (1961), p.4.	1961 Census
Share Ties to Relatives '91	Share of households in which at least one household member responds that they have relatives in East Germany in the 1991 wave of the SOEP dataset. This variable is calculated on the entire SOEP before restricting the dataset to the households used in our household level analysis.	SOEP (1991)
Subsidiaries and Branches in loc^a	Number of subsidiaries and branches registered in *loc* belonging to the firm.	ORBIS (2007)
Share of Housing Destroyed '46	Destroyed apartments and houses in 1946 as a share of the stock of apartments and houses in 1939.	German Association of Cities (1949)
Rubble '46 (m^3 p.c.)	Untreated rubble in 1946 in cubic meters per capita.	German Association of Cities (1949)
Income t (p.c., log, MZ)	Log of average income in Deutsche Mark. This information is not publicly available at the region level. We have extracted it from the German Mikrozensus, a yearly survey of a random 1% sample of the population. The question used asks for the household's monthly income per household member in May and the respondent selects an income bracket into which his household falls. To convert this categorical variable into a continuous variable, we use the mean of the bounds of the brackets to calculate the average income per household member and aggregate to the region level. For the top income bracket no upper bound exists. We extrapolate linearly from the second-highest income bracket. E.g for 1985 the second-highest income bracket is '4500 to 5000 German Marks'. Hence we assign to households in the 1985 top income bracket ('5000 German Marks or more') a monthly income of 5250 German Marks.	German Mikrozensus (1985, 1987, 1989, 1991, 1993, 1995)
Income Entrepreneurs t (p.c., log)	Log average income in Deutsche Mark for the subgroup of individuals who indicated to be 'entrepreneur' (with or without employees).	German Mikrozensus (1989, 1995)

Continued on next page

Appendix Table I – continued from previous page

Variable	*Description*	*Source*
Income Non-Entrepreneurs t (p.c., log)	Log average income in Deutsche Mark for the subgroup of individuals who indicated to have an occupation other than 'entrepreneur' (with or without employees).	German Mikrozensus (1989, 1995)
Share Entrepreneur t	Regional share of individuals who indicate that they are an entrepreneur (with or without employees).	German Mikrozensus (1989)
Share Employed in x '89	Regional share of individuals who indicate to be working in sector x.	German Mikrozensus (1989)
Distance to East (100km)	Closest distance from a region's center to the former GDR border in 100 km.	- own calculations -
Migration from East '91-'95	Sum of the share of surveyed individuals who migrated to the region in the years 1991, 1993 and 1995 from East Germany.	German Mikrozensus (1991, 1993, 1995)
Ties to Relatives '91 (Dummy)	Dummy indicating whether household head or another person in the same household had relatives in the other part of Germany in 1991.	German SOEP (1991)
Income t (log, SOEP)	Log of income in German Mark (plus 1) of household head in year t .	German SOEP
Gender	Gender of the household head (0: male, 1: female).	German SOEP (1989)
Age '90	Age of household head in 1990.	German SOEP (1989)
Years of Education '89	Years of education (including professional education) of highest ranked individual in the household for whom income data exists. Usually this will be the household head.	German SOEP (1989)
Capital Income '89	Log of household capital income (plus 1) in 1989.	German SOEP (1989)
Occupation '89	We aggregated the occupations given in the German SOEP to the 8 categories 'Not Employed', 'Pensioner', 'In Education/Military Service', 'Worker', 'Farmer', 'White Collar', 'Entrepreneur' and 'Civil Servant'.	German SOEP (1989)
Industry Sector '89	This uses information on the industrial sector in which the household head works, given in the German SOEP. We aggregated the sectors into the 4 categories 'Agriculture', 'Manufacturing', 'Services', and 'Government'.	German SOEP (1989)
Ownership of Assets t (D)	Two dummy variables indicating whether the household owns 'Financial Securities' and 'Operating Assets' in year t.	German SOEP
Sources of Income '89	Four variables indicating the natural logarithm of the household income in German Mark from four sources (plus 1): 'Entrepreneurial Activity', 'Employment', 'Profit Share', and 'Financial Securities'.	German SOEP (1989)
Affiliations '89	Two dummy variables which indicate 'Union Membership' and 'Membership in a Professional Association' of the household head.	German SOEP (1989)
Transfers from Relatives t (log)	The natural logarithm of the amount (plus 1) of transfers in German Marks the household received from relatives in year t.	German SOEP
Transfers to Relatives t (log)	The natural logarithm of the amount (plus 1) of transfers in German Marks paid to relatives (other than parents and children) in year t.	German SOEP

