The Long-Run Effects of Immigration: Evidence Across a Barrier to Refugee Settlement

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Motivation

What are the long-term economic effects of immigration?

- Know a lot about short- and medium-run effects
- Growing literature on long-run effects
- Challenging question due to the selection of migrants into places

This Paper

We exploit a large natural experiment to study long-term economic effects of migration on host regions:

- Between end of WWII and 1947, millions of people were displaced from Central and Eastern Europe to what became West Germany in 1949
  - One of the largest refugee waves in modern times
- Discontinuity in the spatial distribution of refugees within Germany
  - US admitted refugees into their occupation zone while France restricted access
- Spatial Regression Discontinuity Design

Main Findings

- Arrival of refugees resulted in a strong and persistent increase in population density on US side of the 1945-49 occupation zone border
- Coincides with higher rents, productivity, income, wages, and education today
- Suggests that arrival of refugees triggered agglomeration economies that build up gradually and range beyond municipality borders
- Evidence for three mechanisms behind agglomeration effect:
  - Labor market pooling
  - Knowledge spillovers
  - Reduced transportation costs

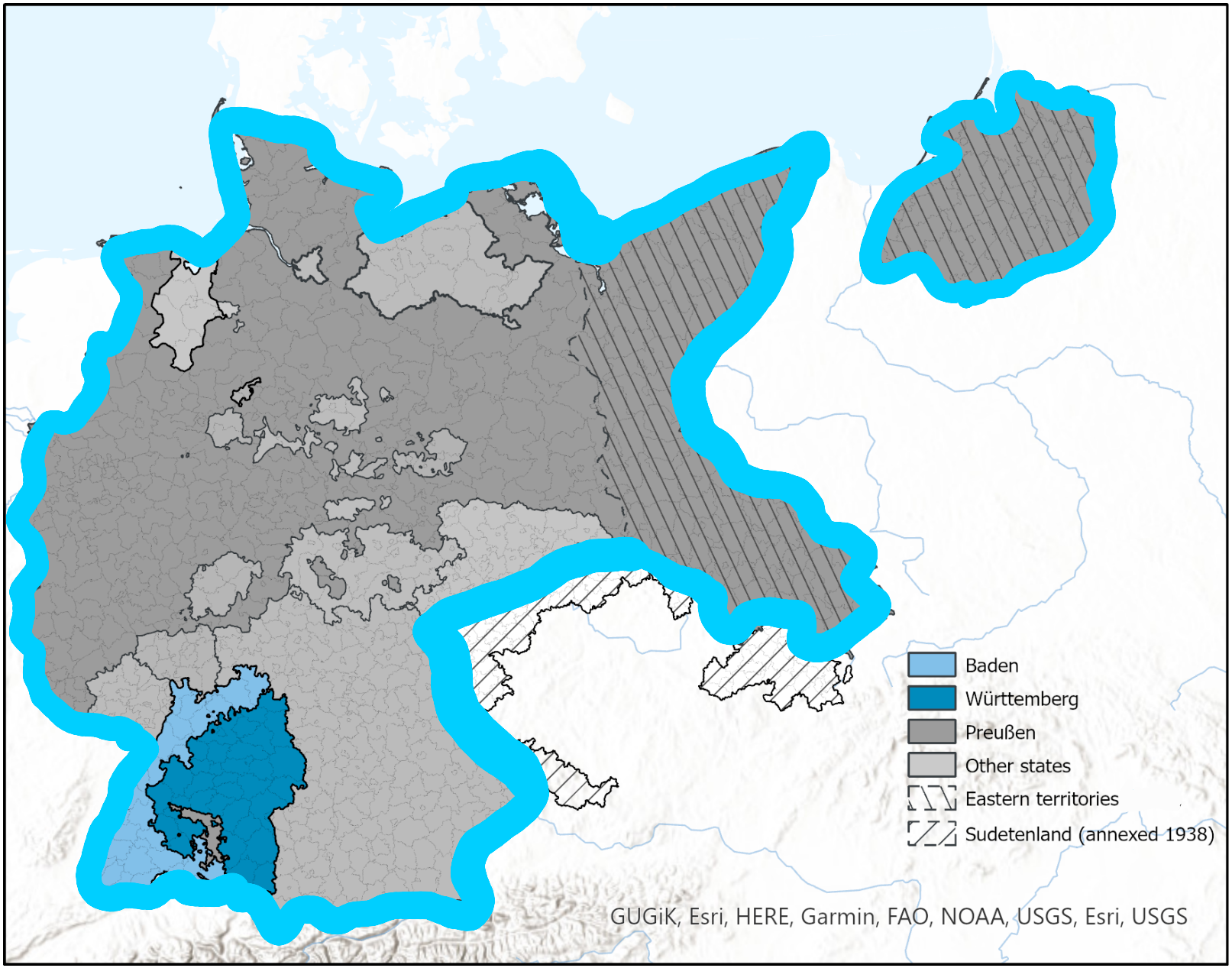
Literature

- **(Long-term) effects of migration**: Peri (2012), Hornung (2014), Sequeira et al. (2020), Peters (2022), Burchardi and Hassan (2013), Burchardi et al. (forthcoming)
- **Post-WWII population in Germany**: Schumann (2014), Braun et al. (2014, 2021), Wyrwich (2020), Peters (2022), ...
- **Spatial Regression Discontinuity**: Dell (2010), Dell et al. (2018), Van Patten and Mendez (2022), ...
- **Agglomeration Forces and Spillovers**: Duranton and Puga (2004), Rosenthal and Strange (2004), Combes and Gobillon (2015), Ahlfeldt et al. (2015), Greenstone et al. (2010), Rosenthal and Strange (2020), Dauth et al. (2022), ...

