Econometrica Supplementary Material

SUPPLEMENT TO "MARKET SIZE AND SPATIAL GROWTH—EVIDENCE FROM GERMANY'S POST-WAR POPULATION EXPULSIONS"

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MICHAEL PETERS
Department of Economics, Yale University and NBER

SM-1. APPENDIX: THEORETICAL RESULTS

SM-1.1. *Static Allocations*

CONSIDER THE MANUFACTURING SECTOR in region r. Let P_M be the price for the aggregate good and w the wage rate. The profits of the final good firm are given by

$$\Pi = \max_{[x_i]} P_M \mathcal{Q} X - \int_0^N p_i x_i \, di,$$

where $X = (\int_0^{N_{rt}} x_{it}^{\frac{\rho-1}{\rho}} di)^{\frac{\rho}{\rho-1}}$. Standard arguments imply that prices and profits of inputs producers are given by $p_i = \frac{\rho}{\rho-1} w$ and $\pi_i = \frac{1}{\rho} P_X X \frac{1}{N}$, where the price index for the aggregate input bundle is given by $P_X = \frac{\rho}{\rho-1} w N^{-\frac{1}{\rho-1}}$. This implies that $P_M = P_X/\mathcal{Q} = \frac{\rho}{\rho-1}\frac{1}{\mathcal{Q}}\frac{1}{N^{\frac{1}{\rho-1}}} w$. Symmetry implies that $x_{it} = H_P/N$, where H_P is aggregate employment in the production of inputs. Hence, $Y_M = \mathcal{Q} N^{\frac{1}{\rho-1}} H_P$. Total labor payments to production workers relative to sectoral sales are given by $\frac{wH_P}{P\mathcal{Q}X} = \frac{\rho-1}{\rho}$. This implies that individual profits are $\pi_i = \frac{1}{\rho-1}\frac{H_P w}{N}$.

Aggregate nominal income in region r is given by

$$PY_r = w_{rA} H_{rA} + R_r T_r + w_{rM}(H_{rP} + H_{rE}) + \Pi_r,$$

where aggregate profits Π_r are given by $\Pi_r = N_r \pi_{ir} - w_{rM} H_{rE}$. This implies that

$$P_r Y_r = \frac{1}{\gamma} w_{rA} H_{rA} + \frac{\rho}{\rho-1} w_{rM} H_{rP}. \tag{SM-1}$$

Given the total manufacturing labor supply, H_{rMt}, labor market clearing implies that $H_{rMt} = H_{rPt} + H_{rEt}$. If there is entry in equilibrium, then

$$N_{rt} = \frac{1}{\rho-1}\frac{1}{f_E} N_{rt-1}^{\lambda} H_{rPt}.$$

The total mass of labor allocated to entry activities is

$$H_{rEt} = f_E N_{rt-1}^{-\lambda}\big(N_{rt} - (1-\delta)N_{rt-1}\big) = \frac{1}{\rho-1} H_{rPt} - (1-\delta) f_E N_{rt-1}^{1-\lambda}.$$

Michael Peters: m.peters@yale.edu

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Hence, $H_{rPt} = \frac{\rho-1}{\rho} H_{rMt} + \frac{\rho-1}{\rho}(1-\delta) f_E N_{rt-1}^{1-\lambda}$, and $H_{rEt} = H_{rMt} - H_{rPt}$. Along a steady state where the number of varieties is constant, these expressions simplify to

$$\frac{H_{rP}}{H_{rM}} = \frac{\rho - 1}{\rho - 1 + \delta} \quad \text{and} \quad \frac{H_{rE}}{H_{rM}} = \frac{\delta}{\rho - 1 + \delta}.$$

If $w_{rMt} h_{rt}^E > \pi_{irt}$, there is no entry in equilibrium and the growth rate of varieties is negative, that is, $N_{rt} = (1-\delta) N_{rt-1}$. Equation (7) implies that this is the case if

$$w_{rMt} f_E N_{rt-1}^{-\lambda} > \frac{1}{\rho - 1} \frac{w_{rMt} H_{rPt}}{N_{rt}} = \frac{1}{\rho - 1} \frac{w_{rMt} H_{rPt}}{(1-\delta) N_{rt-1}}.$$

In this case, we have $H_{rPt} = H_{rMt}$ and $H_{rEt} = 0$. Hence, there is no entry if and only if $f_E (1-\delta) N_{rt-1}^{1-\lambda} > \frac{1}{\rho-1} H_{rMt}$.

SM-1.2. *Static Equilibrium*

Consider the consumers in region j. Let the prices they face from the goods produced in region r be denoted by P_{rj}. The CES structure of preferences implies that

$$\frac{P_{rj} C_{rj}}{P C_j} = \frac{P_{rj}^{1-\sigma}}{\sum_r P_{rj}^{1-\sigma}} = \left(\frac{P_{rj}}{P_j}\right)^{1-\sigma}, \quad \text{where } P_j = \left(\sum_r P_{rj}^{1-\sigma}\right)^{1/(1-\sigma)}.$$

Hence, total spending on goods in region r is given by

$$\text{Spending on } r = \sum_j P_{rj} C_{rj} = \sum_j \left(\frac{P_{rj}}{P_j}\right)^{1-\sigma} P C_j.$$

Note that total manufacturing spending is given by $PC_j = (1-\alpha) P Y_j$, where total income PY_j is given in (SM-1). Moreover,

$$P_{rjM} = \tau_{rj} P_{rrM} = \tau_{rj} \varsigma \frac{1}{Q_{rt}} \frac{1}{N_{rt-1}^{\lambda\vartheta}} \frac{1}{H_{rPt}^{\vartheta}} w_{rMt}. \tag{SM-2}$$

Hence, the market-clearing equation for region r is given by

$$\frac{\rho}{\rho - 1} w_{rM} H_{rP} = \sum_j \frac{\tau_{rj}^{1-\sigma} P_{rrM}^{1-\sigma}}{\sum_m \tau_{mj}^{1-\sigma} P_{mmM}^{1-\sigma}} (1-\alpha) \left(\frac{w_{jA} H_{jA}}{\gamma} + \frac{\rho}{\rho - 1} w_{jM} H_{jP}\right). \tag{SM-3}$$

Similarly, market clearing in the agricultural sector requires that

$$\frac{w_{rA} H_{rA}}{\gamma} = \sum_j \frac{\tau_{rj}^{1-\sigma} P_{rrA}^{1-\sigma}}{\sum_m \tau_{mj}^{1-\sigma} P_{mmA}^{1-\sigma}} \alpha \left(\frac{w_{jA} H_{jA}}{\gamma} + \frac{\rho}{\rho - 1} w_{jM} H_{jP}\right), \tag{SM-4}$$

where $P_{rrA} = \frac{1}{Q_{rt}} \frac{w_{rAt}}{\gamma} (\frac{H_{rAt}}{T_r})^{1-\gamma}$.The labor market-clearing conditions are given by

$$H_{rAt} = \Gamma_\theta \sum_{k=R,N} \sum_{\nu=I,F} L_{rt}^{\nu k} \phi_A^{\nu k} \left(\frac{w_{rAt}}{\overline{w}_{rt}^{\nu}} \right)^{\theta-1}, \tag{SM-5}$$

$$\frac{\rho}{\rho-1} H_{rPt} - (1-\delta) f_E N_{rt-1}^{1-\lambda} = \Gamma_\theta \sum_{k=R,N} \sum_{\nu=I,F} L_{rt}^{\nu k} \phi_M^{\nu k} \left(\frac{w_{rMt}}{\overline{w}_{rt}^{\nu}} \right)^{\theta-1}. \tag{SM-6}$$

Given $\{\mathcal{Q}_{rt}, N_{rt-1}\}_r$ and $\{[L_{rt}^{\nu k}]_{\nu,k}\}_r$, equations (SM-3), (SM-4), (SM-5), and (SM-6) are $4R$ equations in $4R$ unknowns: $\{H_{rAt}, H_{rPt}, w_{rAt}, w_{rMt}\}_r$. Using that $\phi_M^{\nu}(w_{rMt}/\overline{w}_{rt}^{\nu})^{\theta-1} = (\phi_M^{\nu})^{1/\theta}(\pi_{rMt}^{\nu})^{\frac{\theta-1}{\theta}}$, it follows that

$$H_{rPt}(\{\mathcal{Q}_{rt}, N_{rt-1}, \mathcal{L}_{rt}\}) = \frac{\rho-1}{\rho} \left(\Gamma_\theta \sum_{\nu=I,F} L_{rt}^{\nu} (\phi_M^{\nu})^{1/\theta} (\pi_{rMt}^{\nu})^{\frac{\theta-1}{\theta}} + (1-\delta) f_E N_{rt-1}^{1-\lambda} \right).$$

SM-2. APPENDIX: EMPIRICAL RESULTS

SM-2.1. *Historical Setting: Additional Empirical Results*

In this section, I report additional empirical results on the historical setting.

Data Sources. The data for the years 1933 and 1939 is published in Statistisches Reichsamt (1936) and Statistisches Reichsamt (1939). For the post-war data I had to rely on numerous publications for the individual states. For the state of North Rhine Westphalia (Nordrhein-Westfalen) the data is taken from Statistisches Landesamt Nordrhein-Westfalen (1950, 1952) and Statistisches Landesamt Nordrhein-Westfalen (1961, 1964). For the state of Bavaria (Bayern) the data is taken from Bayerisches Statistisches Landesamt (1953) and Bayerisches Statistisches Landesamt (1963). For the state of Rhineland Palatinate (Rheinland-Pfalz) the data is taken from Statistisches Landesamt Rheinland-Pfalz (1950) and Statistisches Landesamt Rheinland-Pfalz (1961). For the state of Lower Saxony (Niedersachsen) the data is taken from Niedersächsisches Amt

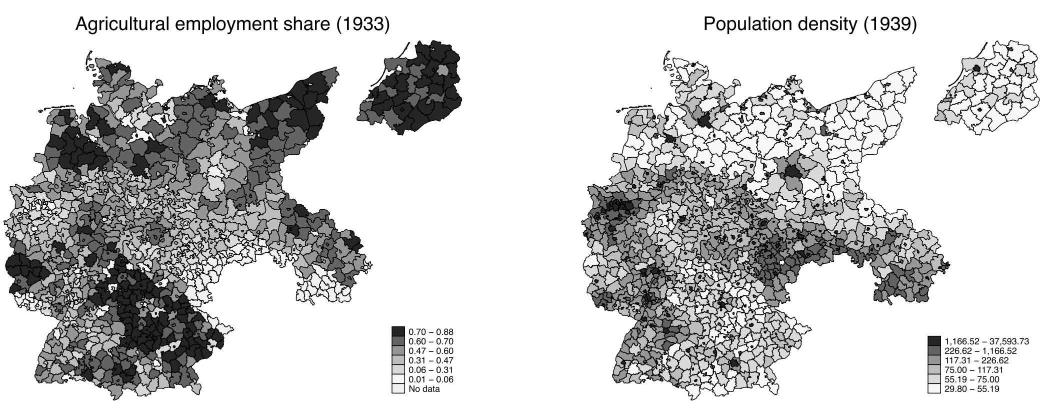

FIGURE SM-1.—Economic geography in the pre-war period. *Note*: The map on the left shows the agricultural employment share in 1933. The map on the right shows population density in 1939.