Continued on next page

Appendix Table I – continued from previous page

Variable	*Description*	*Source*
Concern about s '90	The level of concern the household head has about topic s, where s is 'Aggregate Economic Development', 'Preservation of Peace', and 'Individual Job Security'. All three variables take values 1,2, or 3, with 1 being the most concerned and 3 being the least concerned.	German SOEP (1990)
PANEL B: Generated variables		
Income t_1/t_0 (p.c., log)	Income t_1 (p.c., log) - Income t_0 (p.c., log).	
Share of Total Subsidiaries and Branches in loc^a	Number of subsidiaries and branches in loc over the sum of this and the number of subsidiaries and branches in West Germany.	
Subsidiaries and Branches in loc^a (Dummy)	Dummy variable that indicates whether the firm operates at least one subsidiary or branch in loc.	
Subsidiaries and Branches in loc^a (log)	Logarithm of the number of subsidiaries and branches in loc.	
Income t (p.c., log, SOEP)	Log of average income in the region, using the SOEP data.	
Income t_1/t_0 (log, SOEP)	Income t_1 (p.c., log, SOEP) - Income t_0 (p.c., log, SOEP)	
Transfers from Relatives '90-'95 (log)	The natural logarithm of the nominal sum (plus 1) in German Marks of Transfers from Relatives over the years 1990, 1991, 1993 and 1995.	
Transfers to Relatives '90-'95 (log)	The natural logarithm of the nominal sum (plus 1) in German Marks of Transfers to Relatives over the years 1990, 1991, 1993 and 1995.	

[a] Where loc stands for East Germany, West Germany, 'New' EU Countries, 'Old' EU Countries, and Non-EU Countries.

Appendix Table II: GMM Using Panel Structure

	(1)	(2)	(3)
	Income (p.c., log)		
Share Expellees × 1995	2.800***	2.839***	2.528***
	(0.984)	(0.907)	(0.854)
Share Expellees × 1993	2.046**	2.085**	1.774**
	(0.984)	(0.907)	(0.854)
Share Expellees × 1991	1.519	1.558*	1.247
	(0.984)	(0.907)	(0.854)
Share Expellees × 1989	0.493	0.532	
	(0.984)	(0.907)	
Share Expellees × 1987	-0.342		
	(0.984)		
Income 1985 (p.c., log)	0.853***		
	(0.032)		
Income 1987 (p.c., log)		0.834***	
		(0.033)	
Income '87/'85 (p.c., log)		-0.473***	
		(0.061)	
Income 1989 (p.c., log)			0.829***
			(0.037)
Income '89/'85 (p.c., log)			-0.466***
			(0.060)
Distance East (100km)	0.003	0.006**	0.005
	(0.003)	(0.003)	(0.003)
N	350	280	210

Notes: The table reports coefficient estimates from an asymptotically efficient two-step GMM estimation. In the first step we applied the Bartlett kernel to estimate the covariances of the errors up to one lag. The dependent variable is the log of mean per capita income in year t, where t is 1991, 1993 and 1995. In column 2 we additionally use data from 1989, and in column 1 data from 1987 as outcome variable. The main variable of interest in all columns is *Share Expellees (Soviet Sector) '61*. We interacted this with a *full set* of possible year dummies (different across columns) and hence the main effect is not included. We instrument for these interactions with the interaction of the same year dummies with *Share Housing Destroyed '46*. All regressions control for a region's distance to the inner-German border and include state-year fixed effects. Column 1 controls for the log of the mean per capita income in 1985, column 2 controls for the log of the mean per capita income in 1987 and column 3 controls for the log of the mean per capita income in 1989. Column 2 also controls for log of the ratio of mean per capita income in 1987 and 1985. Column 3 also controls for log of the ratio of mean per capita income in 1989 and 1985.

Appendix Table III: Summary Statistics (Expellees, Census '71)

	(1) *Ex. (Soviet Sector)*	(2) *Ex. (Direct)*	(3) *West Germans*
Years of Schooling '71	9.69	9.63	9.81
	(1.19)	(1.11)	(1.50)
Share Entrepreneur '71	0.03	0.03	0.06
Labor Force Participation '71	0.52	0.54	0.55
Agriculture '71	0.04	0.05	0.12
Manufacturing '71	0.51	0.53	0.44
Services '71	0.33	0.30	0.32
Government '71	0.12	0.13	0.11
N	10120	49638	322240

Notes: Appendix Table III shows means, standard deviations in parentheses. Data is from the 1971 edition of the German Census. Column 1 shows summary statistics for expellees via the Soviet sector. Column 2 shows summary statistics for direct expellees. Column 3 shows data for all remaining individuals excluding refugees. Income in 1971 is given in nominal Deutsche Mark. Labor force participation and share entrepreneur are given relative to the entire population. The sectoral distribution is given relative to all working individuals.