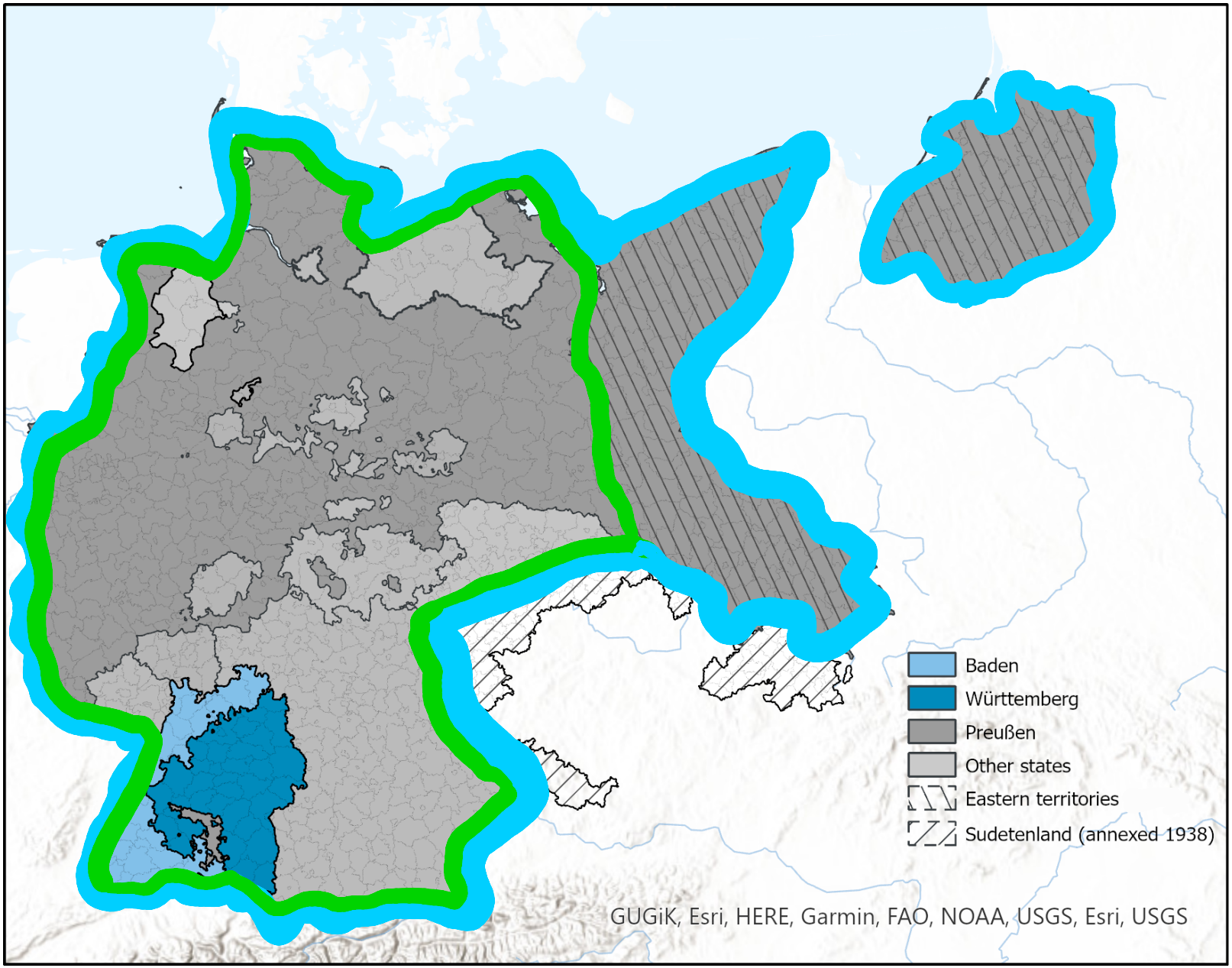
Overview

Overview

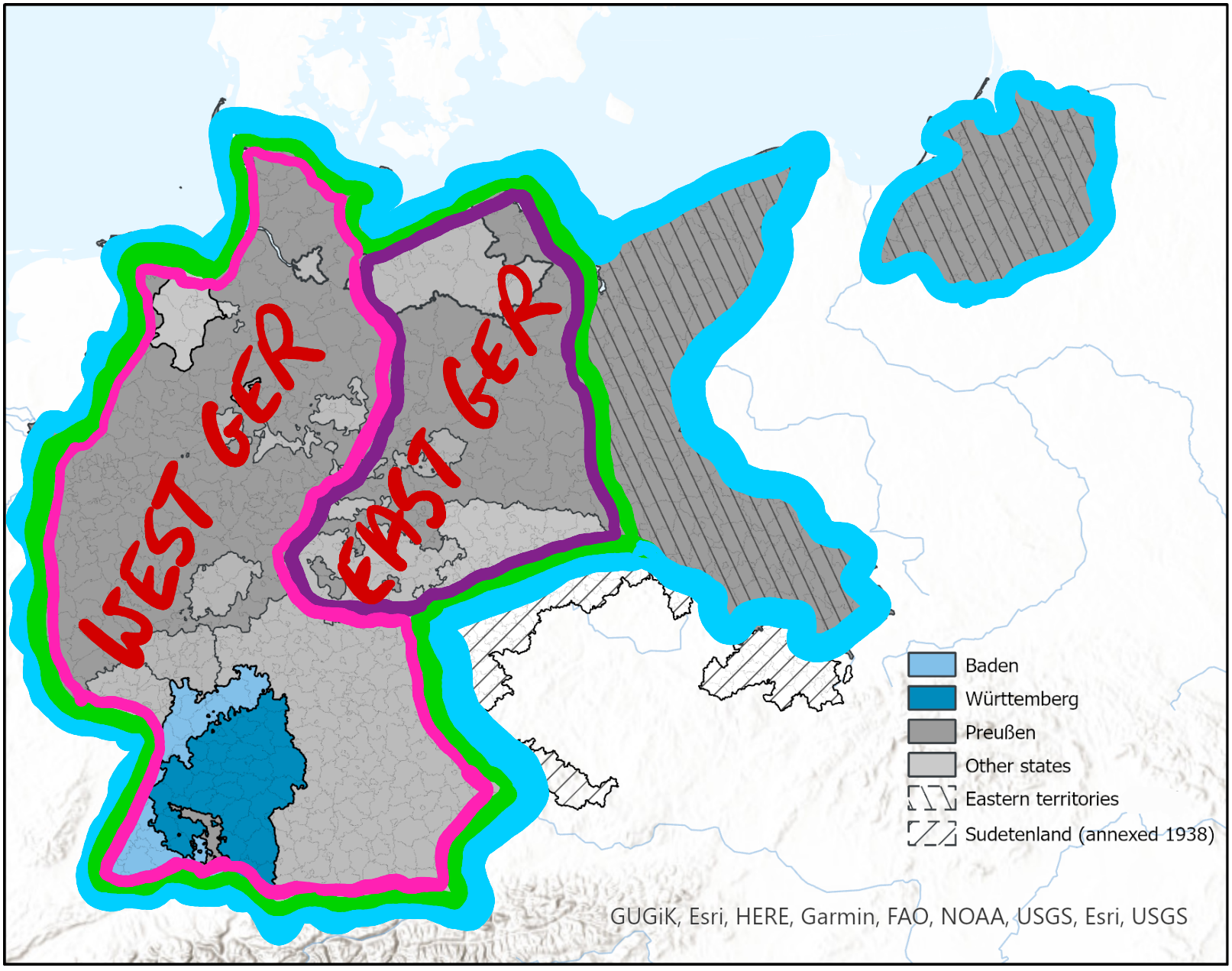
Germany in 1937



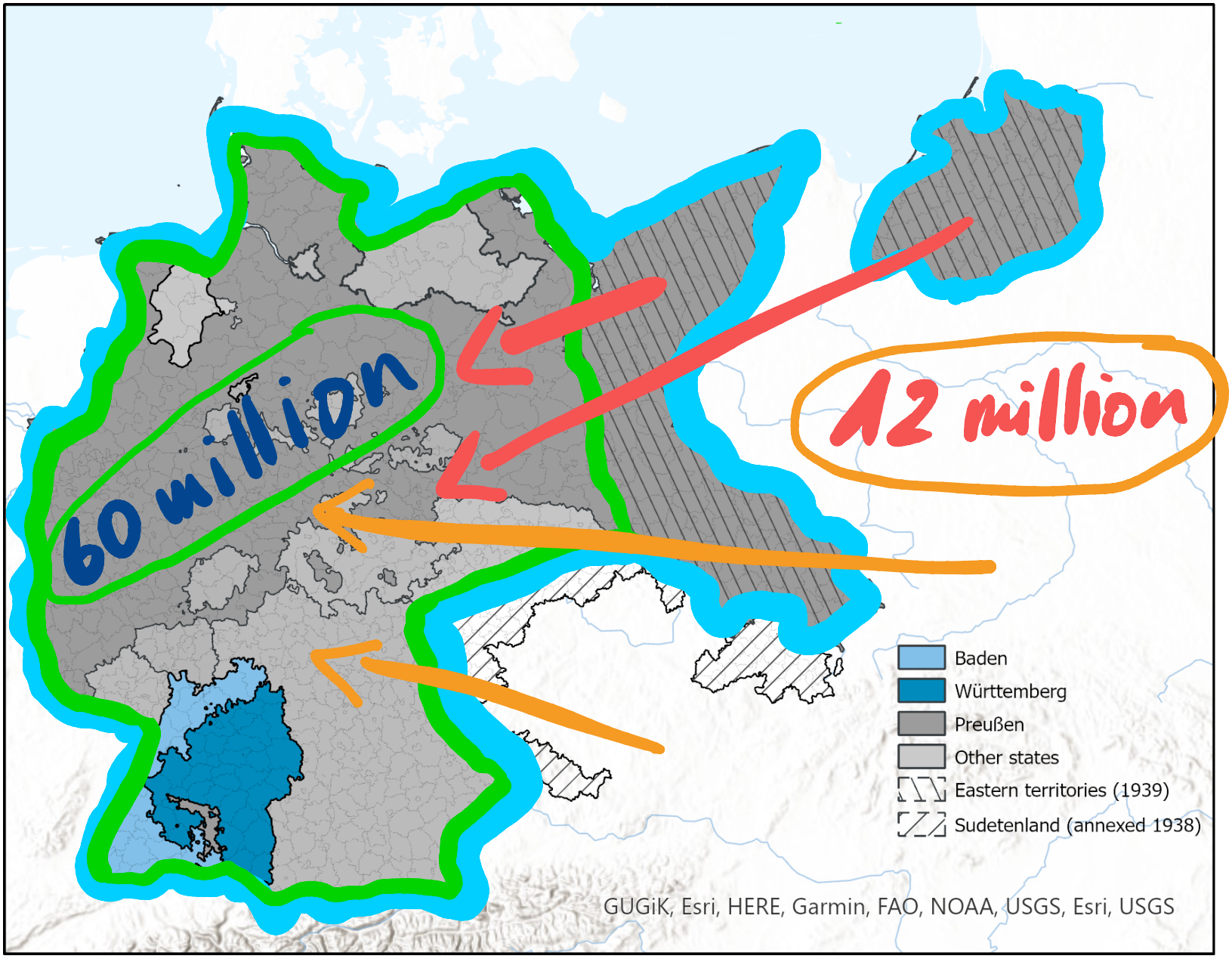
Germany in 1945 (end of 1939-45 WW2)



Germany 1949-1990

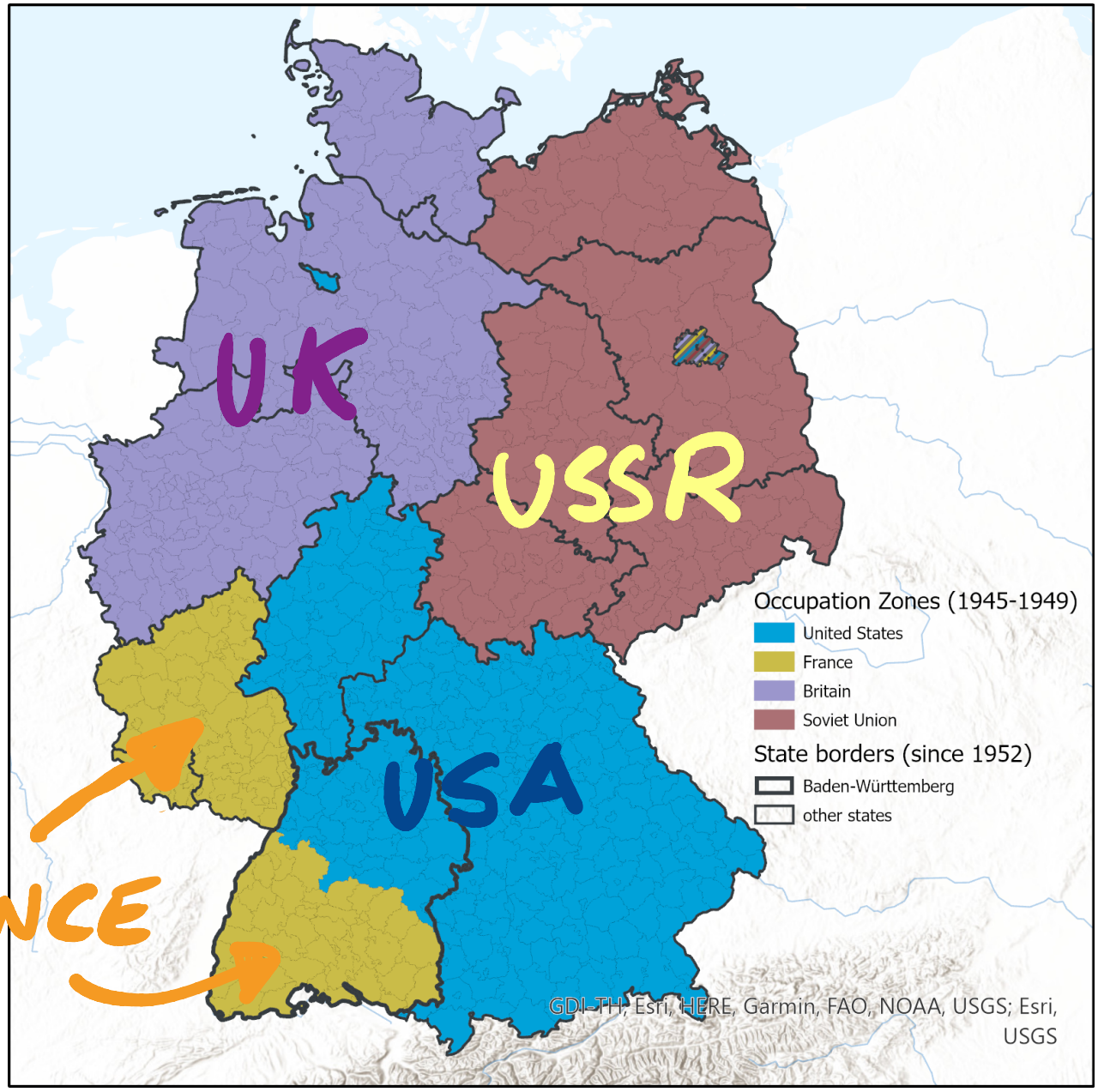


Germany in 1945–49 (refugees/repellees)