TABLE SM-1

LOCAL COMPOSITION OF REFUGEE FLOWS.

	Share of refugees from				Share of population from Soviet Occupied Zone	
	Sudetenland		Eastern Territories			
$\ln y_{1935}$	0.003 (0.016)		−0.011 (0.015)		0.006 (0.001)	
Manufacturing share in 1939		0.079 (0.078)		−0.039 (0.077)		0.022 (0.008)
State FE	✓	✓	✓	✓	✓	✓
ln pop dens 1939	✓	✓	✓	✓	✓	✓
Wartime destr.	✓	✓	✓	✓	✓	✓
Geography	✓	✓	✓	✓	✓	✓
N	523	535	523	535	466	476
R^2	0.798	0.796	0.786	0.785	0.616	0.602

Note: Standard errors are clustered at the level of 37 *Regierungsbezirke*. All specifications control for state fixed effects, population density in 1939, the share of the destroyed housing stock ("Wartime destr."), and the distance to the inner German border and a fixed effect for whether a county is a border county ("Geography").

für Landesplanung und Statistik (1952) and Niedersächsisches Amt für Landesplanung und Statistik (1964). For the state of Hesse (Hessen) the data is taken from Hessisches Statistisches Landesamt (1952) and Hessisches Statistisches Landesamt (1962). The share of refugees in 1946 is taken from Ausschuss der Deutschen Statistiker für die Volks- und Berufszählung (1949). This data was only available for a subset of states.

Ethnic Germans in Eastern Europe Before 1939. In Figure SM-1, I display two aspects of the spatial distribution of economic activity in the pre-war period: the agricultural employment share in 1933 and the population density in 1939. As highlighted in Section 2 in the main text, the Eastern Territories were more agricultural and rural than West Germany prior to the war.

The Spatial Composition of Refugee Inflows. In Table SM-1, I show that there is little evidence that refugees were spatially sorted, that is that the composition of refugees varied systmematically across space: neither the manufacturing share nor GDP per capita predicts the share of refugees coming from the industrialized Sudetenland or the agriculturally specialized Eastern Territories. To see that this absence of spatial sorting is particular to the refugees, the last two columns report the same regression for the share of the population that fled the Soviet Occupied Zone. These individuals are a natural control group as they were not part of the organized refugee treks but were free to settle. The last two columns of Table SM-1 show these migrants do in fact settle systematically in richer and more manufacturing intensive locations.

Wartime Destruction. In the left panel of Figure SM-2, I depict the cross-sectional distribution of wartime destruction, as measured by the share of the housing stock that was damaged in the war. It is apparent that there are many counties where more than 60% of their housing stock was damaged during the war. The red line shows the share of the aggregate housing stock that was destroyed during the war, which amounts to roughly 20%. In the right panel, I display the correlation of war-time destruction with pre-war population density. As expected, there is a strong positive correlation. The size of the markers reflect the county population in 1939.

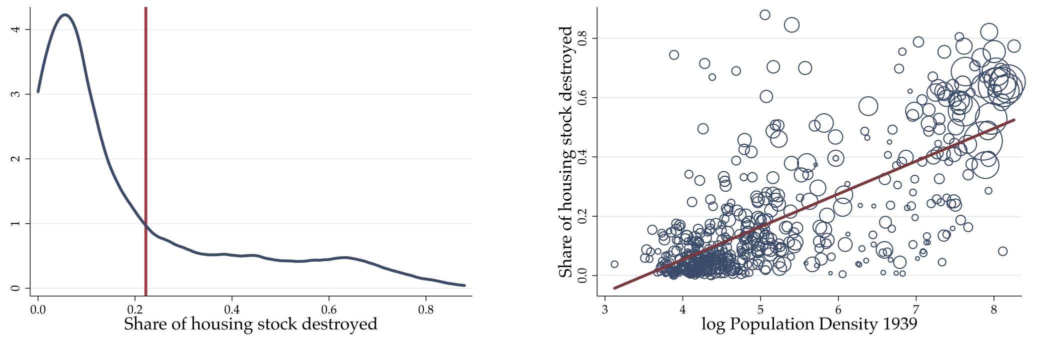

FIGURE SM-2.—Wartime destruction. *Note*: The figure shows the distribution of the share of the housing stock that was destroyed during the war across all counties in West Germany (left panel) and the correlation with population density in 1939 (right panel). The size of the markers in the right panel reflects the total county population in 1939.

SM-2.2. *Additional Results for "The Economic Effects of Refugee Inflows" (Section 3.2)*

In this section, I provide additional results for the empirical results reported in Section 3.

SM-2.2.1. *Robustness of Results*

OLS Estimates (Table 6)

Consider first the robustness of the OLS results. In Table SM-2, I report the results in the short run (i.e., 1939 to 1950); in Table SM-3, I focus on the long run (i.e., 1939 to 1961). For parsimony, I focus on the baseline specification, which is contained in columns 2 and 6 in Table 6. This specification controls for state fixed effects, population density in 1939, the share of wartime destruction, the level of respective dependent variable in 1939, the distance to the inner German border, and a dummy for whether a county is directly at the border. I then consider the following variations of my baseline specification:

1. weighing counties by their population in 1939 to put more weight on (ex ante) large localities (column 2),
2. explicitly controlling for regional variation in labor supply as proxied by the employment share and the share of male inhabitants (column 3),
3. controlling for local construction needs as proxied by the share of the housing stock built after 1945 (column 4),
4. incorporating fixed effects at the city × state level, where "cities" are the roughly 120 counties that mostly contain only a single city (which naturally tends to be large) (column 5),
5. excluding the state of Bavaria, where counties are decisively smaller than in other states (column 6),
6. using the share of refugees in 1946 as the measure of refugee inflows (column 7),
7. estimating the regression on the same sample of counties as in column 7 but using the refugee share in 1950 as the dependent variable (column 8).

For comparison, I always report the baseline estimate from Table 6 in column 1.

Tables SM-2 and SM-3 show that my baseline results are mostly robust with respect to these considerations. Here I focus on the few cases where the results differ. Consider first the short-run results reported in Table SM-2. The elasticity of population growth is

TABLE SM-2

OLS RESULTS IN 1950 (TABLE 6): ROBUSTNESS.

	Base-line	Weights	Labor supply	Constr. activity	City × state FE	Excl. Bavaria	1946 Ref. share	1946 sample
	Panel A: Population growth: $\ln L_{r1950} - \ln L_{r1939}$							
Share of refugees (1950)	1.359	1.514	1.277	1.359	1.387	1.472		1.273
	(0.112)	(0.138)	(0.102)	(0.110)	(0.114)	(0.131)		(0.142)
Share of refugees (1946)							1.001	
							(0.171)	
N	526	526	526	532	479	335	400	400
R^2	0.825	0.846	0.834	0.825	0.846	0.858	0.733	0.777
	Panel B: Manufacturing employment: $\pi^M_{r1950} - \pi^M_{r1939}$							
Share of refugees (1950)	0.317	0.299	0.282	0.315	0.309	0.294		0.246
	(0.074)	(0.061)	(0.072)	(0.074)	(0.079)	(0.073)		(0.094)
Share of refugees (1946)							0.224	
							(0.110)	
N	535	535	535	535	488	344	403	403
R^2	0.390	0.339	0.459	0.392	0.388	0.288	0.357	0.366
	Panel C: Agricultural employment: $\pi^A_{r1950} - \pi^A_{r1933}$							
Share of refugees (1950)	−0.186	−0.223	0.014	−0.169	−0.219	−0.184		−0.104
	(0.072)	(0.080)	(0.079)	(0.075)	(0.069)	(0.111)		(0.100)
Share of refugees (1946)							0.134	
							(0.144)	
N	523	523	523	523	475	338	396	396
R^2	0.701	0.711	0.764	0.717	0.736	0.637	0.724	0.723
	Panel D: Service employment: $\pi^S_{r1950} - \pi^S_{r1933}$							
Share of refugees (1950)	0.014	0.069	−0.114	0.007	0.040	−0.099		0.021
	(0.058)	(0.068)	(0.056)	(0.062)	(0.061)	(0.069)		(0.084)
Share of refugees (1946)							−0.077	
							(0.096)	
N	523	523	523	523	475	338	396	396
R^2	0.363	0.354	0.514	0.375	0.495	0.378	0.402	0.400
	Panel E: GDP per capita growth: $\ln y_{r1950} - \ln y_{r1935}$							
Share of refugees (1950)	−0.083	0.097	−0.035	−0.096	−0.200	−0.382		0.009
	(0.382)	(0.541)	(0.354)	(0.379)	(0.363)	(0.542)		(0.524)
Share of refugees (1946)							0.040	
							(0.494)	
N	523	523	523	523	475	338	396	396
R^2	0.511	0.608	0.543	0.513	0.532	0.454	0.499	0.499
	Panel F: Growth of industrial plants: $\ln N_{r1950} - \ln N_{r1933}$							
Share of refugees (1950)	0.726	0.570	0.494	0.721	0.890	0.458		0.427
	(0.410)	(0.528)	(0.378)	(0.398)	(0.387)	(0.553)		(0.448)
Share of refugees (1946)							−0.116	
							(0.459)	
N	520	520	520	520	472	335	394	394
R^2	0.393	0.385	0.403	0.393	0.491	0.445	0.303	0.306

Note: Standard errors are clustered at the level of 37 administrative units (*Regierungsbezirke*). See main text for details on the different specifications. All specifications control for state fixed effects, log population density in 1939, the extent of wartime destruction, the log distance of the inner German border and a dummy if a county is at the inner German border, and the level of respective dependent variable in 1939.

TABLE SM-3
OLS RESULTS IN 1961 (TABLE 6): ROBUSTNESS.