Appendix Table IV: Direct Expellees and Expellees via Soviet Sector

(a) War Destruction and Regional Characteristics '89

	(1)	(2)
	Coefficient	*p-value*
Outcome Variable	*Share Housing Destr. '46*	*(H_0: No Conditional Corr.)*
Years of Schooling '89	0.053	0.553
	(0.089)	
Share Entrepreneur '89	-0.006	0.304
	(0.006)	
Share Unemployed '89	0.004	0.397
	(0.005)	
Sh. Employed in Agriculture '89	-0.012	0.122
	(0.008)	
Sh. Employed in Manufacturing '89	0.000	0.989
	(0.026)	
Sh. Employed in Services '89	0.013	0.362
	(0.014)	
Sh. Employed in Government '89	-0.006	0.616
	(0.013)	

(b) Expellee Settlement and Regional Characteristics '89

	(1)	(2)	(3)
	Coefficient		*p-value*
Outcome Variable	*Ex. (Soviet Sector)*	*Ex. (Direct)*	*(H_0: Equality of Coeff.)*
Years of Schooling '89	-0.398	-0.538	0.956
	(2.093)	(0.673)	
Share Entrepreneur '89	0.017	0.033	0.937
	(0.160)	(0.046)	
Share Unemployed '89	-0.130	-0.036	0.506
	(0.121)	(0.031)	
Sh. Employed in Agriculture '89	-0.406*	0.151*	0.059
	(0.238)	(0.080)	
Sh. Employed in Manufacturing '89	0.877	-0.022	0.347
	(0.800)	(0.221)	
Sh. Employed in Services '89	0.447	-0.195	0.334
	(0.554)	(0.161)	
Sh. Employed in Government '89	-0.323	0.005	0.392
	(0.352)	(0.065)	

Notes: Part A of Appendix Table IV presents results from ordinary least squares regressions of the outcome variable shown in the leftmost column on *Share Housing Destroyed* and the same controls as column 3 of Table III. Each row represents an independent regression and we only report the coefficient estimates on the share of housing destruction in column 1. Column 2 gives the p-value of a t-test of the equality of the coefficient in column 1 to 0. Part B presents results from ordinary least squares regressions of the outcome variable shown in the leftmost column on *Share Expellees (Soviet Sector)*, the *Share Expellees (Direct)* and the same controls as column 3 of Table III. Each row represents an independent regression and we only report the coefficient estimates on the shares of the two types of expellees in column 1 and column 2. Column 3 gives the p-value of a t-test of the equality of the coefficients in column 1 and 2. In both Part A and B standard errors are given in parentheses and calculated using the Huber-White correction to correct for potential heteroscedasticity.

Appendix Table V: Placebo

	(1)	(2)	(3)	(4)	(5)	(6)
PANEL A:	*Income '95/'89 (p.c., log)*					
	(OLS)			(IV)		
Share Expellees (Sov. S.) '61	2.131***	2.150***	2.039***	3.422*	3.396*	2.943*
	(0.701)	(0.722)	(0.557)	(1.796)	(1.774)	(1.726)
Share Expellees (Direct) '61	-0.092	-0.099	-0.043	-0.350	-0.371	-0.065
	(0.149)	(0.160)	(0.154)	(0.620)	(0.656)	(0.693)
Sh. Employed in Agricult. '89		0.047	-0.028		0.139	-0.114
		(0.192)	(0.302)		(0.270)	(0.295)
Sh. Employed in Manufact. '89			-0.197			-0.316
			(0.250)			(0.306)
Sh. Employed in Services '89			0.240			0.121
			(0.251)			(0.331)
Sh. Employed in Governm.'89			-0.452			-0.535
			(0.426)			(0.410)
R^2	0.600	0.600	0.663	0.557	0.560	0.639
Instruments	-	-	-	Housing & Rubble	Housing & Rubble	Housing & Rubble
PANEL B: First Stage				*Share Expellees (Sov. Sector) '61*		
Share Housing Destroyed '46				-0.020***	-0.021***	-0.020***
				(0.006)	(0.006)	(0.006)
Rubble '46 (m^3 p.c.)				0.002	0.001	-0.002
				(0.015)	(0.015)	(0.016)
R^2				0.920	0.922	0.931
PANEL C: First Stage				*Share Expellees (Direct) '61*		
Share Housing Destroyed '46				-0.026	-0.026	-0.027
				(0.017)	(0.017)	(0.019)
Rubble '46 (m^3 p.c.)				-0.107**	-0.106**	-0.104**
				(0.046)	(0.045)	(0.051)
R^2				0.817	0.818	0.822
N	70	70	70	70	70	70
Standard Region Level Controls	yes	yes	yes	yes	yes	yes