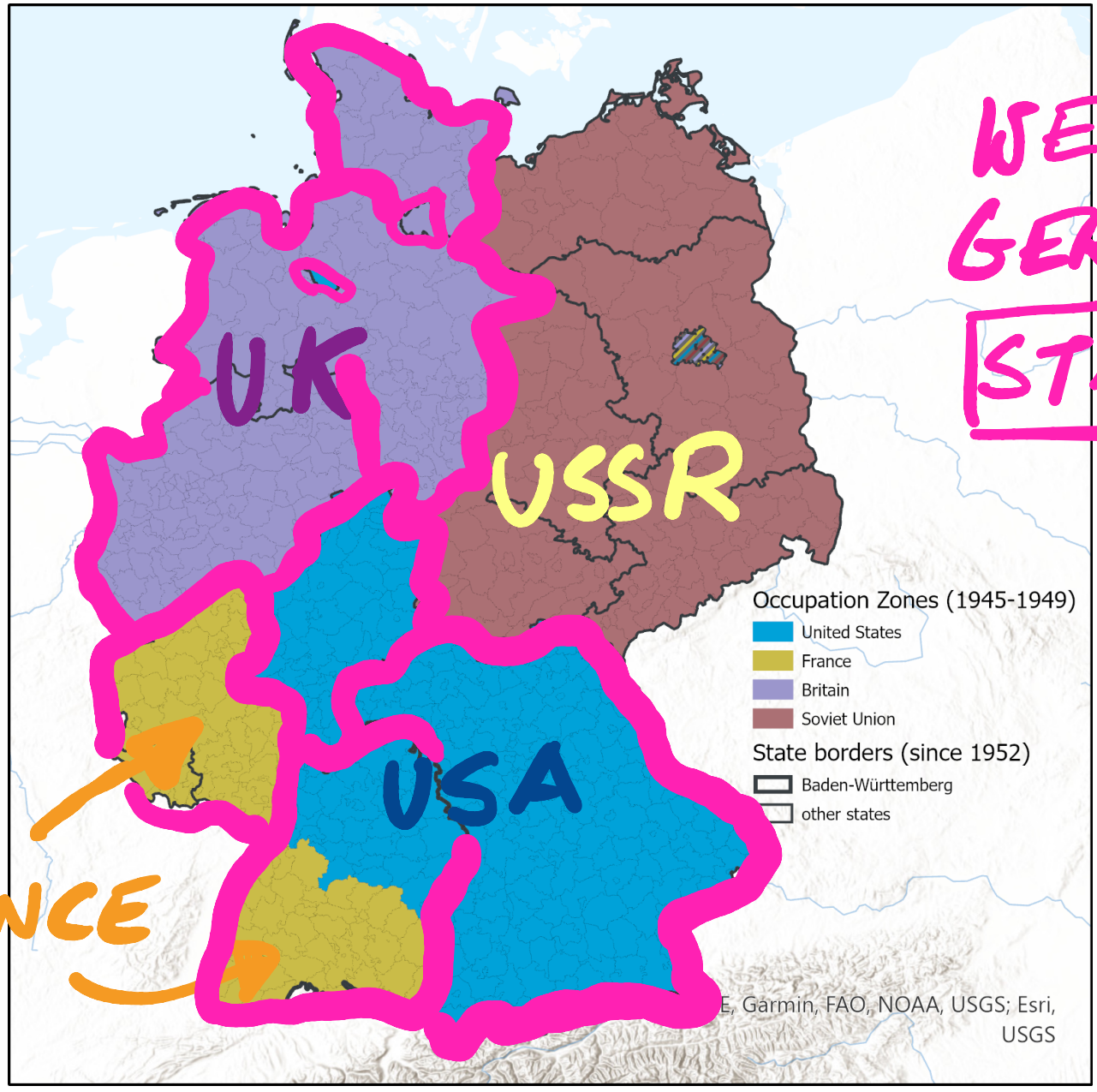
Arrival of Refugees

Germany – 1945-1949 Allied Occupation Zones

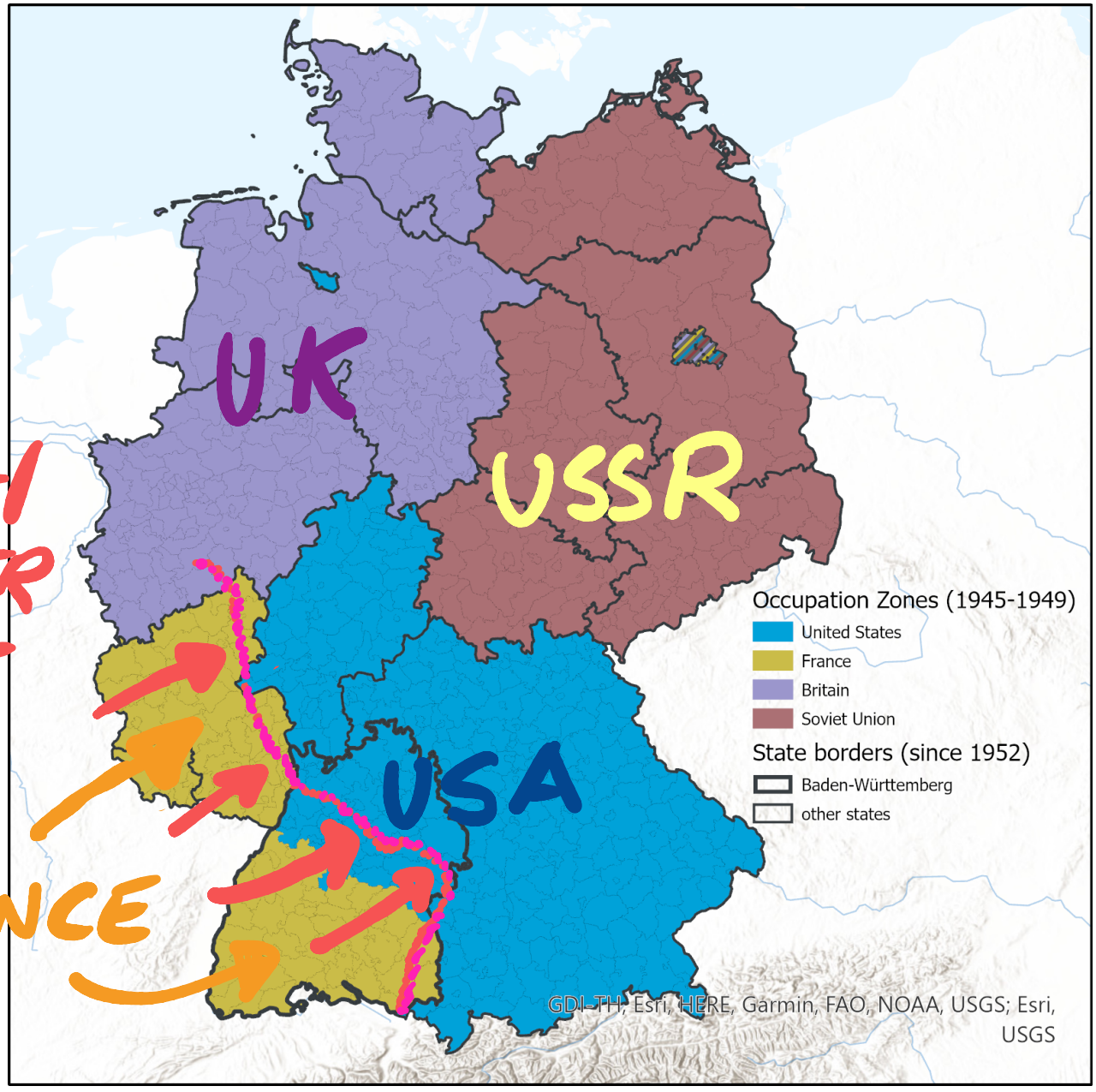


Border Post – French and US occupation zone

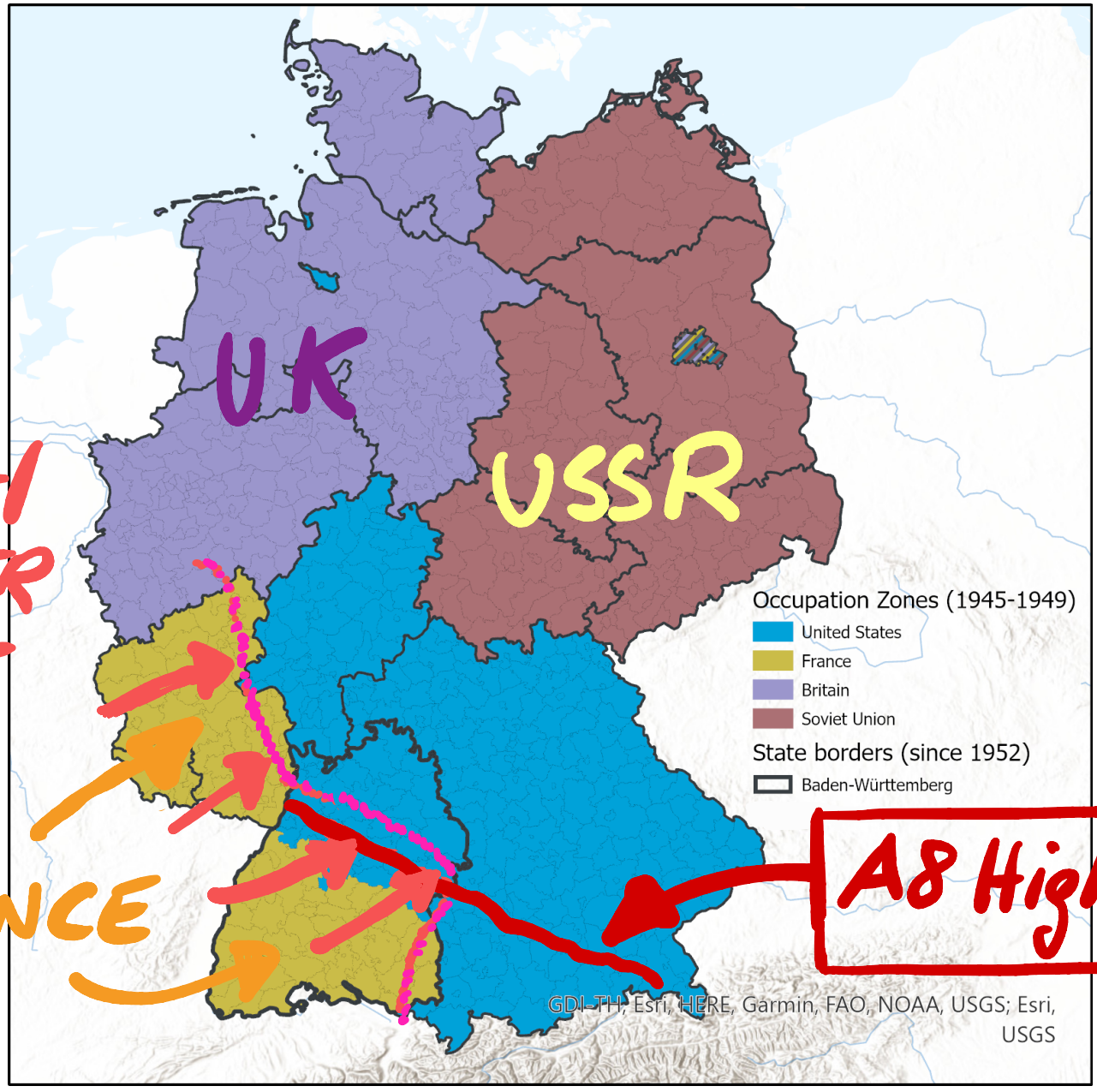
Germany – 1945-1949 FRENCH Occupation Zone