	Base-line	Weights	Labor supply	Constr. activity	City × state FE	Excl. Bavaria	1946 Ref. share	1946 sample
	Panel A: Population growth: $\ln L_{r1961} - \ln L_{r1939}$							
Share of refugees (1950)	1.029 (0.211)	1.129 (0.211)	1.090 (0.211)	1.001 (0.214)	1.096 (0.215)	1.114 (0.245)		0.880 (0.247)
Share of refugees (1946)							0.355 (0.307)	
N	526	526	479	526	479	335	398	398
R^2	0.299	0.418	0.325	0.369	0.356	0.408	0.133	0.191
	Panel B: Manufacturing employment: $\pi^M_{r1961} - \pi^M_{r1939}$							
Share of refugees (1950)	0.241 (0.086)	0.166 (0.065)	0.253 (0.088)	0.237 (0.087)	0.266 (0.090)	0.242 (0.062)		0.207 (0.109)
Share of refugees (1946)							0.161 (0.135)	
N	535	535	488	535	488	344	403	403
R^2	0.352	0.508	0.355	0.357	0.360	0.406	0.320	0.328
	Panel C: Agricultural employment: $\pi^A_{r1961} - \pi^A_{r1933}$							
Share of refugees (1950)	−0.097 (0.078)	−0.105 (0.075)	−0.116 (0.085)	−0.077 (0.088)	−0.141 (0.079)	−0.169 (0.096)		−0.060 (0.107)
Share of refugees (1946)							0.196 (0.153)	
N	523	523	475	523	475	338	396	396
R^2	0.761	0.835	0.771	0.778	0.782	0.801	0.763	0.761
	Panel D: Service employment: $\pi^S_{r1961} - \pi^S_{r1933}$							
Share of refugees (1950)	0.017 (0.071)	0.080 (0.073)	−0.002 (0.067)	0.010 (0.073)	0.003 (0.073)	−0.045 (0.077)		0.022 (0.098)
Share of refugees (1946)							−0.051 (0.108)	
N	523	523	475	523	475	338	396	396
R^2	0.186	0.164	0.279	0.199	0.332	0.128	0.202	0.201
	Panel E: GDP per capita growth: $\ln y_{r1961} - \ln y_{r1935}$							
Share of refugees (1950)	0.502 (0.227)	0.484 (0.255)	0.597 (0.213)	0.490 (0.236)	0.581 (0.236)	0.455 (0.348)		0.642 (0.267)
Share of refugees (1946)							−0.001 (0.277)	
N	519	519	471	519	471	334	392	392
R^2	0.889	0.918	0.891	0.891	0.889	0.865	0.887	0.889
	Panel F: Growth of industrial plants: $\ln N_{r1956} - \ln N_{r1933}$							
Share of refugees (1950)	0.697 (0.756)	−0.467 (0.898)	0.518 (0.822)	0.645 (0.724)	1.038 (0.758)	0.478 (1.053)		0.441 (0.940)
Share of refugees (1946)							−0.660 (0.874)	
N	520	520	520	520	472	335	394	394
R^2	0.373	0.379	0.378	0.381	0.400	0.433	0.316	0.315

Note: Standard errors are clustered at the level of 37 administrative units (*Regierungsbezirke*). See main text for details on the different specifications. All specifications control for state fixed effects, log population density in 1939, the extent of wartime destruction, the log distance of the inner German border and a dummy if a county is at the inner German border, and the level of respective dependent variable in 1939.

lower when I focus on the share of refugees in 1946 (Panel A, column 7). This is expected because—as seen in Table 2—a large number of refugees arrived only in 1946 and the following years. Using this variation, neither the relationship with the agricultural employment share nor the one with the growth rate of plants is significantly different from zero (Panels C and F, column 7). Finally, controlling for local labor supply changes the relative composition between agricultural and service employment. In Table SM-3, I consider the robustness of the long-run results. In that case, the only result that differs from the baseline estimates is that the conditional correlation between GDP growth and population growth and the allocation of refugees in 1946 is not statistically significantly different from zero.

In Section OA-2.5 in the Online Appendix, I report additional results. First, Table 6 in the main text only reported the coefficient on the share of refugees in 1950, which is the main coefficient of interest. In Tables OA-7 and OA-8 in the Online Appendix, I report the coefficients on the remaining covariates. I focus on specification 3 for 1950 (see Table OA-7) and specification 7 for 1961 (see Table OA-8). Additionally, in Table OA-9, I replicate the estimates of Table 6 with robust instead of clustered standard errors. This strengthens the results because the clustered standard errors turn out to be generally larger

TABLE SM-4

FIRST STAGE.

	Share of refugees in 1950							
	Robust standard errors				Clustered standard errors (37 clusters)			
ln Exp. Dist.	−0.142	−0.446			−0.142	−0.446		
	(0.045)	(0.046)			(0.127)	(0.112)		
ln ED × Bavaria		0.394	−0.038	−0.028		0.394	−0.038	−0.028
		(0.041)	(0.044)	(0.044)		(0.106)	(0.102)	(0.095)
ln ED × BW			−0.672	−0.642			−0.672	−0.642
			(0.057)	(0.062)			(0.086)	(0.072)
ln ED × Hesse			−0.267	−0.215			−0.267	−0.215
			(0.076)	(0.078)			(0.144)	(0.134)
ln ED × NRW			−0.248	−0.201			−0.248	−0.201
			(0.058)	(0.060)			(0.100)	(0.087)
ln ED × LS			−0.464	−0.446			−0.464	−0.446
			(0.062)	(0.062)			(0.126)	(0.116)
ln ED × RhPf			−0.075	−0.063			−0.075	−0.063
			(0.107)	(0.107)			(0.121)	(0.133)
ln ED × SH			−0.336	−0.305			−0.336	−0.305
			(0.088)	(0.086)			(0.088)	(0.084)
State FE	✓	✓	✓	✓	✓	✓	✓	✓
ln pop dens 1939	✓	✓	✓	✓	✓	✓	✓	✓
Wartime destr.	✓	✓	✓	✓	✓	✓	✓	✓
Geography	✓	✓	✓	✓	✓	✓	✓	✓
Pre-war empl.				✓				✓
lny 1935				✓				✓
N	536	536	536	522	536	536	536	522

Note: Standard errors are robust (columns 1–4) or clustered at the level of 37 *Regierungsbezirke* (columns 5–8). The expulsion distance ("ED") is calculated according to (1). All specifications control for state fixed effects, population density in 1939, the share of the destroyed housing stock ("Wartime destr."), and the distance to the inner German border and a fixed effect for whether a county is a border county ("Geography"). Specifications 4 and 8 control for the manufacturing employment share in 1939 and the agricultural employment share in 1939 ("pre-war empl.") and GDP per capita in 1935 (*lny*1935).

Instrumental Variables Estimates (Table 7)

In Table SM-4, I report the first-stage relationship between the share of refugees and the distance to expulsion regions. For completeness, I report both the specification with robust (columns 1–4) and with clustered standard errors (columns 5–8). The table shows why it is important to allow for the relationship between the expulsion distance and the refugee share to vary by state. Columns 1 and 5 show that the relationship is—on average—negative. However, the remaining columns show that in Bavaria, which is a relatively large state in the South of Germany with many small counties, the relationship is essentially flat. This is in stark contrast to the other states.[41] The reason for this qualitative difference between Bavaria and the rest of Germany is a problem of measurement. By being on the south-eastern border of Germany, Bavaria was a natural destination for many expellees from Czechoslovakia, Hungary, and Rumania. Because these regions were not part of the German Reich, I do not have access to their population at the county level. Hence, they are not part of the "Expulsion distance." Counties in Bavaria that were relatively close to such regions (and hence received a large share of refugees) therefore appear to have a larger distance to the expulsion regions than they effectively did.

In Tables SM-5 and SM-6, I report the same robustness checks for the IV specification as I did for the OLS specification in Tables SM-2 and SM-2. The only meaningful difference with respect to the baseline specification (which I again replicate in the first column) is that the long-run effect on GDP per capita and the number plants is smaller once the state of Bavaria is excluded. Doing do also increases the standard errors substantially because the sample size decreases by roughly 190 counties. In the last column, I include a specification where I allow the distance to the inner German border to have a state-specific coefficient. This specification is motivated by my instrumental variables strategy that interacts the expulsion distance with state fixed effects to instrument for the local refugee share. With this extra flexibility, many results are insignificant. This is not entirely surprising given the high correlation between expulsion distance and the distance to the inner German border. In fact, for the OLS specification, all results are unchanged if I allow for the distance effect to have state-specific coefficients.

In Section OA-2.3 in the Online Appendix, I report a host of additional results. In particular, I report the results of the reduced form, the IV estimates when I weight each location with its population in 1939, and a specification when I use robust instead of clustered standard errors. Furthermore, in Section OA-2.7 in the Online Appendix, I also report the results of an alternative instrumental variables strategy, which relies on the interaction between the distance to the expulsion region and the local housing supply. This strategy delivers the same qualitative insights but is much less precisely estimated.

SM-2.2.2. *Pre-Trends*

The OLS results rely on the assumption of parallel trends: conditional on pre-war controls, different regions would have developed similarly in the absence of refugee inflows. In Table SM-7, I report a set of regressions that suggest that my controls appropriately control for eventual pre-trends. The first four columns show that the residual share of refugees is uncorrelated with manufacturing and agricultural employment shares in the pre-war period. The last three columns show that there is no correlation between the share of refugees and population growth or the growth of manufacturing plants in the pre-war period and that the share of refugees is, if anything, negatively correlated with

[41]The only exception is "Rhineland Palatinate" (RhPf), which is relatively small.

TABLE SM-5

IV RESULTS IN 1950 (TABLE 7): ROBUSTNESS.

	Base-line	Labor supply	Constr. activity	City × state FE	Excl. Bavaria	1946 Ref. share	1946 sample	State-specific geography
	Panel A: Population growth: $\ln L_{r1950} - \ln L_{r1939}$							
Share of refugees in 1950	1.556 (0.184)	1.319 (0.186)	1.542 (0.181)	1.548 (0.184)	1.531 (0.202)		1.578 (0.336)	1.355 (0.389)
Share of refugees in 1946						1.758 (0.592)		
	Panel B: Manufacturing employment: $\pi^M_{r1950} - \pi^M_{r1939}$							
Share of refugees in 1950	0.295 (0.123)	0.171 (0.148)	0.273 (0.121)	0.291 (0.122)	0.455 (0.157)		0.115 (0.205)	0.078 (0.248)
Share of refugees in 1946						0.126 (0.277)		
	Panel C: Agricultural employment: $\pi^A_{r1950} - \pi^A_{r1933}$							
Share of refugees in 1950	−0.576 (0.166)	−0.240 (0.157)	−0.416 (0.141)	−0.570 (0.175)	−0.260 (0.117)		−0.774 (0.276)	−0.256 (0.186)
Share of refugees in 1946						−0.866 (0.397)		
	Panel D: Service employment: $\pi^S_{r1950} - \pi^S_{r1933}$							
Share of refugees in 1950	0.229 (0.201)	0.135 (0.202)	0.154 (0.175)	0.226 (0.206)	−0.037 (0.171)		0.518 (0.302)	0.131 (0.247)
Share of refugees in 1946						0.563 (0.410)		
	Panel E: GDP per capita growth: $\ln y_{r1950} - \ln y_{r1935}$							
Share of refugees in 1950	0.404 (0.670)	0.796 (0.674)	0.125 (0.672)	0.183 (0.578)	0.460 (0.870)		0.617 (0.986)	0.060 (1.128)
Share of refugees in 1946						0.563 (1.190)		
	Panel F: Growth of industrial plants: $\ln N_{r1950} - \ln N_{r1933}$							
Share of refugees in 1950	1.767 (0.592)	1.381 (0.556)	1.687 (0.551)	1.831 (0.596)	0.752 (0.699)		1.658 (0.980)	1.474 (1.182)
Share of refugees in 1946						2.563 (1.421)		
State FE	✓	✓	✓	✓	✓	✓	✓	✓
ln pop dens 1939	✓	✓	✓	✓	✓	✓	✓	✓
Wartime destr.	✓	✓	✓	✓	✓	✓	✓	✓
Geography	✓	✓	✓	✓	✓	✓	✓	✓
Pre-war controls	✓	✓	✓	✓	✓	✓	✓	✓

Note: Standard errors are clustered at the level of 37 administrative units (*Regierungsbezirke*). See main text for details on the different specifications. All specifications control for state fixed effects, log population density in 1939, the extent of wartime destruction, the log distance of the inner German border and a dummy if a county is at the inner German border, and the level of respective dependent variable in 1939.

the change in the manufacturing employment share between 1933 and 1939. Thus, there is no evidence that regions with higher refugee inflows were on a more promising trajectory in the pre-war period.