Notes: Panel A reports coefficient estimates from ordinary least squares regressions at the regional level in columns 1 through 3. Columns 4 through 6 report results from instrumental variable regressions. Standard errors are given in parentheses. Standard errors are calculated using the Huber-White correction to account for potential heteroscedasticity. In Panel A the dependent variable is the log of the ratio of mean per capita income in 1995 and 1989. The main variables of interest are *Share Expellees (Soviet Sector) '61* and *Share Expellees (Direct) '61*. In the specifications in columns 4 through 6 of Panel A we instrument for these variables with *Share Housing Destroyed 46* and *Rubble 46 (m^3 p.c.)*. The corresponding first stage regressions are given in columns 4-6 of Panel B and C. All regressions control for a region's distance to the inner-German border, the log of mean per capita income in 1989 and the log of the ratio of mean per capita income in 1989 and 1985. All regressions include 10 state fixed effects. Coefficient estimates for these controls are not shown to save space.

Appendix Table VI: Co-Movement with the Cycle

	(1)	(2)	(3)
	Income '89/'85 (p.c., log)		
Share Expellees (Sov. S.) '61	1.892***	2.482***	2.637***
	(0.527)	(0.845)	(0.640)
Growth Beta	-0.007	-0.006	-0.016***
	(0.008)	(0.008)	(0.005)
Income 1989 (p.c., log)	-0.184***	-0.210***	-0.209***
	(0.060)	(0.059)	(0.036)
Distance East (100km)	0.009**	0.011***	0.012***
	(0.004)	(0.004)	(0.004)
Income '89/'85 (p.c., log)	-0.392***	-0.380***	-0.551***
	(0.075)	(0.081)	(0.088)
R^2	0.607	0.595	0.771
N	70	70	70

Notes: The table reports coefficient estimates from regressions at the regional level. Column 1 shows results from an ordinary least squares regression (corresponding to Column 2 of Panel A of Table III). Columns 2 and 3 show results from instrumental variable regressions (corresponding to Column 3 of Panel A of Table III). The control variables correspond to the respective regressions in Panel A of Table III. Additionally to the corresponding regressions in Panel A of Table III we include the region level 'Beta'. This is the coefficient of region-specific regressions of regional growth (measured as difference in log income) between the years 1982, 1985, 1986, 1987 and 1989, on Germany-wide growth (measured as difference in log income) during this periods. Robust standard errors are given in parentheses. Column 3 weights the observations with the inverse of the standard error of the estimate of 'Beta'.

Appendix Table VII: Social Ties and Firm Investment (Share)

	(1)	(2)	(3)	(4)	(5)
	Share of Total S. & B. in East Germany				
PANEL A: Reduced Form					
Share Housing Destroyed '46	-0.012**	-0.011**	-0.011**	-0.011**	-0.012***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
S. & B. in West Germany (log)	0.016***	0.016***	0.016***	0.016***	0.016***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Income 1989 (p.c., log)		-0.007	-0.023	0.021	-0.010
		(0.012)	(0.014)	(0.026)	(0.012)
Distance to East (100km)		-0.005***		-0.005***	-0.005***
		(0.002)		(0.002)	(0.002)
Income '89/'85 (p.c., log)		0.003	0.020	-0.011	-0.001
		(0.022)	(0.021)	(0.023)	(0.022)
Migration from East'91-'95					-0.775
					(0.534)
R^2	0.024	0.024	0.024	0.025	0.025
PANEL B: IV					
Share Expellees (Sov. Sector) '61	0.646**	0.596**	0.527**	0.563**	0.626**
	(0.298)	(0.286)	(0.258)	(0.284)	(0.288)
N	19387	19387	19387	19387	19387
Firm-Level Sector Fixed Effects	yes	yes	yes	yes	yes
Distance Quartile Fixed Effects	-	-	yes	-	-
Region Level Sector Controls	-	-	-	yes	-