Germany – 1945-1949 FRENCH Occupation Zone



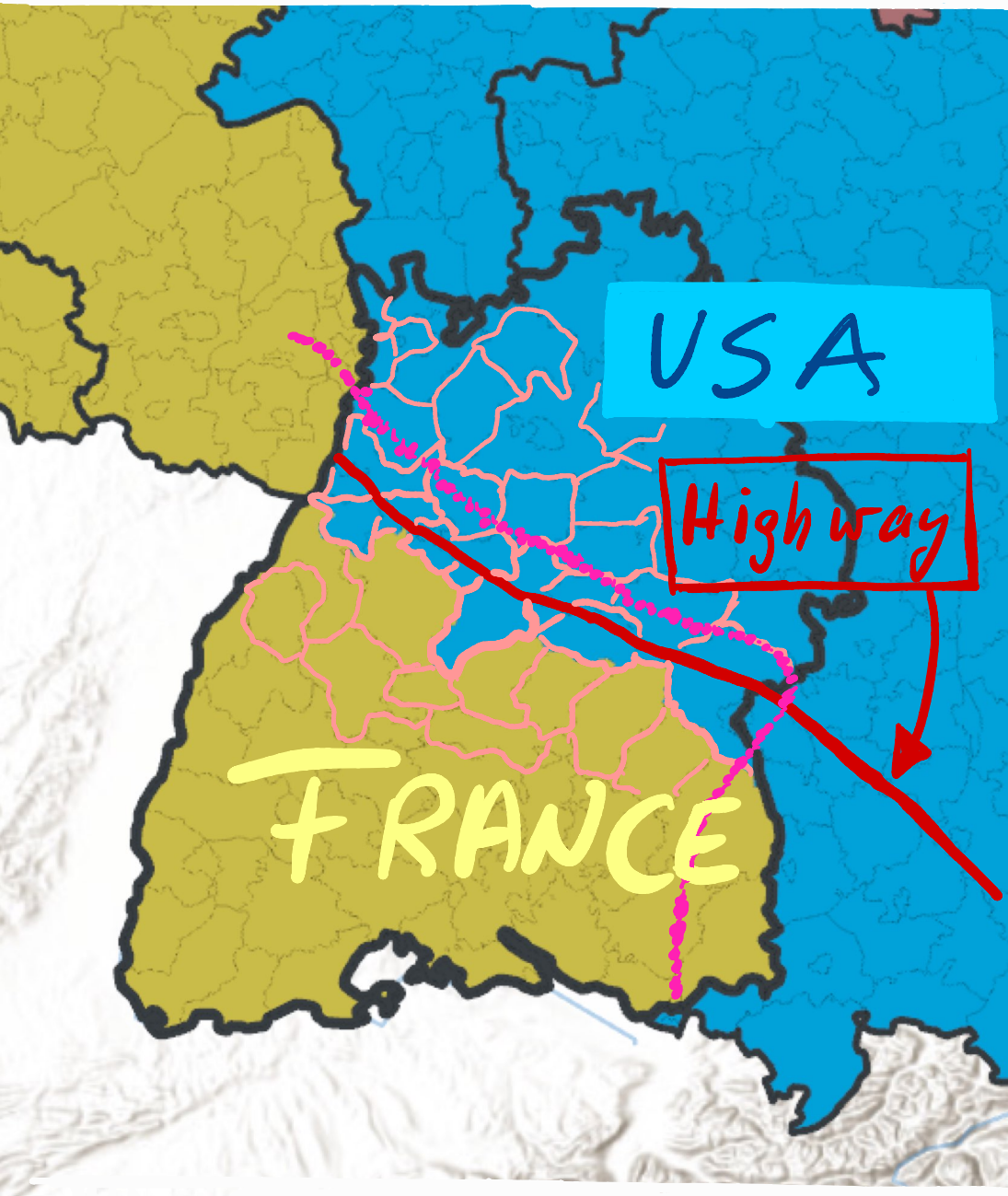
Germany – 1945-1949 FRENCH Occupation Zone