In Section OA-2.6 in the Online Appendix, I provide further evidence for the parallel trends assumption. The nature of the allocation rule implies that refugees were settled to

TABLE SM-6

IV RESULTS IN 1961 (TABLE 7): ROBUSTNESS.

	Base-line	Labor supply	Constr. activity	City × state FE	Excl. Bavaria	1946 Ref. share	1946 sample	State-specific geography
	Panel A: Population growth: $\ln L_{r1961} - \ln L_{r1939}$							
Share of refugees in 1950	1.440 (0.253)	1.324 (0.242)	1.034 (0.244)	1.442 (0.264)	1.528 (0.319)		1.507 (0.396)	1.124 (0.496)
Share of refugees in 1946						1.216 (0.774)		
	Panel B: Manufacturing employment: $\pi^M_{r1961} - \pi^M_{r1939}$							
Share of refugees in 1950	0.219 (0.134)	0.214 (0.122)	0.166 (0.138)	0.202 (0.138)	0.422 (0.164)		0.111 (0.186)	−0.062 (0.293)
Share of refugees in 1946						−0.029 (0.278)		
	Panel C: Agricultural employment: $\pi^A_{r1961} - \pi^A_{r1933}$							
Share of refugees in 1950	−0.449 (0.173)	−0.283 (0.142)	−0.243 (0.163)	−0.456 (0.180)	−0.200 (0.167)		−0.767 (0.269)	−0.151 (0.152)
Share of refugees in 1946						−0.766 (0.408)		
	Panel D: Service employment: $\pi^S_{r1961} - \pi^S_{r1933}$							
Share of refugees in 1950	0.203 (0.218)	0.098 (0.184)	0.117 (0.189)	0.217 (0.227)	−0.039 (0.172)		0.533 (0.299)	0.014 (0.194)
Share of refugees in 1946						0.623 (0.414)		
	Panel E: GDP per capita growth: $\ln y_{r1961} - \ln y_{r1935}$							
Share of refugees in 1950	0.530 (0.266)	0.602 (0.234)	0.283 (0.272)	0.473 (0.225)	−0.065 (0.460)		0.971 (0.383)	−0.005 (0.827)
Share of refugees in 1946						0.437 (0.724)		
	Panel F: Growth of industrial plants: $\ln N_{r1956} - \ln N_{r1933}$							
Share of refugees in 1950	2.332 (0.816)	2.541 (1.016)	1.863 (0.780)	2.125 (0.733)	0.411 (1.326)		2.378 (1.527)	−0.312 (1.594)
Share of refugees in 1946						3.090 (2.078)		
State FE	✓	✓	✓	✓	✓	✓	✓	✓
ln pop dens 1939	✓	✓	✓	✓	✓	✓	✓	✓
Wartime destr.	✓	✓	✓	✓	✓	✓	✓	✓
Geography	✓	✓	✓	✓	✓	✓	✓	✓
Pre-war controls	✓	✓	✓	✓	✓	✓	✓	✓

Note: Standard errors are clustered at the level of 37 administrative units (*Regierungsbezirke*). See main text for details on the different specifications. All specifications control for state fixed effects, log population density in 1939, the extent of wartime destruction, the log distance of the inner German border and a dummy if a county is at the inner German border, and the level of respective dependent variable in 1939.

relatively rural, low population density locations. Even though all my results reported in Tables 6 and 7 control for the population density in 1939, one might still be concerned that controlling for population density linearly is insufficient. In Table OA-10 in the Online Appendix, I control for pre-war population density and pre-war urbanization nonparametrically through 60 fixed effects and show that doing so leaves my estimates unchanged.

TABLE SM-7
PRE-TRENDS.

	Manufac. share		Ag. share	Growth: 1933–1939		
	(1933)	(1939)	(1933)	Population	Man. share	Plants
Share of refugees (1950)	−0.005 (0.108)	−0.150 (0.114)	−0.037 (0.134)	0.205 (0.320)	−0.163 (0.070)	0.352 (0.328)
ln pop dens 1939	✓	✓	✓	✓	✓	✓
Wartime destr.	✓	✓	✓	✓	✓	✓
Geography	✓	✓	✓	✓	✓	✓
State FE	✓	✓	✓	✓	✓	✓
N	523	535	523	523	522	504
R^2	0.559	0.489	0.691	0.092	0.142	0.084

Note: Standard errors are clustered at the level of 37 *Regierungsbezirke*. In columns 1–3, the dependent variables are the manufacturing employment share in 1939 and 1933 and the agricultural employment share in 1933. In columns 4–6, the dependent variables are population growth, the change in the manufacturing share, and the growth rate of the number of plants between 1933 and 1939.

SM-2.2.3. *Evidence Across Bavarian Villages*

In Table 8 in the main text, I analyzed the relationship between the allocation of refugees and subsequent population growth and industrialization across 6000 communities within counties in Bavaria. In Figure SM-3, I display the cross-sectional distribution of the local refugee share across villages. The blue line shows the overall variation; the red line shows the variation within counties after taking out a full set of county fixed effects. The heterogeneity in the absorption of refugees across villages is very large even within counties. This pattern is consistent with the historical narrative that the abruptness of the refugee arrival combined with the dire situation in the immediate post-war period did not allow for a more equitable distribution of refugees across space.

Table 8 in the main text showed that the relationship between the share of refugees in 1950 and economic outcomes in 1961 across villages is substantially weaker than the one across counties. I now show that this "attenuation" is due to a high degree of spatial

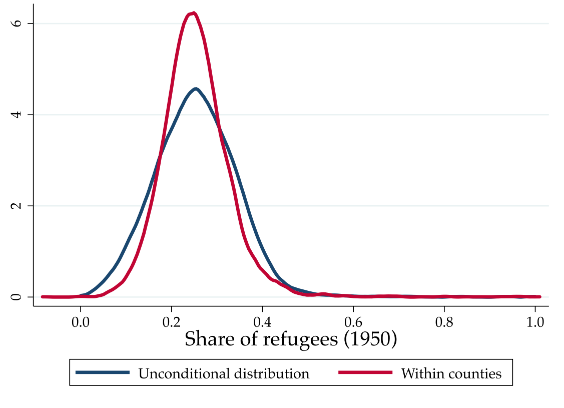

FIGURE SM-3.—The Initial Allocation of Refugees Within and Across Counties. *Notes*: The figure shows the distribution of the local refugee share across 6000 villages in Bavaria in 1950. The unconditional distribution is shown by the blue line. The red line depicts the residual variation within counties after controlling for county fixed effects.

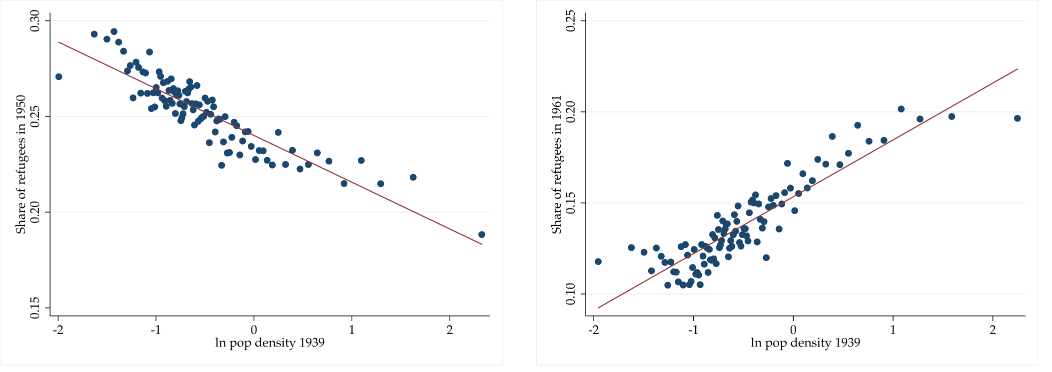

FIGURE SM-4.—Refugees' Spatial Mobility Toward Urban Centers: 1950–1961. *Notes*: The figure shows binned scatter plots for 100 percentiles of the refugee share in 1950 and 1961 against population density after controlling for county fixed effects.

mobility between villages. To see this, consider Figure SM-4, which shows the within-county correlation between local population density in 1939 and the share of refugees in 1950 (left panel) and 1961 (right panel). As expected, in 1950, there is a strong negative correlation because—like in the allocation across counties—refugees were initially sent to rural villages. Strikingly, in 1961, the within-county variation is now positive. This is exactly what one would expect if refugees were to move within their counties to locations whose employment structure is less agriculturally specialized.

To see this behavior more directly, consider Table SM-8. In the first three columns, I regress population growth between 1950 and 1961 on the initial share of refugees. The relationship is strongly negative, indicating a substantial degree of mean reversion. To see that this mean version is special to refugees, in column 2, I control for population density in 1939 and population size in 1950. Hence, holding population size and population growth constant, if this growth is due to refugee inflows (as opposed to other sources of population growth), population growth is lower in the subsequent period. This is exactly what one would expect if refugees were initially "misplaced."

This "misplacement" is to a large extent driven by rural villages. In column 3, I allow the effect of refugee-induced population growth to differ by initial population density (which I capture through five quantiles). A clear pattern emerges. The extent of mean revision is particularly strong in the most rural locations as the refugees are particularly eager to leave these locations. This result is also corroborated in the last two columns. The overall correlation between the local share of refugees is positive but—compared to the one across counties—small. In the last column, I allow this correlation to depend on the pre-war population density. As expected, the autocorrelation of the local refugee share is much lower in the least dense villages compared to the more urban locations within counties.

SM-2.3. *Identification and Estimation*

In this section, I provide further details on the estimation of the model. I first describe the construction of the different moments reported in Table 11. Then I discuss how these moments identify particular parameters of interest. In Section SM-2.3.3, I describe in more detail how I estimate the German division and the loss of market access.

TABLE SM-8
SPATIAL MOBILITY WITHIN COUNTIES: 1950–1961.

	Population growth 1950–1961			Share of refugees (1961)	
Share of refugees (1950)	−1.010	−0.681		0.405	
	(0.104)	(0.051)		(0.023)	
Share of refugees × 1939 pop dens. qtile 1			−0.774		0.357
			(0.051)		(0.023)
Share of refugees × 1939 pop dens. qtile 2			−0.794		0.360
			(0.051)		(0.023)
Share of refugees × 1939 pop dens. qtile 3			−0.653		0.411
			(0.058)		(0.024)
Share of refugees × 1939 pop dens. qtile 4			−0.611		0.433
			(0.064)		(0.027)
Share of refugees × 1939 pop dens. qtile 5			−0.434		0.532
			(0.072)		(0.028)
County FE	✓	✓	✓	✓	✓
ln Population 1950		✓	✓	✓	✓
Pop. dens. 1939		✓	✓	✓	✓
N	6046	6018	6018	5948	5948
R^2	0.193	0.374	0.384	0.468	0.484

Note: Standard errors are clustered at the county level. "pop dens quintile x" is a dummy variable for the xth quantile of the population density in 1939.