Notes: All Panels report firm-level regression results using our sample of firms which are headquartered in West Germany. Standard errors are clustered at the district level to account for likely spatial correlation. Panel A reports results from firm-level ordinary least squares regressions. Panel B reports results of firm-level instrumental variables regressions. The main variable of interest in these specifications is *Share Expellees (Soviet Sector) '61*. We instrument for this variable with *Share Housing Destroyed '46*. Corresponding first stage results at the regional level are shown in Table II. The dependent variable in both panels is the number of a firm's subsidiaries and branches located in East Germany relative to the number of its subsidiaries and branches in all of Germany. All regressions include 10 state fixed effects and 4 firm-level sector fixed effects (agriculture, manufacturing, services, government). We control for distance to the inner-German border at the district level. Log of per capita income in 1989 and log of the ratio of per capita income in 1989 and 1985 are regional level controls. Column 3 controls for 4 distance dummies, corresponding to quartiles of the distance measure. Column 4 controls for the share of a region's 1989 population working in agriculture, manufacturing, services and government, respectively. The specification in column 5 controls for the share of the region's population who are migrants arriving from East Germany between 1991 and 1995. All specifications in Panels B-E include the same controls as the specification in Panel A, which we do not report to save space.

Appendix Table VIII: Sector Specific Effects

	S. & B. in East Germany (Dummy)	N
Expellees '61 × Agriculture	3.302	307
	(4.308)	
Expellees '61 × Services	2.121**	15500
	(1.012)	
Expellees '61 × Manufacturing	0.024	3219
	(1.749)	
Expellees '61 × Government	-2.579	361
	(2.432)	
N	19387	
Instrument	Housing×Sector	

Notes: The table reports coefficient estimates from a firm-level instrumental variables regression using our sample of firms which are headquartered in West Germany. Standard errors are given in parentheses. Standard errors are clustered at the district level to account for likely spatial correlation. The main variable of interest is the interaction of 4 exhaustive sectoral fixed effects (agriculture, manufacturing, services and government) with *Share Expellees (Soviet Sector) '61*. (The main effect of *Share Expellees (Soviet Sector) '61* is hence not included.) We instrument with the interaction of the sectoral fixed effects and *Share Housing Destroyed 46*. The dependent variable is a dummy indicating whether a firm has a subsidiary or branch in East Germany. The regression includes 10 state fixed effects and the 4 firm-level sector fixed effects (agriculture, manufacturing, services, government). It also includes the same controls as the specifications in column 2 of Table V. We do not report these coefficients on these controls to save space. The second column shows the number of firms in each sector.

Appendix Table IX: Robustness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
PANEL A: Full Sample	*Income '95/'89 (log)*						
Ties to Relatives '91	0.058***	0.061***	0.053***	0.058***	0.058***	0.068***	0.064***
	(0.021)	(0.021)	(0.019)	(0.021)	(0.021)	(0.021)	(0.019)
Sector: Government '89		0.075**					0.026
		(0.029)					(0.033)
Years of Education '89			-0.044				-0.044
			(0.071)				(0.071)
(Years of Education '89)^2			0.003				0.003
			(0.003)				(0.003)
Occupation: Entrepreneur '89				0.043			0.029
				(0.067)			(0.061)
Transfers to Relatives '90-'95 (log)					0.006		0.002
					(0.008)		(0.008)
Lived in East Germany						-0.057	-0.062
						(0.045)	(0.043)
R^2	0.274	0.277	0.305	0.274	0.274	0.275	0.307
N	1857	1857	1857	1857	1857	1857	1857
PANEL B: Restricted Sample	*Income '95/'89 (log)*						
Ties to Relatives '91	0.069***	0.071***	0.061***	0.069***	0.067***	0.077***	0.071***
	(0.023)	(0.023)	(0.021)	(0.023)	(0.023)	(0.024)	(0.021)
R^2	0.281	0.284	0.318	0.281	0.283	0.282	0.321
N	1533	1533	1533	1533	1533	1533	1533
Household Level Controls	yes	yes	yes	yes	yes	yes	yes

Notes: The table reports coefficient estimates from weighted least squares regressions at the household level. The inverse of the sampling probability provided by SOEP is used as weights. Standard errors, clustered at the region level to account for spatial correlation, are given in parentheses. The dependent variable in all regressions is the log of the ratio of household income in 1995 and 1989. Column 1 replicates the results from the household level regression in column 3 in Table VI. All specifications include, additional to the shown covariates, the same controls as the specification in column 3 in Table VI. Panel A reports results using the full sample. In Panel B we replicate the regressions from Panel A using a restricted sample. In this sample we exclude households who did not have operational assets in 1989, but report to have such assets in 1995 as well as all households which report to have income from renting out property in 1995. For expositional clarity we only report results for the coefficient of interest. See data appendix for details on the construction of our variables.