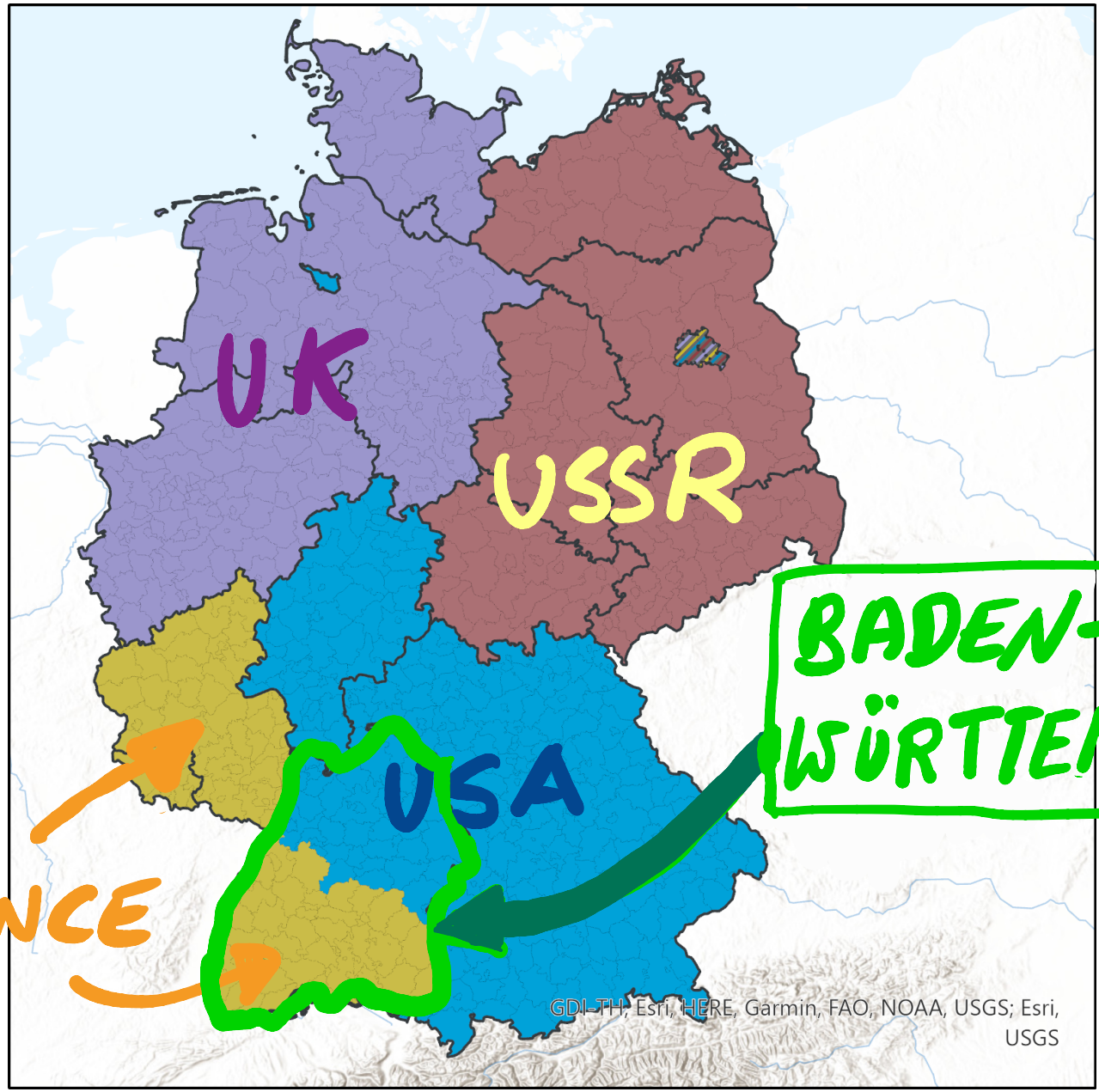
SPRING/ SUMMER 1945

FRANCE

A8 Highway


USA
Highway
FRANCE

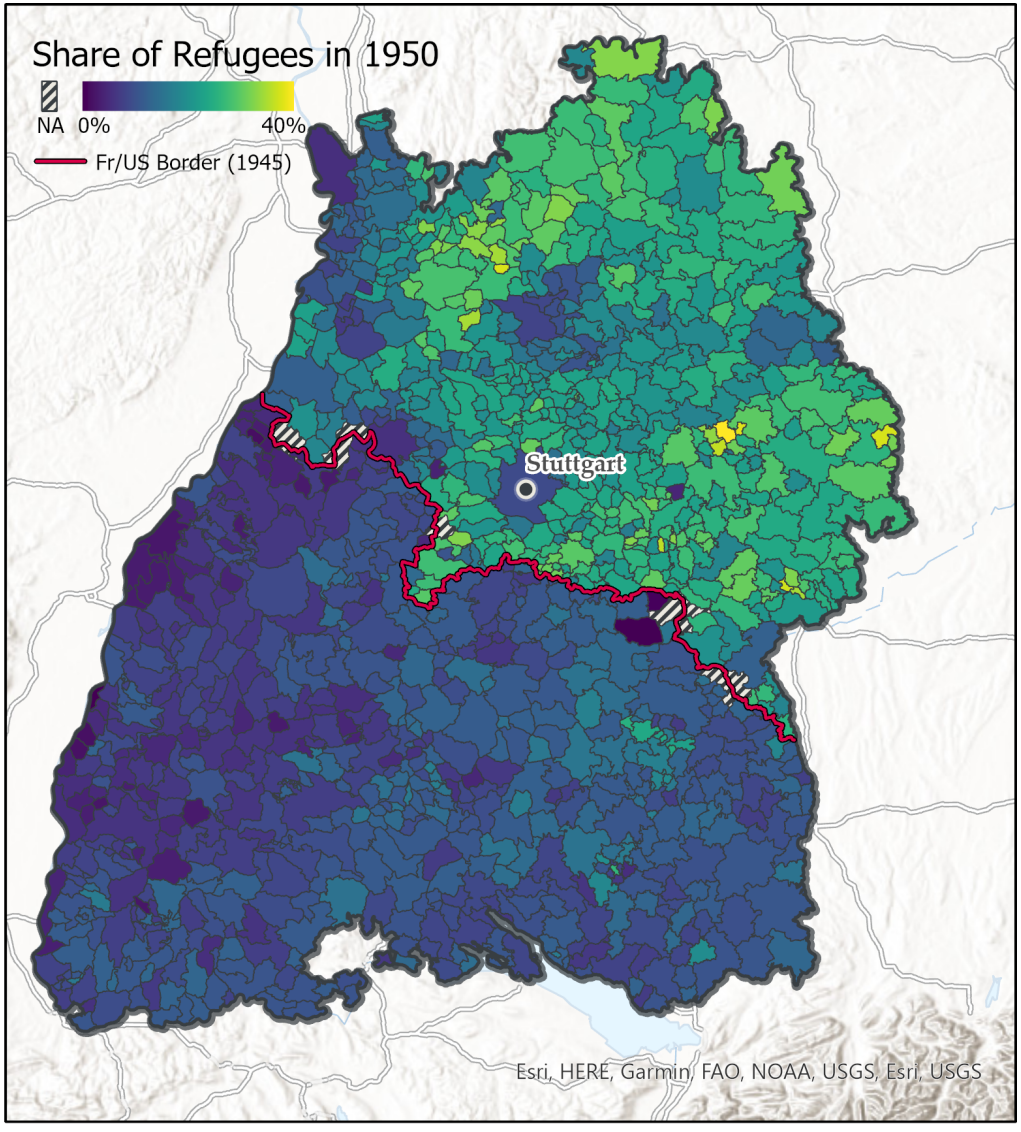
Germany – 1945-1949 Allied Occupation Zones



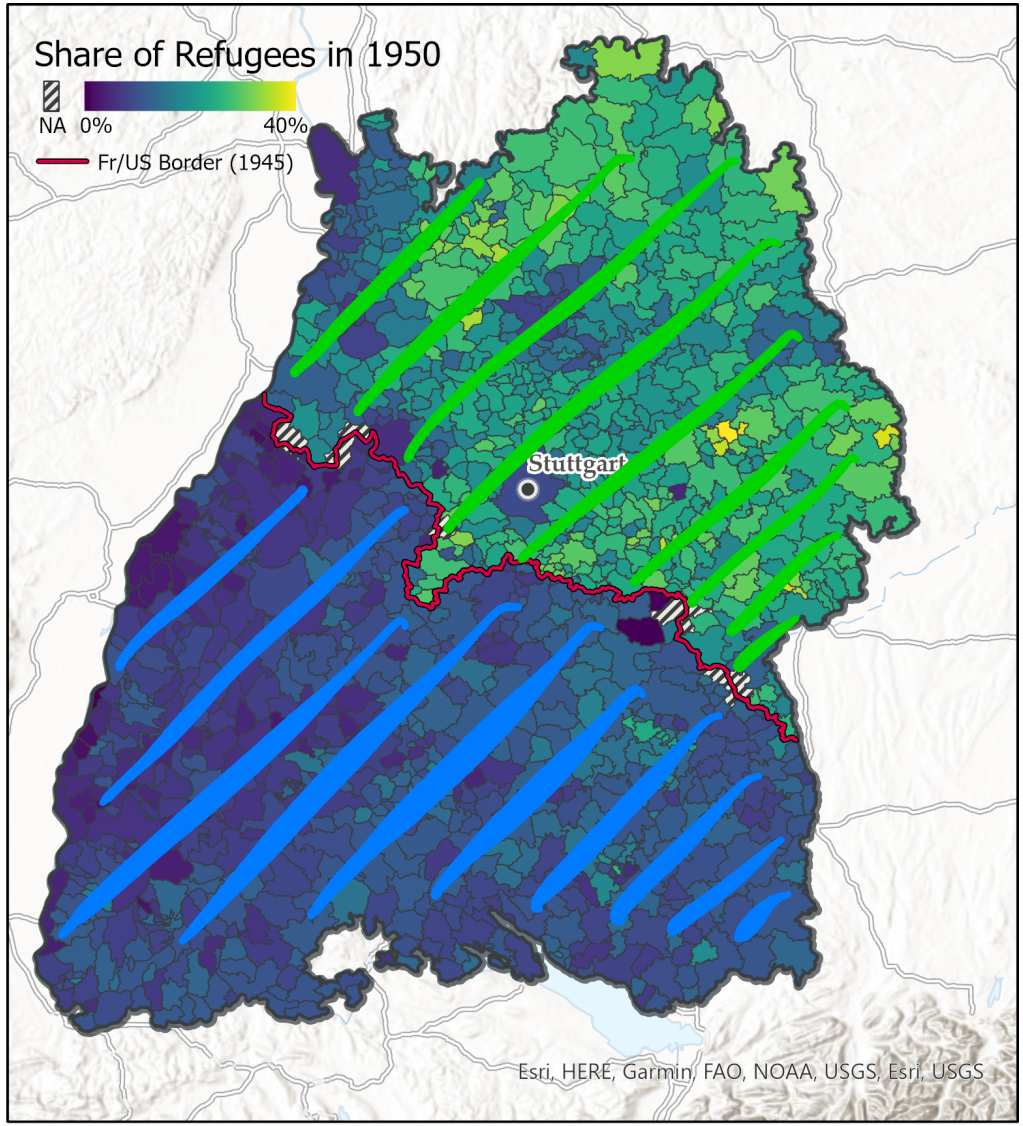
No Refugees in French Occupation Zone

- The French occupation zone did not let refugees in (Staatssekretariat für das französisch besetzte Gebiet Württembergs und Hohenzollerns 1946)
- Reasons given:
  - did not participate in Potsdam conference on distribution of refugees
  - cannot deal with administrative and economic burden of refugees given situation in France
- Result is that the state of Baden-Württemberg today consists of a region which allowed refugees in after WWII (former US occupation zone) and one that did not (former French occupation zone)

Baden-Württemberg – Share of Expellees in 1950 Census



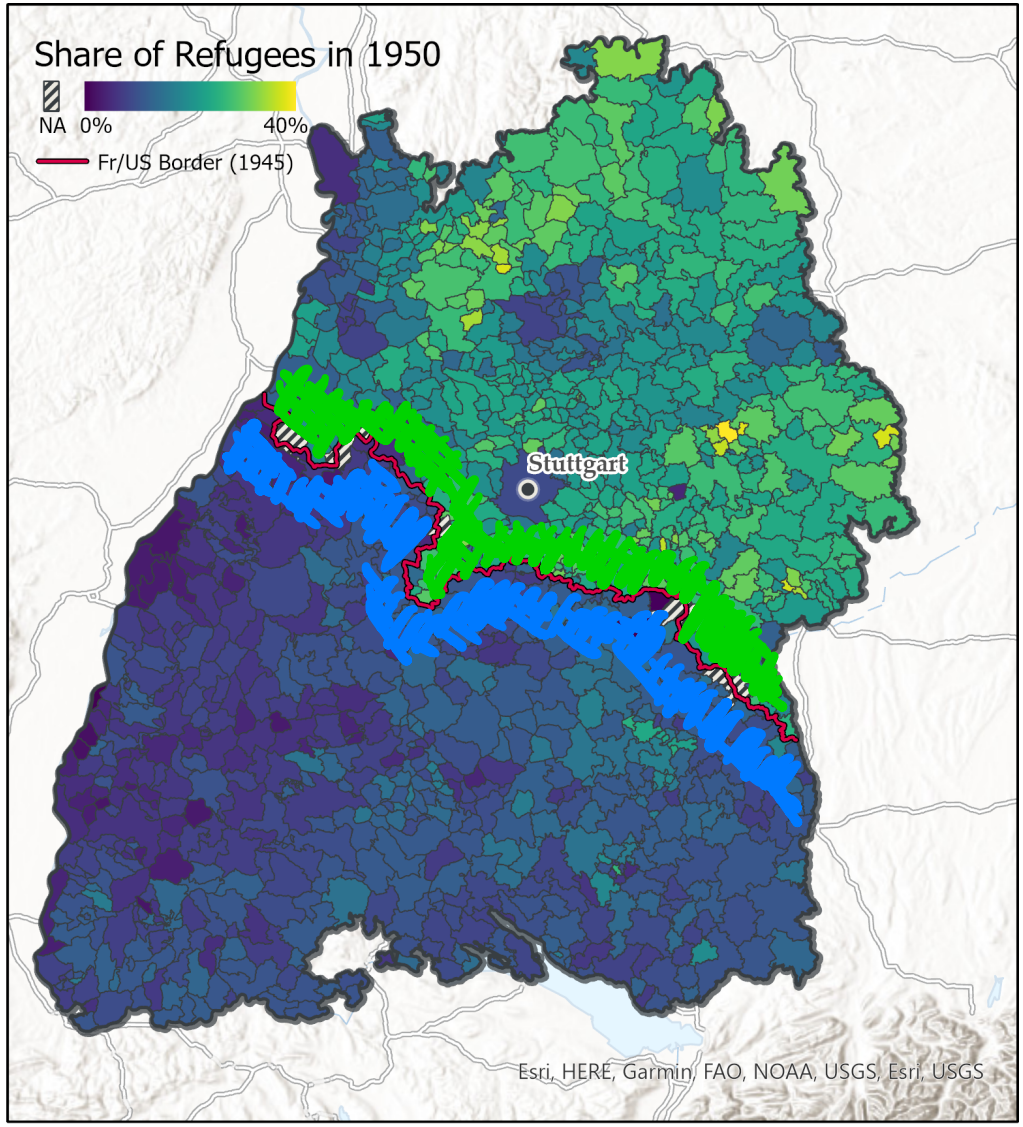
Baden-Württemberg – Share of Expellees in 1950 Census