SM-2.3.1. *Moments and Estimation*

As highlighted in Table 11, I use 17 moments to estimate the model. These are:

1. Local income growth (as in (2))

$$\ln y_{rt} - \ln y_{r1935} = \delta_s + \beta_t^y \mu_{r1950} + \alpha \ln y_{r1935} + \phi \ln \ell_{r1939} + \varphi \text{wd}_r + \tau \text{dist}_r + u_r$$

for $t = 1950$, 1961, and 1980.

2. Local manufacturing growth (as in (2))

$$\pi_{rt}^M - \pi_{r1939}^M = \delta_s + \beta_t^M \mu_{r1950} + \alpha \pi_{r1939}^M + \phi \ln \ell_{r1939} + \varphi \text{wd}_r + \tau \text{dist}_r + u_r$$

for $t = 1950$ and 1961.

3. Local population growth (as in (2))

$$\ln L_{rt} - \ln L_{r1939} = \delta_s + \beta_t^\ell \mu_{r1950} + \phi \ln \ell_{r1939} + \varphi \text{wd}_r + \tau \text{dist}_r + u_r$$

for $t = 1950$, 1961, and 1980.

4. Local population growth between 1950 and 1955

$$\ln L_{r1955} - \ln L_{r1950} = \delta_s + \beta_{55}^{popgr} \mu_{r1950} + \phi \ln \ell_{r1939} + \varphi \text{wd}_r + \tau \text{dist}_r + u_r.$$

5. The correlation of the local refugee share within states

$$\mu_{rt} = \delta_s + \beta_t^\mu \mu_{r1950} + u_r$$

for $t = 1955$ and 1961 as also shown in Figure 2.

6. The effect of distance to the East on long-run GDP growth

$$\ln y_{r1961} - \ln y_{r1935} = \delta_s + \tau_{61}^y \text{dist}_r + \beta_t^y \mu_{r1950} + \alpha \ln y_{r1935} + \phi \ln \ell_{r1939} + \varphi \text{wd}_r + u_r.$$

These are 12 moments that stem directly from regression estimates that exploit the regional variation in refugee in flows:

$$\Omega = \big(\underbrace{\beta_{50}^y, \beta_{61}^y, \beta_{80}^y}_{\text{GDP}}, \underbrace{\beta_{50}^M, \beta_{61}^M}_{\text{Man share}}, \underbrace{\beta_{50}^\ell, \beta_{61}^\ell, \beta_{80}^\ell, \beta_{55}^{popgr}}_{\text{Population}}, \underbrace{\beta_{55}^\mu, \beta_{61}^\mu}_{\text{Refugee correlation}}, \underbrace{\tau_{61}^y}_{\text{Distance}}\big).$$

I summarize these results in Table SM-9.

In addition, I use five additional moments for identification. In particular, I target

1. the share of migrants that move within states. More specifically, let S denote the set of states with a typical element s. Consider county $r \in S$. Total outflows from region r are given by

$$\text{Outflows from } r = \psi \sum_{\nu=F,I} \left[L_{rt-1}^\nu \left(1 - \frac{\left(V_r \overline{w}_{rt}^\nu / \Psi_r\right)^\varepsilon}{\sum_{k=1}^R \left(\mu_{rk} V_k \overline{w}_{kt}^\nu / \Psi_k\right)^\varepsilon} \right) \right],$$

where Ψ_r denotes the price index in region r. The total outflows that end up in the same state are given by

$$\text{Outflows from } r \text{ within same state} = \psi \sum_{\nu=F,I} \left[L_{rt-1}^\nu \frac{\sum_{j \in s(r)} \left(\mu_{rj} V_j \overline{w}_{jt}^\nu / \Psi_j\right)^\varepsilon}{\sum_{k=1}^R \left(\mu_{rk} V_k \overline{w}_{kt}^\nu / \Psi_k\right)^\varepsilon} \right],$$

where $j \in s(r)$ denotes the set of counties which are in the same state as county r. Hence, I target the moment

$$\text{Within-state migration share} = \frac{\sum_r \text{Outflows from } r}{\sum_r \text{Outflows from } r \text{ within same state}} \quad \text{(SM-7)}$$

This moment is helpful to discipline the extent to which migration costs rise in distance. Empirically, the aggregate share is given by 0.67. In Figure SM-5, I show the distribution of this statistic across counties.

2. the average earnings premium in manufacturing relative to agriculture, that is, the "agricultural productivity gap" (Gollin, Lagakos, and Waugh (2014)). In the model, it is calculated as

$$\frac{\overline{w}_M}{\overline{w}_A} = \frac{\sum_r w_{rMt} H_{rMt} / \sum_r L_{rt}^M}{\sum_r w_{rAt} H_{rAt} / \sum_r L_{rt}^A}, \quad \text{(SM-8)}$$

TABLE SM-9

MOMENTS FOR QUANTITATIVE ANALYSIS.

	GDP pc growth			Δ Manufac share		Pop. growth				Share of refugees	
	35–50	35–61	35–80	39–50	39–61	39–50	39–61	39–80	50–55	1955	1961
Share of refugees (1950)	−0.083	0.502	0.201	0.317	0.241	1.359	1.029	1.041	−0.342	0.735	0.586
	(0.382)	(0.227)	(0.198)	(0.074)	(0.086)	(0.112)	(0.211)	(0.521)	(0.071)	(0.033)	(0.044)
log distance		0.090									
		(0.058)									
State FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ln pop dens 1939	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Wartime destr.	✓	✓	✓	✓	✓	✓	✓	✓	✓		
log GDPpc 1935	✓	✓	✓								
Manufac. share 1939				✓	✓						
Population 1939						✓	✓	✓			
Geography	✓	✓	✓	✓	✓	✓	✓	✓	✓		
N	523	519	329	535	535	526	526	331	526	536	504
R^2	0.511	0.889	0.919	0.390	0.352	0.825	0.299	0.228	0.756	0.859	0.726

Note: Note: Standard errors are clustered at the level of 37 *Regierungsbezirke*. See main text for details on the different specifications.

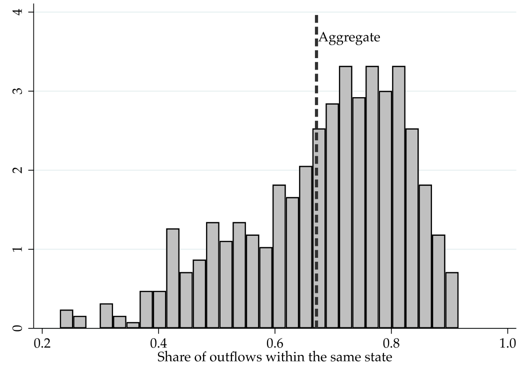

FIGURE SM-5.—Migration: Share of Outflows that Remain Within the Same State. *Notes*: The figure shows the distribution of the share of outflows that remain within the same state across counties.

where the sectoral labor supply H_{rst} is given by $H_{rst} = \sum_\nu L^\nu_{rt}\phi^\nu_s(w_{rst}/\overline{w}^\nu_{rt})^{\theta-1}$ and L^s_{rt} denotes the number of people working in sector s. As a target, I rely on a number of 1.5, which is consistent with the results reported in Gollin, Lagakos, and Waugh (2014).

3. the relative wage of refugees relative to natives in 1961, which in the model I define as

$$\beta^{w,\text{Ref}} = \ln\left(\frac{\text{avg earnings}^{\textit{Refugee}}}{\text{avg earnings}^{\textit{Natives}}}\right).$$

Empirically, I rely on micro data from the EVS and estimate a Mincer-type regression of log earnings on demographics and a dummy for whether or not the individual is a refugee, that is,

$$\ln \text{earnings}_i = \alpha + \beta^{w,\text{Ref}} \times \text{Refugee}_i + x_i'\xi + u_i,$$

where x_i contains a set of age and education dummies. Empirically, I find an estimate of $\beta^{w,\text{Ref}} = -0.075$ with a standard error of 0.007.

4. the dispersion of GDP pc at the regional level from the regression

$$\ln y_{rt} = \alpha_r + \beta^\varrho \ln y_{rt-1} + v_{rt},$$

which I run for the years 1957, 1961, 1964, and 1966. Here α_r is a county fixed effect so that this specification mirrors the structural productivity process for $\mathcal{Q}_{rt}$. I run the same specification in the model-generated data and target the dispersion in the estimated residuals, that is, $sd(\hat{v}_{rt})$. Empirically, I find that $sd(\hat{v}_{rt}) = 0.041$.

5. an elasticity of trade flows with respect to distance of -1.29 as reported in Monte, Redding, and Rossi-Hansberg (2018). I parameterize the trade costs as a power function of the geographic distance, that is, $\tau_{rj} = \tau_0 d^\zeta_{rj}$. Suppose that the distance within a location is given by $d^{\min}$. Hence, $\tau_{rr} = \tau_0(d^{\min})^\zeta$. Setting $\tau_{rr} = 1$ yields $\tau_{rj} = (d_{rj}/d^{\min})^\zeta$. In practice, I take $d^{\min}$ to be the 5% quantile of the observed distances across regions. By choice of $\zeta = 1.29/(\sigma - 1)$, my model matches the distance elasticity exactly.

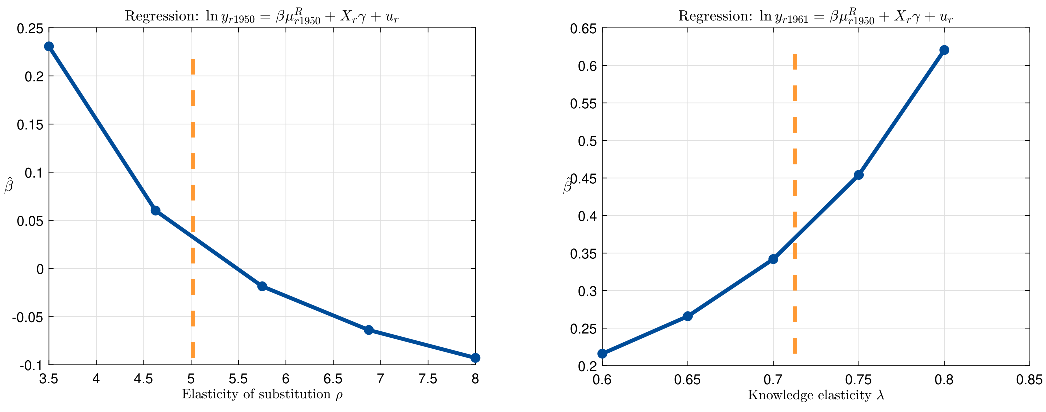

FIGURE SM-6.—Identification of ρ and λ. *Note*: The figure shows the regression coefficient β_t from specifications 1 and 2 of Table SM-9 for different values of ρ (left panel) and λ (right panel). All other structural parameters are held constant. The estimated parameters are depicted as the orange dashed line.