Appendix Table X: Conditional Differences between Households with and without Ties

Outcome Variable	*Coefficient (St. Err) on Ties to Relatives '91*	*N*
PANEL A: Socio-Economic Characteristics		
Education		
Years of Education '89	0.145 (0.100)	1857
Occupational Status		
Not Employed '89	0.002 (0.013)	1857
In Education/Military Service '89	-0.002 (0.005)	1857
Pensioner '89	0.009 (0.016)	1857
Worker '89	0.005 (0.023)	1857
Entrepreneur '89	-0.005 (0.005)	1857
White Collar '89	0.012 (0.022)	1857
Civil Servant '89	-0.021 (0.013)	1857
Industry Sector		
Agriculture '89	-0.007 (0.005)	1857
Manufacturing '89	0.016 (0.021)	1857
Services '89	0.020 (0.017)	1857
Government '89	-0.030* (0.018)	1857
Sources of Income		
Entrepreneurial Activity '89 (log)	0.056 (0.118)	1857
Employment '89 (log)	0.134 (0.169)	1857
Profit Share '89 (log)	0.053 (0.095)	1857
Capital (Financial Securities) '89 (log)	0.024 (0.063)	1857
Operating Assets '89 (D)	0.004 (0.011)	1857
Affiliations		
Union Membership '89	-0.035 (0.026)	2008
Membership in a Professional Association '89	-0.010 (0.017)	1857
PANEL B: Transfers		
Transfers from Relatives '89 (log)	0.001 (0.065)	1857
Transfers to Relatives '89 (log)	0.238*** (0.063)	1857
Transfers from Relatives '90-'95 (log)	0.117 (0.084)	1857
Transfers to Relatives '90-'95 (log)	0.329*** (0.121)	1857
PANEL C: Expectations		
Concern about Aggregate Economic Development '90	0.032 (0.036)	1847
Concern about Preservation of Peace '90	0.033 (0.037)	1846
Concern about Individual Job Security '90	0.016 (0.041)	1188

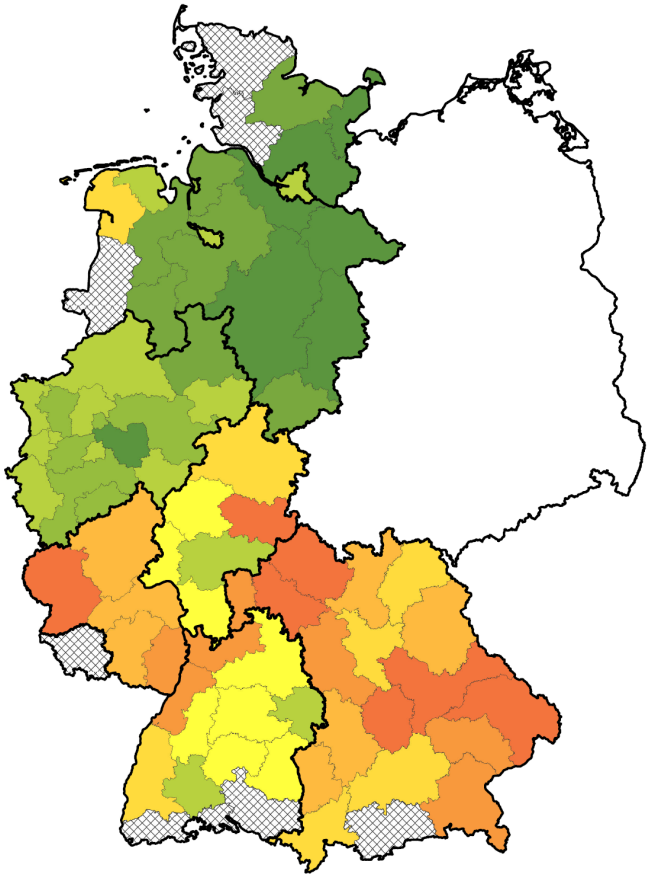
Notes: The table shows results from ordinary least squares regressions of the outcome variable shown in the leftmost column on *Ties to Relatives '91* and the same controls as column 3 of Table VI. Each row represents an independent regression and we only report the coefficient estimate and standard error on *Ties to Relatives '91*. Standard errors are given in parentheses and calculated using the Huber-White correction to correct for potential heteroscedasticity. The last column shows the sample size. In Panel B the dependent variable *Transfers to Relatives '89* is the yearly amount of "payments of financial support to relatives" (excluding parents, parents-in-law, children, children-in-law, separated/divorced partner). *Transfers to Relatives '90-'95* is the sum of this variable for the years 1990, 1991, 1993, and 1995 (the question was not asked in the years 1992 and 1994). *Transfers from Relatives '89* is the average monthly household income of support payments from persons who do not live in the same household. *Transfers from Relatives '90-'95* is the sum of monthly support payments for the years 1990, 1991, 1993, and 1995. The dependent variables in Panel C are responses to the question "What about the following areas: Do they worry you?". The responses are coded on a scale from 1 to 3 in which 1 represents "a major" concern and 3 represents "no concern".