pop share refugees

+12 pp

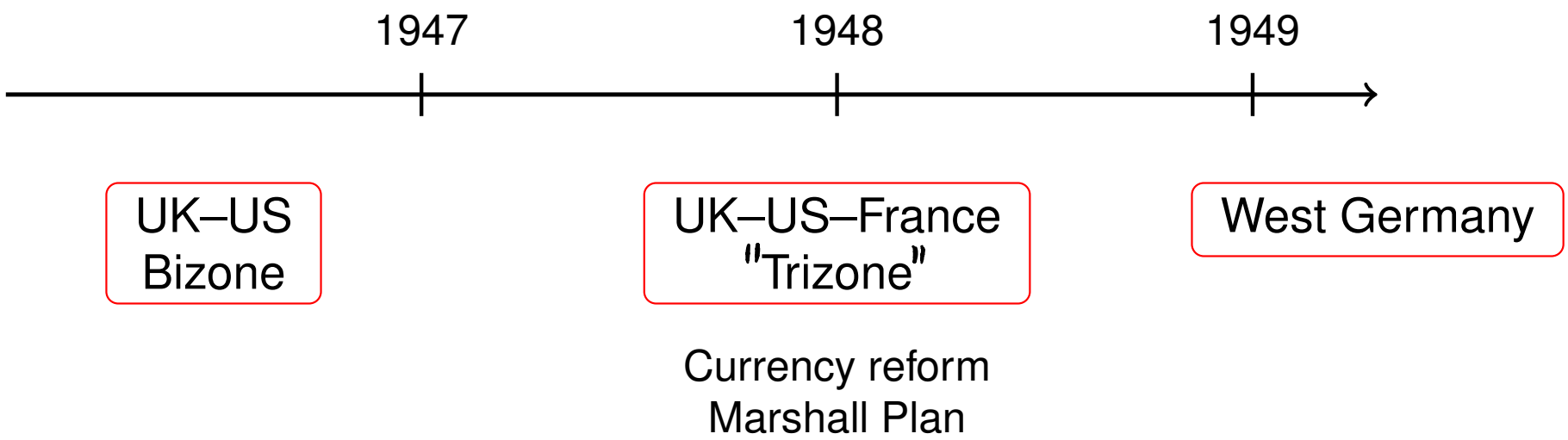
Baden-Württemberg – Share of Expellees in 1950 Census



pop share refugees

+12 pp

Occupation Zones in Post–WW2 Germany (1945–49)



① Economic Effects at Border Today

② Explanations:

→ Agglomeration Effects

→ A8 Highway

→ Vs Policies/Institutions 1945-49

Overview

Data

- Historical Census Data from 1871 to 1970/71
- Modern data on productivity, income, education at municipality level from German Statistical Offices
- Firm-level data from manufacturing survey (AFiD data)
- Property-level data on rents and house characteristics (Census 1987 and ImmobilienScout24 2008-16)
- Individual-level data on health, education, norms, and attitudes from German Socio-Economic Panel (SOEP)
- School-level data on language acquisition from Statistical Office Baden-Wuerttemberg
- Lists of war-time destruction, industry dismantling, military bases, food rations, ...
- Geo-located patents since 1871 (PatentCity Database), digitized historical road maps

Spatial Regression Discontinuity Design

$$y_m = \alpha + \gamma USZoneLocation_m + f(\text{geographic location}_m) + \sum_i^S seg_m^i + X_m'\beta + \epsilon_m \quad (1)$$

0 or 1

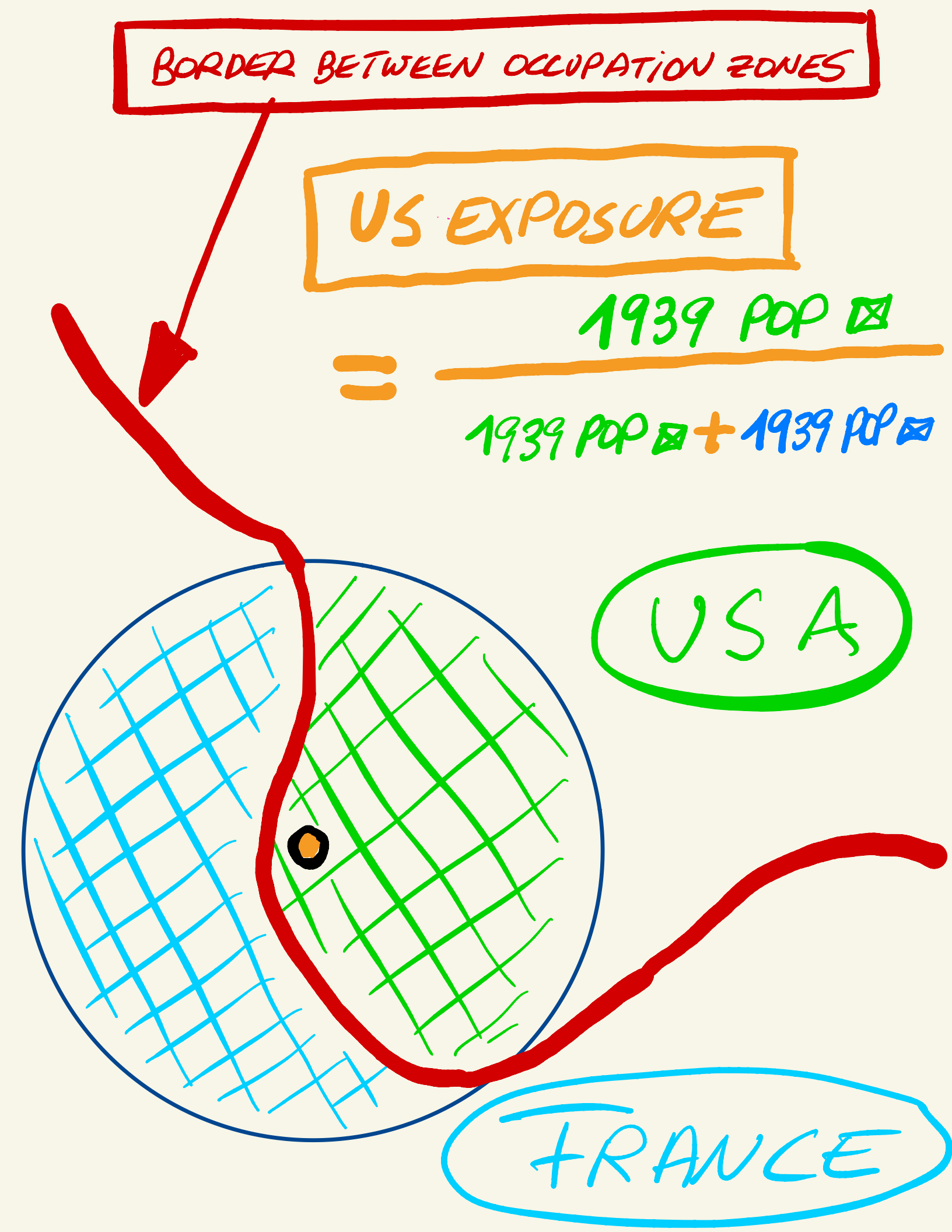
- baseline specification: municipalities within 15km of the border
- local linear RD polynomial in latitude and longitude with weights proportional to inverse distance to the border
- X_m includes polynomials in distance to Stuttgart and highway exit
- Conley (1999) standard errors to account for spatial error correlation structure

Exposure to US Zone

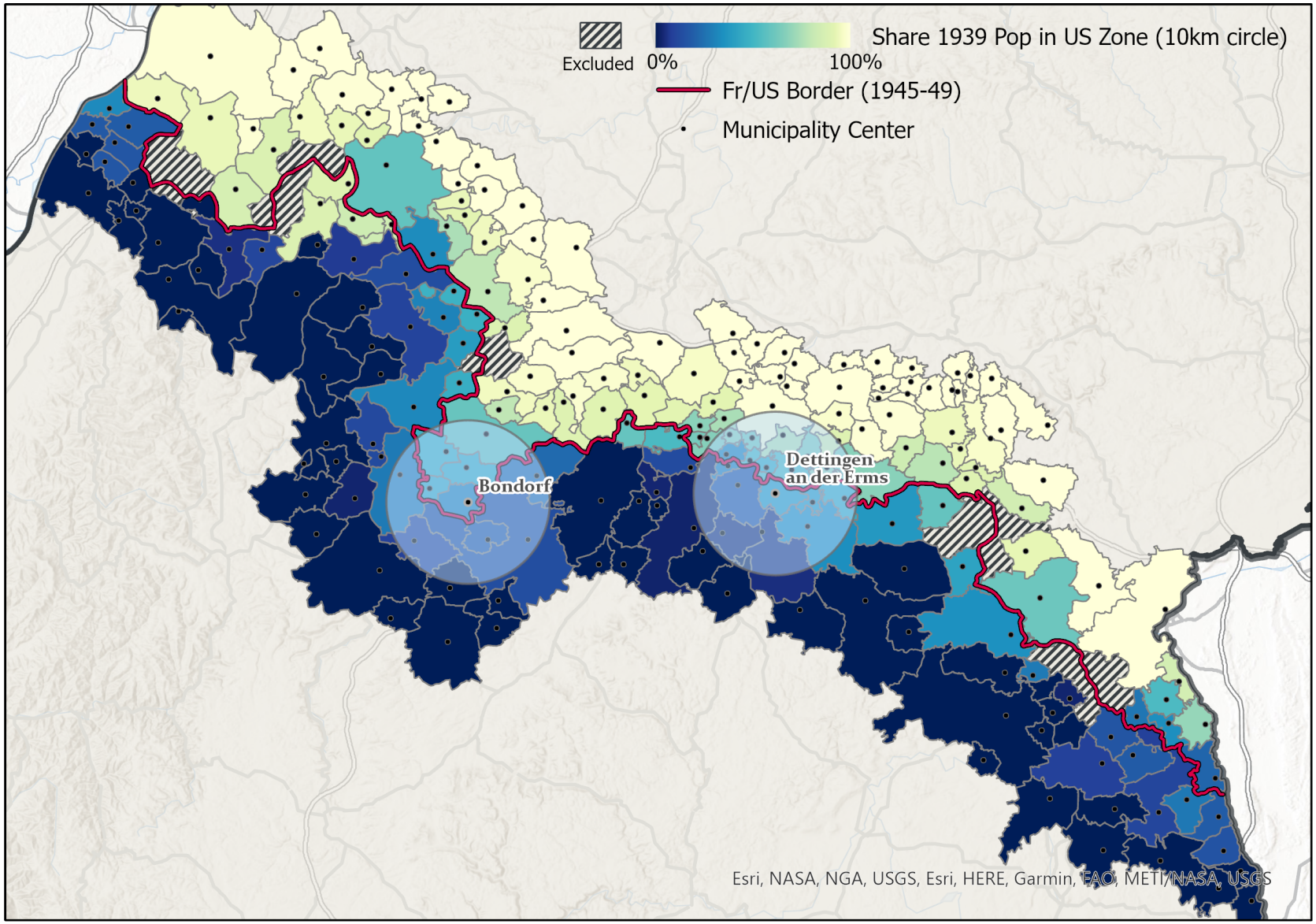
- Treatment effects might range beyond the municipality
- Include a measure of exposure to the US Zone (and hence, the arrival of refugees)

$$y_m = \alpha + \gamma USZoneLocation_m + \delta USZoneExposure_m + f(\text{geographic location}_m) + \sum_i^S seg_m^i + X_m'\beta + \epsilon_m \quad (2)$$