Given these moments, I construct my criterion function as

$$\mathcal{M} = \sum_{m\in\Omega}(m_{\text{Model}} - m_{\text{Data}})^2 + \left(sd(\hat{v}_{rt})^{\text{Model}} - sd(\hat{v}_{rt})^{\text{Data}}\right)^2 + \left(\left(\beta^{w,\text{Ref}}\right)^{\text{Model}} - \left(\beta^{w,\text{Ref}}\right)^{\text{Data}}\right)^2$$
$$+ \left(\frac{\text{Ag-prod gap}^{\text{Model}} - \text{Ag-prod gap}^{\text{Data}}}{\text{Ag-prod gap}^{\text{Data}}}\right)^2 + \left(\frac{\text{State-share}^{\text{Model}} - \text{State-share}^{\text{Data}}}{\text{State-share}^{\text{Data}}}\right)^2,$$

and estimate the parameters by minimizing $\mathcal{M}$ through a search of Sobol grid points.

SM-2.3.2. *Identification*

Even though all parameters are estimated jointly, there is a tight link between particular moments and parameters.

Growth and Scale: ρ and λ. The two scale parameters ρ and λ are mostly identified from the short-run and the long-run relationship between refugee inflows and GDP per capita. The lower ρ, the more potent the static agglomeration force and the higher the impact of refugee inflows on income per capita in the short run. If ρ is large, the effects of locally decreasing returns through the agricultural sector and elastic demand dominate and the effect of refugee inflows on GDP per capita is negative. The relationship between refugee inflows and long-run GDP per capita is increasing in λ, as λ amplifies the strength of the dynamic agglomeration force.

This intuition is contained in Figure SM-6, where I report the estimated regression coefficients as function of ρ (left panel) and λ (right panel). Both moments are monotone in the respective parameters. The higher ρ, the lower the short-run scale elasticity. This tends to reduce the effect of refugee inflows on GDP per capita, making it eventually negative. The right panel shows the relationship between refugee inflows and GDP per capita in 1961. As expected, this relationship is increasing in λ.

Spatial Mobility: ε, ψ, β, and κ. The Calvo parameter ψ governs the extensive margin of population mobility. It is mostly identified from the autocorrelation of refugee shares

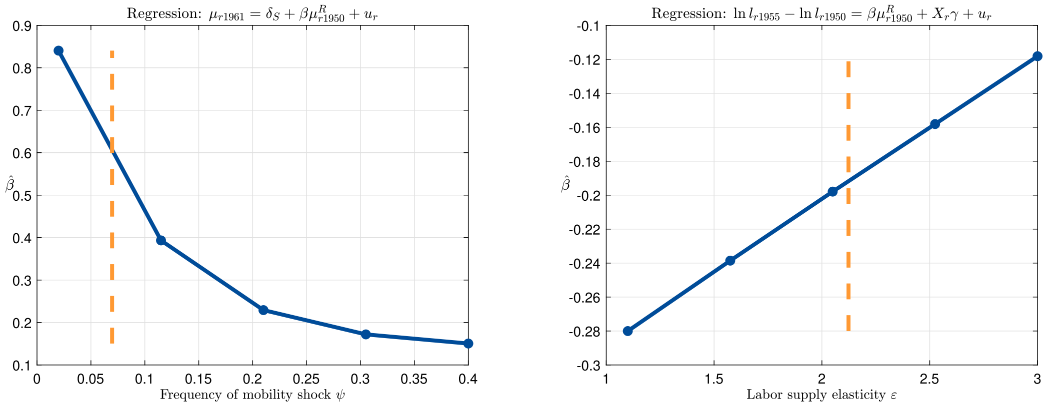

FIGURE SM-7.—Identification of ψ and ε. *Note*: The left panel shows the regression coefficient β_t from specifications 11 of Table SM-9 for different choices of ψ. The right panel shows the regression coefficient β_t from specifications 9 of Table SM-9 for different choices of ε. All other structural parameters are held constant. The estimated parameters are depicted as the orange dashed line.

because the higher ψ, the faster will the distribution of refugees mimic the ones of natives, that is, regions with an initial "excess" of refugees revert quickly to the mean. If $\psi = 1$, the model predicts that the share of refugees should be equalized across space within a single period if moving costs η_{rj} were constant across regions of origin. In the left panel of Figure SM-7, I report the regression coefficient as a function of ψ holding all other parameters constant. As expected, there is a strong negative relationship.

The parameter ε is mostly identified from the correlation between the initial refugee allocation and subsequent population growth. If ε is small, this initial allocation is not very well aligned with individuals' idiosyncratic tastes and we would expect a strong negative correlation between the refugee share in 1950 and subsequent growth. This is the case as shown in the right panel of Figure SM-7.

The migration costs are parameterized as a function of distance: $\eta_{rj} = (\frac{d_{rj}}{d^{\min}})^{-\kappa}$. Hence, the higher κ, the more are migration costs increasing in distance. The parameter κ is thus informed by the share of outflows, which are within the state of a given a county (see equation (SM-7)). Finally, the congestion parameter of amenities β governs the long-run relationship between refugee inflows and population growth and is thus informed by β^{ℓ}_{80}.

Skill Distribution: ϕ^I_M, ϕ^I_A, and χ. To estimate the human capital of industrialists, ϕ^I_M and ϕ^I_A, and their share χ, I use three sets of moments. First, I target the relationship between refugee inflows and the expansion of the local manufacturing sector both in 1950 and in 1961. The lower ϕ^I_A, the more will industrialist natives sort toward urban areas. The inflow of refugees will therefore trigger a larger increase in the local manufacturing sector. Second, I target the "agricultural productivity gap" as defined in (SM-8). Holding ϕ^I_A fixed, the parameter ϕ^I_M increases relative human capital of industrialists in the manufacturing sector and hence the measured agricultural gap. Finally, I exploit differences in earnings between refugees and natives at the micro level. In addition to the regional effects of refugee inflows on the manufacturing share, spatial sorting also matters for relative earnings. Without skill heterogeneity, there would be no differential sorting between refugees and natives by skill. With skill heterogeneity, industrial workers among natives sort toward regions which are specialized in non-agricultural production and which offer higher wages. In contrast, refugees are not sorted upon their arrival but only sort gradually. The parameter χ is therefore an additional important determinant of the relative earnings between natives and refugees.

Spatial Fundamentals $[\mathcal{Q}_r, \mathcal{A}_r, \mathcal{T}_r]$ *and the Agricultural Expenditure Share* α. To estimate the spatial fundamentals, I assume that the economy is in a steady state in 1933 and calibrate $[\mathcal{Q}_r, \mathcal{A}_r, \mathcal{T}_r]$ by matching the population distribution $\{L_{r1933}\}_r$, the sectoral employment shares $\{s^M_{r1933}\}_r$, and income per capita $\{y_{r1933}\}_r$. Formally, for a given set of structural parameters, there is a one-to-one mapping between the three fundamentals and the three moments for each region and the agricultural expenditure share α. Note also that the steady state implies a particular endogenous distribution of the number of varieties N_{r1933} and the extent of spatial sorting, that is, the allocation of industrial types ω^I_{r1933} across counties. In Section OA-3.2 in the Online Appendix, I describe this mapping in more detail.

SM-2.3.3. *The German Division and the Loss of Market Access: Details*

To incorporate the loss of market access in my calibrated model, I use the following procedure. A location in my model is fully characterized by the three-dimensional tupel $(\mathcal{Q}_r, \mathcal{T}_r, \mathcal{A}_r)$ and its distance to all other locations. Moreover, given the other structural parameters, the three fundamentals $(\mathcal{Q}_r, \mathcal{T}_r, \mathcal{A}_r)$ are fully determined from data on the manufacturing employment share π^M_r, the total population L_r, and income per capita y_r. I model the "East" as an additional $R+1$th location. To measure its distance, I take the midpoint from GIS. I directly measure the total population and the manufacturing share in 1933. Finally, I model income per capita in the East as being proportional to income per capital in the West, that is, $y^{East}_{33} = \eta \times y^{West}_{33}$, and take the factor of proportionality η as a structural parameter that I estimate as part of the Sobol grid. In my theory, I model the division as a prohibitive increase in trade and mobility costs in 1945. The moment that most closely maps to η is the elasticity between income growth and the distance of the inner German border. Intuitively, the higher η, the richer the East, and the larger the relative post-war income loss for counties that are close to the East.

SM-2.3.4. *The Long-Run Effects of GDPpc and Population*

In Figure 4, I displayed the estimated impact of the refugee settlement on GDPpc and the local population until the late 1990s. In Tables SM-10 and SM-11, I report the results in a regression form. As discussed in detail in Section OA-2.2 in the Online Appendix, the 1970s saw drastic changes in county borders. For comparison with the results in the 1970s, 1980s, and 1990s, I therefore recompute GDP growth and population growth in the 1950s and 1960s for these new borders.

The specifications reported in Tables SM-10 and SM-11 are exactly the same as my baseline analysis, that is, all regressions control for state fixed effect, pre-war population density, war-time destruction, the distance to the inner German border, a border fixed effect, and the level of respective dependent variable in the pre-war period, that is, GDPpc in 1935 for Table SM-10 and log of the population in 1939 and 1933 for Table SM-11. I always report the coefficient on the share of refugees in 1950, μ_{r1950}. As seen in Figure 4, there is a strong positive effect on both GDPpc and the level of the population over most of the 20th century.

TABLE SM-10

THE LONG-RUN EFFECT OF THE REFUGEE SETTLEMENT: GDP PC GROWTH.

	GDP pc Growth: 1935–											
	1950	1957	1961	1964	1966	1970	1972	1974	1980	1992	1994	1996
μ_{r50}	−0.148	0.513	0.495	0.447	0.461	0.519	0.534	0.479	0.212	0.396	0.306	0.320
	(0.586)	(0.244)	(0.196)	(0.254)	(0.223)	(0.181)	(0.175)	(0.171)	(0.198)	(0.197)	(0.230)	(0.269)
N	329	329	329	329	329	329	329	329	329	329	329	329
R^2	0.526	0.909	0.917	0.825	0.900	0.886	0.899	0.888	0.919	0.930	0.924	0.913

Note: Standard errors are clustered at the level of 37 administrative units (*Regierungsbezirke*). All specifications control for state fixed effects, log population density in 1939, the extent of wartime destruction, the log distance of the inner German border, a dummy if a county is at the inner German border, and log GDP pc in 1935.

SM-2.4. *The Implications of Path Dependence*

As discussed in the main text, at the estimated parameters, my model features persistence. Hence, the long-run outcome of the model might depend on the particular history of shocks the different localities experienced. In this section, I discuss the implications of this feature in more detail. In particular, I show that the model converges to a steady state eventually but that these steady states depend on the history of shocks. To quantify the aggregate importance of path dependence, I study a parameterization of my model that does not feature path dependence because of large dispersion forces on the labor supply side. Specifically, this model features a lower value for the supply elasticity ε and a higher value of the congestion in amenities β, but the same production function parameters λ and ρ.

Convergence and Path Dependency. To see that my model converges to a steady state, consider the following exercise: take 50 histories of local productivity $[\mathcal{Q}_{rt}]$ between 1933 and 2200 with the following feature: they all start at the respective long-run level in 1933, that is, $\mathcal{Q}_{r1933} = \mathcal{Q}_r$, and after 1970, productivity is constant and again given by $\mathcal{Q}_{rt} = \mathcal{Q}_r$. Hence, these different histories only differ by the sequence of shocks between 1933 and 1970. If the model converges to a steady state, the share of refugees should be equalized across regions. Moreover, the annual growth rates in GPD pc and population should be zero for each location and hence also equalized.