Appendix Table XI: East Germany

	(1)	(2)	(3)	(4)	(5)	(6)
			Income (log, SOEP)			
	1990	*1991*	*1992*	*1993*	*1994*	*1995*
Ties to Relatives '91	0.039	0.041	0.072*	0.040	0.063	0.046
	(0.029)	(0.041)	(0.039)	(0.037)	(0.040)	(0.045)
Income '89 (p.c., log, SOEP)	0.282***	0.164***	0.187***	0.150***	0.191***	0.164***
	(0.051)	(0.039)	(0.036)	(0.034)	(0.032)	(0.029)
Gender	-0.020	-0.051	-0.041	-0.065**	-0.053*	-0.070**
	(0.036)	(0.037)	(0.030)	(0.028)	(0.027)	(0.031)
Age '90	0.049***	0.038***	0.024***	0.024***	0.014***	0.012***
	(0.005)	(0.005)	(0.004)	(0.006)	(0.005)	(0.004)
(Age '90)^2	-0.001***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R^2	0.463	0.308	0.274	0.282	0.252	0.247
N	1359	1359	1359	1359	1359	1359

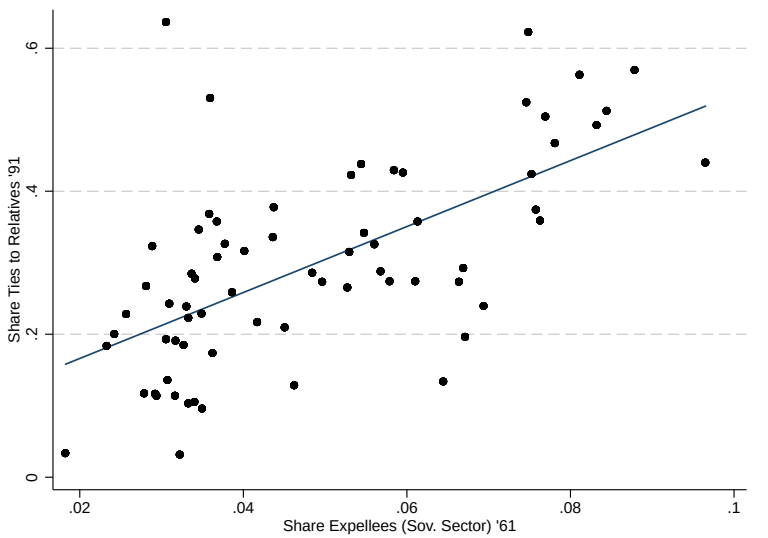
Notes: The table reports coefficient estimates from weighted least squares regressions at the household level. It uses the sample of households located in East Germany in both 1990 and 1995. The inverse of the sampling probability provided by SOEP is used as weights. Standard errors, clustered at the regional level to correct for spatial correlation, are given in parentheses. The dependent variable is the log of household income in the specified year. The explanatory variable of interest is a dummy indicating ties to relatives in West Germany. All specifications include a full set of region fixed effects. See data appendix for details.