- $USZoneExposure_m$: share of 1939 population in US zone within 10km radius around center of m


BORDER BETWEEN OCCUPATION ZONES
US EXPOSURE
=
1939 POP ☒
1939 POP ☒ + 1939 POP ☒
USA
FRANCE

Exposure to US Zone - Map

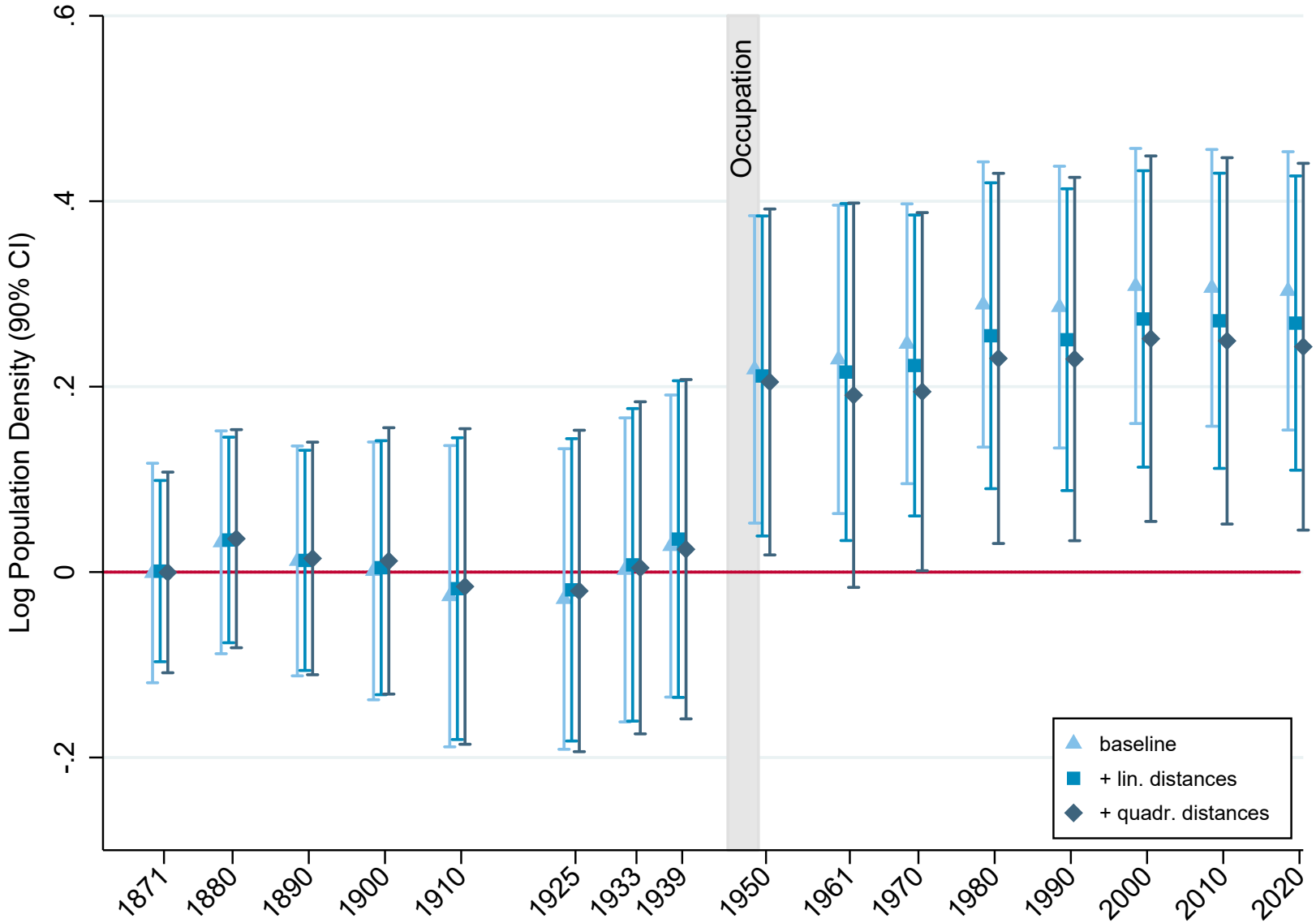


Overview

More Refugees on former US side in 1950

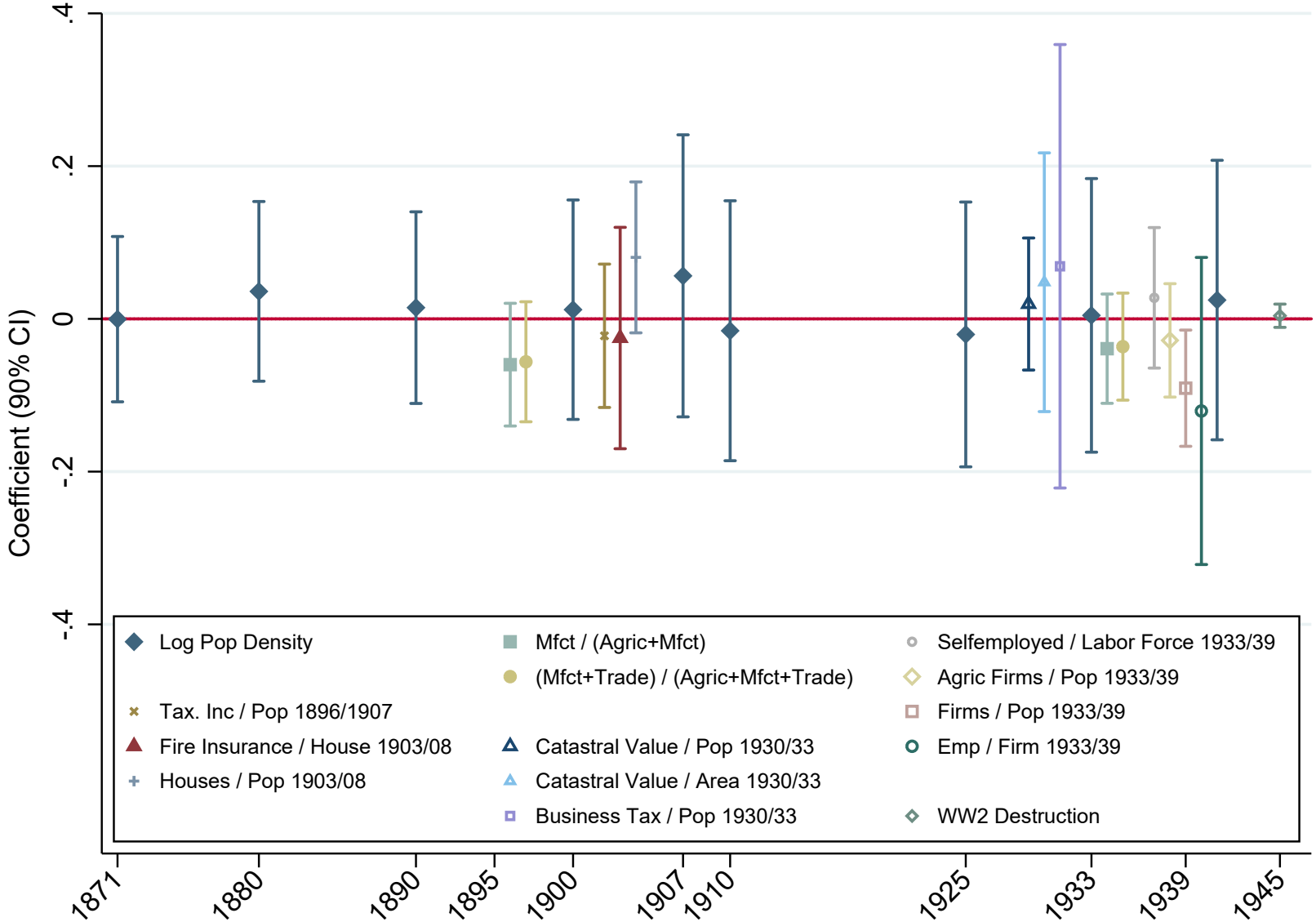
	(1)	(2)	(3)	(4)
	Refugees / Pop		Refugees / non-Refugees	
US Zone	0.126***	0.122***	0.180***	0.177***
	(0.009)	(0.012)	(0.013)	(0.020)
Share 1939 Pop in US Zone (10km radius)		0.013		0.012
		(0.025)		(0.038)
Municipalities	216	216	216	216

Population Density Shock is Strong and Persistent



Overview

No Differences in pre-WWII Economic Characteristics



Overview

Introduction

Historical Background

Data & Empirical Framework

Results

- Refugees & Population ✓
- Economic Characteristics before WWII ✓
- Long-term Economic Outcomes ←
- Agglomeration Mechanisms
- Alternative Mechanisms

Long-term outcomes: Productivity and Wages

	(1)	(2)	(3)	(4)
Panel A: Aggregate Productivity				
	2007-2018			
US Zone	0.130**	0.053		
	(0.057)	(0.065)		
Share 1939 Pop in US Zone (10km circle)		0.270*		
		(0.148)		
Municipalities	219	219		
Panel B: Hourly wages and value added in manufacturing establishments				
	Hourly Wages 1995-2012		Value Added / hr. 1995-2012	
US Zone	0.076**	0.045	0.074	-0.006
	(0.034)	(0.037)	(0.052)	(0.064)
Share 1939 Pop in US Zone (10km radius)		0.105**		0.267***
		(0.054)		(0.098)
Observations	3,415	3,415	3,402	3,402