In Figure SM-8, I depict the cross-sectional dispersion in the share of refugees (left panel), annual GDP pc growth (middle panel), and annual population growth (right

TABLE SM-11

THE LONG-RUN EFFECT OF THE REFUGEE SETTLEMENT: POPULATION GROWTH.

	Population growth: 1939–								
	1950	1961	1970	1972	1974	1980	1992	1994	1996
μ_{r50}	1.461	1.120	1.135	1.119	1.137	1.152	1.046	1.136	1.220
	(0.117)	(0.155)	(0.243)	(0.260)	(0.263)	(0.305)	(0.329)	(0.327)	(0.351)
N	313	311	311	311	311	311	311	311	311
R^2	0.814	0.480	0.385	0.389	0.401	0.326	0.298	0.310	0.331

Note: Standard errors are clustered at the level of 37 administrative units (*Regierungsbezirke*). All specifications control for state fixed effects, log population density in 1939, the extent of wartime destruction, the log distance of the inner German border, a dummy if a county is at the inner German border, and the log of the population in 1939 and 1933.

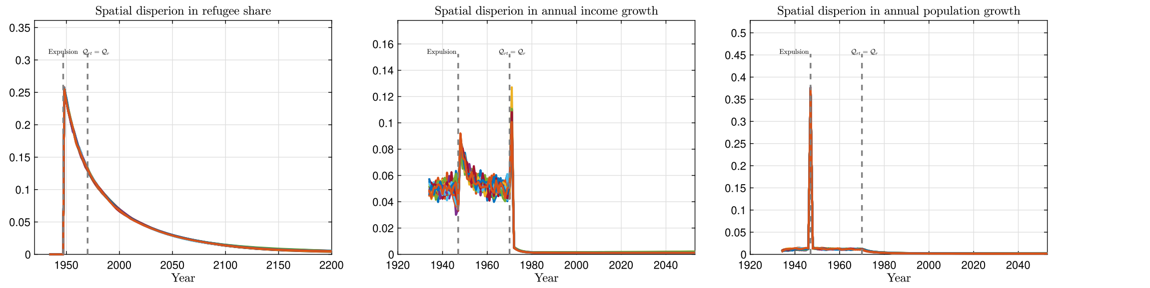

FIGURE SM-8.—Stationarity of the Model. *Note*: The left panel shows the cross-sectional dispersion in the share of refugees. The middle (right) panel shows the cross-sectional dispersion of annual growth rates in income pc (population). I always measure the cross-sectional dispersion as the difference between 90% and 10% quantile of the respective variable. Each plot contains 50 lines for the 50 different sample paths. The sample paths differ in the history of productivity shocks $\mathcal{Q}_{rt}$ between 1933 and 1970. Starting in 1970, local productivity $\mathcal{Q}_{rt}$ is set to its long-run value $\mathcal{Q}_r$ and constant over time.

panel) for each of the 50 histories. Hence, each figure contains 50 lines. For each outcome, I measure dispersion as the difference between 90% and 10% quantile of the respective variable. If the model converges to a steady state, all lines should go to zero in the long run.

As seen in Figure SM-8, this is indeed the case. Consider first the share of refugees in the left panel. The cross-sectional dispersion spikes up at the time of the expulsion in the late 1940s and subsequently declines. Note that this pattern is almost identical across all 50 histories so that the different lines are virtually on top of each other. Because there is no innate difference between refugees and natives conditional on their type, the dynamics of the refugee share are very long-lived and it takes almost 200 years for the refugee shares to be fully equalized across space. In the middle panel, I show the dispersion in annual income growth. Prior to 1970, the dispersion is sizable due to productivity shocks. At the time of the expulsion, the dispersion increases because of decreasing returns and scale effects. Once the exogenous productivity is constant after 1970, the dispersion in income growth converges to zero for each of the 50 sample paths. The right panel shows that this is also the case of local population growth. Expectedly, the population inflow at the time of the expulsion generates vast regional differences in population growth. Once productivity is constant, the economy converges to a steady state for each of the 50 different histories. Note also that the convergence in population and income growth is much faster than for the share of refugees and hence I depict them on different x-axes.

Even though the model converges to a steady state for each sample path, this steady state might not necessarily be the same across sample paths. If the steady states are different, the model features path dependence in the sense of Allen and Donaldson (2020). To see this is the case, let $l_{rt}^{(h)}$ denote the population in region r at time t in history $h = 1, 2, \dots, 50$. Recall that each history only differs in the shocks that occurred between 1933 and 1970. Let q_{rt}^{90} and q_{rt}^{10} denote the 90% and 10% quantile of $l_{rt}^{(h)}$ across histories h for region r at time t. Let $d_{rt} = q_{rt}^{90} - q_{rt}^{10}$. Hence, d_{rt} is a measure of how different the population in region r at time t could be, given the different realizations of shocks between 1933 and 1970.

In the left panel of Figure SM-9, I depict the density of this measure in 1970 in blue and in the steady state in orange. Consider first the blue line. The fact that d_{r70} is between 0.1 and 0.5 means that across 50 different productivity realizations, most locations could experience differences in size between 0.1 and 0.5 log points. If these differences were only

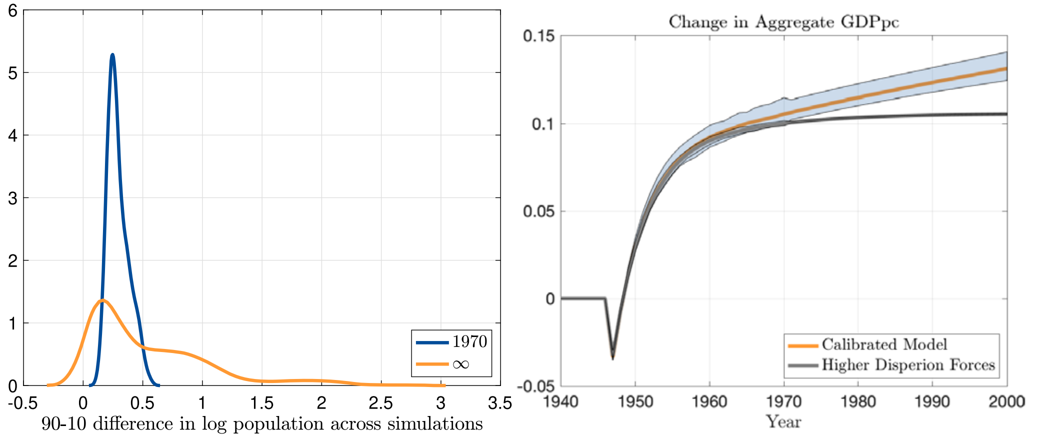

FIGURE SM-9.—Long-Run Persistence. *Note*: Let $l_{rt}^{(h)}$ denote the population in region r at time t in history h. Let q_{rt}^{90} and q_{rt}^{10} denote the 90% and 10% quantile of $l_{rt}^{(h)}$ across histories h for region r at time t. Let $d_{rt} = q_{rt}^{90} - q_{rt}^{10}$. The left panel shows the distribution of d_{r1970} across locations in blue and the steady-state distribution $d_{r\infty}$ in orange. The right panel shows the change in aggregate GDP both in the calibrated model and in the parameterization with higher dispersion forces.

driven by the particular realizations of shocks, we would expect this density to collapse in the long run. Figure SM-9 shows that this is not the case. In particular, the distribution shows more dispersion on both sides: some regions experience less variation in population size across histories in the long run, some regions experience more. The fact that $d_{r\infty}$ is not 0 for all locations is an example of path dependence: different realization of shocks between 1933 and 1970 lead to different long-run outcomes.

To gauge the quantitative importance of path dependence, I compare this calibration with a different parameterization of the model that features no persistence. Persistence is more likely to occur if local agglomeration forces are large (i.e., λ is large and ρ is small) and dispersion forces are small (i.e., ε is large and β is small). Because I am mostly interested in the implications for aggregate GDP, I leave the technological parameters λ and ρ unchanged and only increase the amenity congestion externality β from its estimated value 0.25 to 0.8 and reduce the spatial labor supply elasticity ε from 2.1 to 1.

This parameterization of the model does not features path dependence: the long-run distribution of the population is the same for all histories of shocks. This parameterization of the model also implies that the semi-elasticity between population growth and the initial refugee share is sharply declining and essentially equal to its long-run level of around 0.2 by the year 2000. This is in stark contrast to the data, which showed a semi-elasticity of around 1 in the late 1990s.

To see whether the aggregate consequences of the inflow of refugees depends on the existence of path dependence in an important way, in the left panel of Figure SM-9, I compare the aggregate GDP impact of the refugee inflow in the calibrated model (orange line at the top) with the model with higher dispersion forces (gray line at the bottom). The calibrated model implies a somewhat larger aggregate impact. This is due to the fact that the lower dispersion forces make workers more sensitive to regions with higher wages (because the spatial labor supply elasticity ε is large) and allow for more agglomeration (because the amenity congestion elasticity β is small). Quantitatively, however, the aggregate impact is broadly similar: the model with higher dispersion forces shaves off 1 or 2 percentage points at the horizon of four to five decades.

SM-2.5. *The Spatial Impact: Supply versus Demand*

In Figure 6 in the main text, I decomposed the impact of refugee inflows on local income per capita into a supply and a demand component. Figure 6 is constructed in the following way: First, I calculate the equilibrium path in the baseline calibration with the inflow of refugees. Then, I calculate the counterfactual equilibrium in the absence of refugee flows. From these two allocations, I calculate the total spatial impact on manufacturing employment and income per capita. I then decompose this total impact into a demand and a supply component using the following procedure. Take region r and calculate an equilibrium path where refugees only arrive in region r. The difference between this equilibrium path and the path without any refugee flows is the supply component for region r. Now take again region r and calculate an equilibrium path where refugees arrive in all regions but region r. The difference between this equilibrium path and the path without any refugee flows is the demand component for region r. Doing this for all regions in the sample allows me to calculate the supply and demand effects for all locations.

Manufacturing Employment. Figure 6 focused on income per capita. In Figure SM-10, I report the same decomposition for the local manufacturing share. First of all, note that an increase in the manufacturing employment share does not necessarily go hand-in-hand with an increase in income per capita if local technology accumulates slowly. In the short run, the manufacturing sector absorbs the rising population for a given level of technology. This reduces productivity due to selection as the marginal manufacturing worker is worse than the average worker.[42] In the long run, a larger manufacturing labor force triggers entry and hence an upward shift in the labor demand schedule.