Appendix Figure I: Map of Settlement of Expellees



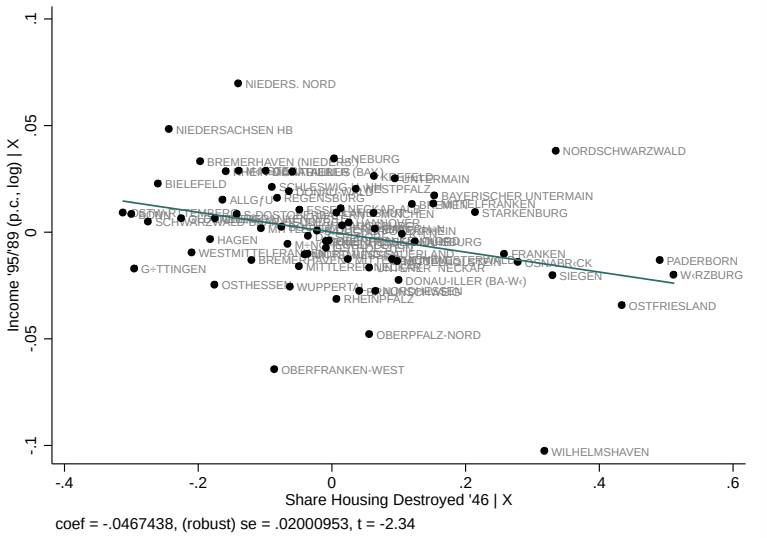
Notes: The figure presents the level of *Share Expellees (Soviet Sector) '61* in West German regions. The 10 colors refer to 10 centiles (10th, 20th, 30th and so on) of expellee settlement, with red indicating those regions with least settlement and green indicating regions with most settlement. The the cut-off values for those centiles of *Share Expellees (Soviet Sector) '61* are 0.029, 0.032, 0.034, 0.036, 0.043, 0.053, 0.058, 0.067, 0.077, respectively. Grey areas indicate regions for which we do not have full data (typically missing war destruction data).

Appendix Figure II: Share Ties to Relatives and Share Expellees



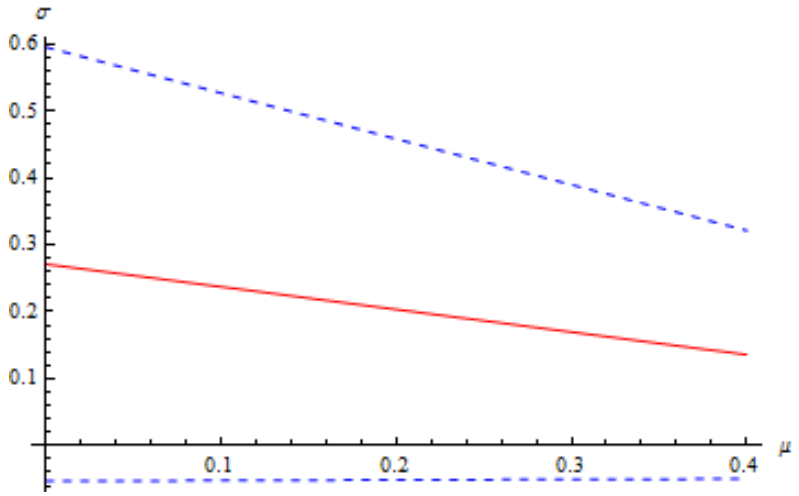
Notes: The figure is a scatterplot of our two measures of social ties, *Share Expellees (Soviet Sector) '61* and *Share Ties to Relatives '91*. The solid line depicts the fitted regression line from an ordinary least squares regression of *Share Ties to Relatives '91* on *Share Expellees (Soviet Sector) '61* and a constant. The coefficient estimate on *Share Expellees (Soviet Sector) '61* is 3.41 (s.e.=0.54) and significant at the 1% level. (Standard errors calculated using the Huber-White correction to account for potential heteroscedasticity.)

Appendix Figure III: Income Growth and Share Housing Destroyed (Conditional Scatterplot)



Notes: The figure is a conditional scatterplot of the log of the ratio of per capita income in 1995 and 1989 and *Share Housing Destroyed '46*. The reduced form regression corresponding to this plot, presented in column 2 of Panel C of Table II, controls for distance to the inner-German border, the log of per capita income in 1989, the log of the ratio of per capita income in 1989 and 1985 and a full set of state fixed effects. The solid line depicts the estimated linear relation between the log of the ratio of per capita income in 1995 and 1989 and share housing destroyed. The coefficient estimate is -0.048 (s.e.=0.020) and significant at the 5% level. (Standard errors calculated using the Huber-White correction to account for potential heteroscedasticity.)

Appendix Figure IV: Estimated Relationship between Social and Economic Spill-Over



Notes: This figure depicts the relationship between σ (the effect of the share of the region population who have ties to the East on the income of an individual household who itself may or may not have such ties) and μ (the effect of average income growth in a given region on the income of an individual household) implied by equation (5), the estimate of α from column 1 of Table VI (0.338) and the estimate of β from column 2 (0.067). The dashed lines trace out the 90% confidence interval which is calculated by bootstrapping standard errors across the specifications in the two columns. The bootstrapped standard errors are calculated by performing 500 iterations of the following procedure: we sample 70 regions (with replacement) in the region level dataset and run the specification in column 1 of Table VI; we sample the household data from the same regions (with replacement) and run the specification in column 2 of Table VI. From the two 1×500 vectors of coefficient estimates we calculate the bootstrapped variance-covariance matrix.