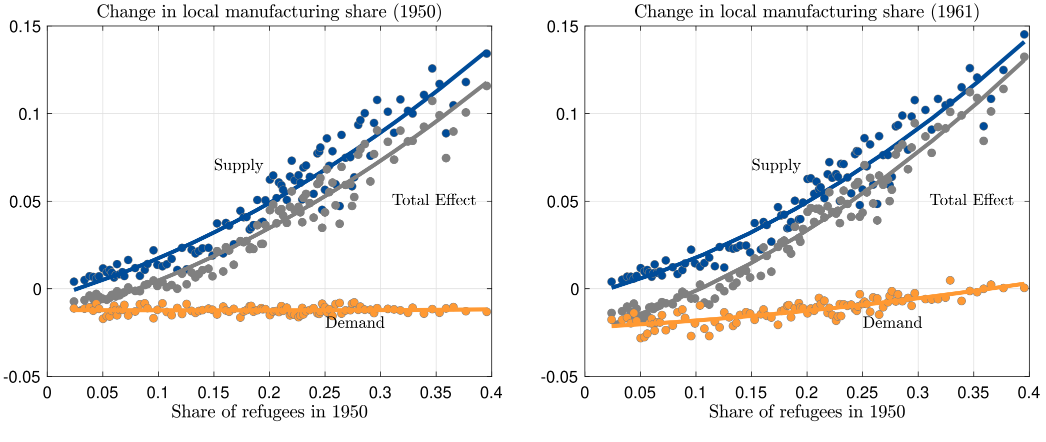

FIGURE SM-10.—The Impact of Refugee Inflows on Manufacturing Employment: Demand versus Supply. *Note*: The figure shows the spatial impact on the local manufacturing employment share in 1950 (left row) and 1961 (right row) as binned scatter plots for 100 percentiles of the refugee share in 1950. In each case, it displays the total effect, the supply effect (i.e., if refugees had only arrived in the particular region), and the demand effect (i.e., if refugees had only arrived in all other regions).

[42]To see this directly, suppose for simplicity that there is no type heterogeneity and that production labor H_{rPt} is proportional to the total labor force in the manufacturing sector H_{rMt}, which is the case along the SBGP. Equation (9) implies that $Y_{rMt} = \varsigma_2 \mathcal{Q}_{rt} N_{rt-1}^{\lambda\vartheta} H_{rPt}^{1+\vartheta}$ and the total supply of manufacturing human capital is given by $H_{rMt} = \Gamma_\theta L_{rt} \phi_M^{\frac{1}{\theta}} \pi_{rMt}^{\frac{\theta-1}{\theta}}$ (see (SM-6)). Output per manufacturing worker is then given by $\frac{Y_{rMt}}{L_{rt}\pi_{rMt}} \propto$

Second, the cross-sectional variation in manufacturing employment is almost entirely driven by the supply side. To see more clearly why this is the case, consider a special case of the model where (i) region r is small relative to the rest of economy and (ii) labor is homogeneous ($\phi_j^F = \phi_j^I$) and perfectly substitutable across sectors ($\theta \to \infty$). The first feature implies that local demand is dissociated from local factor prices. The second simplifies the algebra by abstracting from within-region substitution across industries. As I show in detail in Section OA-1.3 in the Online Appendix, the model then implies that (close to a balanced growth path) local market size H_{rPt} is given by

$$H_{rPt} = \varsigma \pi_{rMt} \times \underbrace{L_{rt}}_{\text{Supply}} \quad \text{where } \pi_{rMt} = h\left(\underbrace{\frac{N_{rt-1}^{(\sigma-1)\lambda\vartheta}}{T_r^{(\sigma-1)(1-\gamma)}}}_{\text{Dynamic CA}} \times \underbrace{L_{rt}^{(\vartheta+(1-\gamma))(\sigma-1)}}_{\text{Supply}} \times \underbrace{\frac{\mathcal{D}_{rM}}{\mathcal{D}_{rA}}}_{\text{Demand}}\right), \qquad \text{(SM-9)}$$

the function $h(\cdot)$ is strictly increasing, and $\mathcal{D}_{rj} = \alpha_j \sum_m \tau_{rm}^{1-\sigma} \overline{P}_{mjt}^{\sigma-1} Y_{mt}$.

Equation (SM-9) highlights why local labor supply plays a dominant role for the local creation of varieties and for the manufacturing employment share. For a given manufacturing employment share π_{rMt}, local market size is directly proportional to local labor supply L_{rt}. In addition, π_{rMt} is endogenously determined and depends on three objects. First, it depends on the region's comparative advantage, which is governed by the existing productivity in manufacturing N_{rt-1} relative to the endowment of land T_r. Second, local labor supply L_{rt} has a direct effect on sectoral employment, because the agricultural sector is subject to decreasing returns while manufacturing has increasing returns. If both sectors were to operate under constant returns to scale technologies, $\gamma = 1$ and $\vartheta = 0$ and π_{rMt} would be independent of L_{rt}. Finally, relative aggregate demand affects local market size through its effect on "market access."

SM-2.6. *Robustness of Quantitative Results*

In this section, I perform two robustness checks to my quantitative results.

The first concerns the measurement of income per capita. As highlighted in the main text, I could not find direct data on GDP pc in 1950. As a substitute, I had to rely on a measure of value-added taxes. This naturally raises the question whether the discrepancy between the small short-run and the larger long-run effects is due to these differences in measurement. To address this problem, I collected data on value-added taxes in the post-war period. The only year where I could find this information was for 1970. Because I also have data for GDPpc in 1970, I can compare implied elasticities with respect to refugee inflows.

In Table SM-12, I report a set of specifications similar to the ones reported in Table 6, that is,

$$\ln y_{rt} - \ln y_{r1935} = \delta_s + \beta \mu_{r1950} + \alpha \ln y_{r1935} + \phi \ln \ell_{r1939} + \varphi \text{wd}_r + x_r' \zeta + u_r,$$

$\mathcal{Q}_{rt} N_{rt-1}^{\lambda\vartheta} \phi_M^{\frac{1+\vartheta}{\theta}} L_{rt}^{\vartheta} \pi_{rMt}^{\frac{\vartheta(\theta-1)-1}{\theta}}$. While a bigger population L_{rt} increases output per worker, the effect of a bigger employment share depends on the relative strength between agglomeration forces ϑ and the deterioration of average human capital through selection θ, and a higher employment share reduces output per worker if $\vartheta < \frac{1}{\theta-1}$, that is, if the short-run scale elasticity ϑ is small relative to the dispersion in sector-specific efficiency units.

TABLE SM-12

LOCAL INCOME GROWTH AND REFUGEES: GDP VERSUS VALUE-ADDED TAXES.

	GDPpc growth				Growth in va taxes pc
	1935–1966	1935–1970	1935–1972	1935–1974	1935–1970
Share of refugees in 1950	0.404	0.453	0.498	0.456	0.057
	(0.228)	(0.180)	(0.173)	(0.171)	(0.784)
State FE	✓	✓	✓	✓	✓
ln pop dens 1939	✓	✓	✓	✓	✓
Wartime destr.	✓	✓	✓	✓	✓
Geography	✓	✓	✓	✓	✓
$\ln y_{1935}$	✓	✓	✓	✓	✓
N	329	329	329	329	325
R^2	0.897	0.882	0.898	0.887	0.285

Note: Standard errors are clustered at the level of 37 *Regierungsbezirke.* All specifications control for state fixed effects, population density in 1939, the share of wartime destruction, $\ln y_{r1935}$, the distance to the inner German border, and a dummy for whether a county is directly at the inner German border.

where $\ln y_{rt}$ denotes income per capita in region r at time t, l_{r1939} is population density in 1939, wd_r is the extent of wartime destruction, and x_r is a set of control variables. In columns 1–4, I estimate the semi-elasticity of refugee inflows on income per capita growth (as measured by GDPpc) for the years between 1966 and 1974. The relationship is positive, significant, and quantitatively very similar to the semi-elasticity in 1961 reported in Table 6. In the last column, I use value-added taxes per capita in 1970. In contrast to the GDPpc data, the coefficient is small, imprecisely estimated, and not statistically significantly different from zero. This discrepancy between the value-added and income per capita data highlights that the estimated income per capita response in 1950 is likely to be less reliable as a moment than many of the other moments I employ.

The second concerns my treatment of refugees' human capital endowment. For my baseline model, I assumed the parameters $(\chi, \phi_M^I, \phi_A^I)$ to be common across groups. While this is in line with the empirical finding that refugees and natives had a similar distribution of educational attainment (see Table 4), one might expect refugees to have less human capital than natives. First, given the reliance on agricultural employment in the Eastern Territories, the quality of education might be lower. Second, and more importantly, to the extent that refugees' skills were only partly transferable across regions, we would expect refugees' human capital to be less efficient.

I therefore extended the model to allow for sector-neutral shifts in the human capital distribution of refugees. Formally, the distribution of refugees' human capital of type ν in sector j is governed by the parameters $k\phi_j^\nu$, where k parameterizes the relative efficiency of refugee human capital (relative to natives). Because these human capital differences are sector neutral, sectoral employment shares conditional on the skill-type ν are still equalized between natives and refugees. However, refugees have lower earnings, and refugee inflows lower the average human capital of the local economy.

To analyze whether these considerations affect my baseline estimation, I re-estimate my model without using the 1950 GDP response as a moment and in the presence of such human capital differences. Even after adding k as an additional parameter and after dropping the 1950 GDP coefficients as a moment, the model still has more moments than parameters. The results of this exercise are contained in Table SM-13. In the first two

TABLE SM-13
ROBUSTNESS OF QUANTITATIVE RESULTS.

Structural Parameters			Moments			
	Baseline	Robustness		Data	Baseline	Robustness
ρ	5.020	5.021	Pop growth 39–50	1.359	1.119	1.172
λ	0.713	0.692	Pop growth 39–61	1.029	0.934	0.872
ϕ_A^I	0.839	0.839	Pop growth 39–80	1	0.914	0.834
ϕ_M^I	13.607	13.574	Manuf. growth 39–50	0.317	0.272	0.266
ψ	0.070	0.075	Manuf. growth 39–61	0.241	0.298	0.259
ε	2.123	2.233	Income growth 39–50	−0.083	−0.002	0.001
κ	−1.098	−1.085	Income growth 39–61	0.502	0.358	0.329
ϖ	0.050	0.052	Income growth 39–80	0.201	0.388	0.338
χ	0.586	0.585	Refugee share 1955	0.735	0.763	0.748
β	0.157	0.157	Refugee share 1961	0.586	0.555	0.535
α	0.24	0.24	Pop growth 50–55	−0.342	−0.183	−0.217
y_{33}^{East}	2.438	2.435	Distance and income growth	0.06	0.012	0.014
k	na	1.003	Agricul. prod. gap	1.5	1.517	1.515
			Earnings diff. of refugees	−0.075	−0.073	−0.071
			Share of outflows within states	0.67	0.611	0.624
			Std dev of resid. of inc growth	0.041	0.037	0.037

Note: The table reports the parameters and moments of the alternative estimation described in Section SM-2.6.

columns, I report the estimated parameters of my baseline model and this alternative specification. In the last three columns, I report the implied moments.

Table SM-13 shows that the results are very similar to the baseline calibration. There are two reasons for this to be the case. First, the baseline model already successfully replicated the fact that refugees have lower earnings than natives. Hence, it is not surprising that the estimated level of relative human capital k is close to unity. As for the short-run GDP effect: this moment mostly disciplines the elasticity of substitution ρ. However, ρ also affects the long-run GDP response and the change in the local manufacturing share. And given that the baseline model replicated the time series of these moments very well, there is no real cost in matching the small short-run GDP response.

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