Bandwidth | Standard Errors | RD Polynomial | One-dimensional RD | Boundary Segments | Radius | Placebo: Highways | Placebo: Bavaria

Long-term outcomes: Rents and Income

	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Rents						
	2008-16		1987		1970	
US Zone	0.120***	0.011	0.080***	0.011	0.061*	0.030
	(0.026)	(0.027)	(0.015)	(0.026)	(0.033)	(0.036)
Share 1939 Pop in US Zone (10km circle)		0.232***		0.155***		0.109*
		(0.057)		(0.042)		(0.063)
Observations	314,765	314,765	255,969	255,969	213	213
Panel D: Income per capita						
	2007-2017		1980			
US Zone	0.015	-0.022	-0.000	-0.048		
	(0.018)	(0.023)	(0.032)	(0.032)		
Share 1939 Pop in US Zone (10km circle)		0.131***		0.170***		
		(0.044)		(0.054)		
Municipalities	219	219	219	219		

Bandwidth | Standard Errors | RD Polynomial | One-dimensional RD | Boundary Segments | Radius

Placebo: Highways | Placebo: Bavaria

Long-term outcomes: Education

	(1)	(2)	(3)	(4)	(5)	(6)
Panel E: University Education						
	1999-2020		1989-1998		1970	
US Zone	0.013**	-0.001	0.006*	-0.004	-0.008	-0.014
	(0.006)	(0.006)	(0.004)	(0.004)	(0.007)	(0.009)
Share 1939 Pop in US Zone (10km circle)		0.049***		0.036***		0.020
		(0.012)		(0.008)		(0.015)
Municipalities	219	219	219	219	219	219

Placebo: Highways | Placebo: Bavaria

Long-term effects: Taking stock

- Arrival of refugees has raised population density on the former US side above population density on the former French side
- Despite higher rents this effect persists until today
- Well-understood explanation for coincidence of higher rents and higher population: Agglomeration Economies
  - input sharing, labor-market matching, and knowledge spillovers can translate greater density into higher productivity and wages (e.g., Duranton and Puga 2004)
  - higher productivity and wages, in turn, sustain greater density despite higher rents
- Consistent with this explanation we find higher productivity, wages, and income
- We now proceed to document the presence of the different agglomeration mechanisms

Overview

Input Sharing

- Denser populated areas could benefit from lower transportation costs and use of common public goods
- We find evidence that municipalities become better connected
- There are also gains to a larger variety of goods

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Shared Inputs						
	Road Distance to nearest highway exit in km					
	Δ % 1940-2015		1940		2015	
US Zone Location	-0.054*	-0.011	-0.58	-1.14*	-1.55***	-1.52***
	(0.030)	(0.034)	(0.507)	(0.395)	(0.534)	(0.289)
US Zone Exposure (10km)		-0.151**		1.99*		-0.115
		(0.066)		(1.812)		(1.118)
Observations	217	217	217	217	218	218
	Land Use		Intermediate Input Use			
	Transport Infrastructure 1980-2021		Intermediate Goods / Revenue		(Intermediate Goods + Energy) / Revenue	
US Zone Location	0.008**	0.003	0.034**	0.040**	0.035**	0.041***
	(0.003)	(0.004)	(0.014)	(0.016)	(0.014)	(0.016)
US Zone Exposure (10km)		0.019**		-0.021		-0.020
		(0.010)		(0.262)		(0.026)
Observations	5,856	5,856	3,866	3,866	3,866	3,866

Labor Market Matching

- Thicker labor markets could lead to better matches of workers and firms
- Dauth et al. (2022) find more positive assortative matching (PAM) in denser local markets (measured by the correlation between AKM worker and firm fixed effects within a local market)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: Labor Market Matching						
	Positive Assortative Matching (1985-2014)		Size of LLM (1985-2014) Log Employment		Commuters to other zone (2021)	
US Zone Location	0.0452**	0.0414	1.78***	1.46***	-0.102***	-0.111***
	(0.0227)	(0.0290)	(0.375)	(0.375)	(0.031)	(0.042)
US Zone Exposure (10km)		0.0134		1.13**		0.033
		(0.0560)		(0.457)		(0.051)
Observations	1070	1070	1070	1070	217	217

Labor Market Matching

	(1)	(2)	(3)	(4)
Panel A: Municipality Level				
	Dauth et al. (2022)	+ our controls	+ US Dummy	IV
Pop Dens	0.0421***	0.0609***	0.0563***	0.1490**
	(0.0072)	(0.0171)	(0.0172)	(0.0572)
US Zone Location			0.0281	
			(0.0220)	
Observations	1075	1070	1070	1070
First Stage F-Stat				51.46
Panel B: LLM Level				
	Dauth et al. (2022)			IV
Pop Dens	0.0525***		0.0150	0.0802***
	(0.0191)		(0.0361)	(0.0166)
US Zone Exposure of LLM		0.0716***	0.0583	
		(0.0271)	(0.0495)	
Observations	55	55	55	55
First Stage F-Stat				74.67

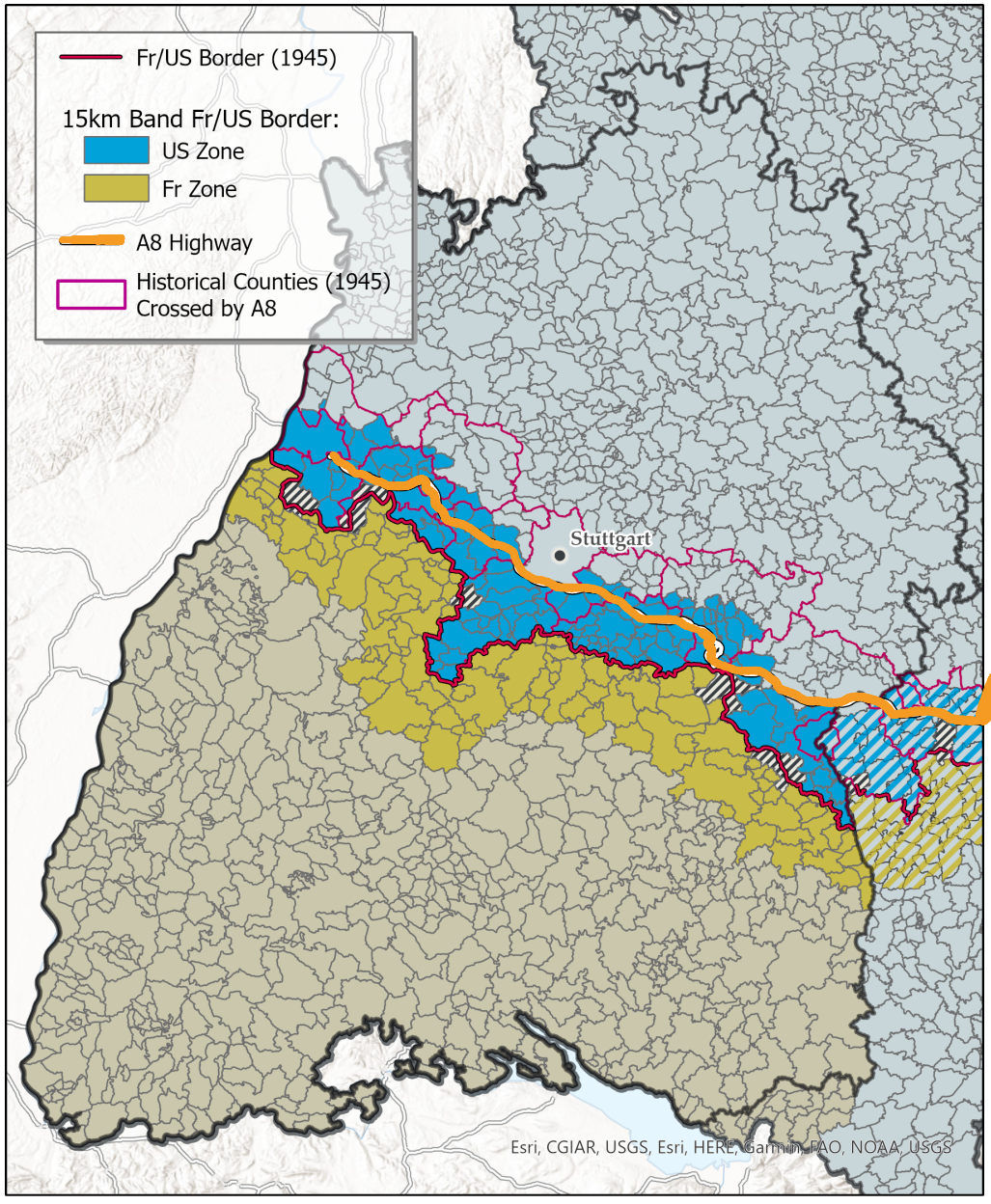
Knowledge Spillovers

- Proxy knowledge by patenting activity
- Use PatentCity Database that covers all registered patents since 1871

	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Patents						
	Log Patents					
	1980-2019		1950-1979		1871-1939	
US Zone Location	0.053	-0.247	0.022	0.029	-0.067	0.320
	(0.220)	(0.273)	(0.287)	(0.361)	(0.208)	(0.274)
US Zone Exposure (10km)		0.946*		-0.205		-1.150*
		(0.522)		(0.648)		(0.669)
Observations	809	809	479	479	397	397
	Log Patents per Capita					
	1980-2019		1950-1979		1871-1939	
US Zone Location	-0.039	-0.224	0.040	0.291	-0.063	0.077
	(0.119)	(0.151)	(0.219)	(0.321)	(0.155)	(0.201)
US Zone Exposure (10km)		0.584**		-0.747		-0.422
		(0.273)		(0.504)		(0.401)
Observations	809	809	479	479	397	397
	Patents per Capita Above Median					
	1980-2019		1950-1979		1871-1939	
US Zone Location	0.022	-0.080	-0.040	-0.002	-0.051	-0.026
	(0.058)	(0.082)	(0.082)	(0.099)	(0.051)	(0.064)
US Zone Exposure (10km)		0.334**		-0.122		-0.080
		(0.151)		(0.180)		(0.119)
Observations	856	856	642	642	1498	1498

Overview

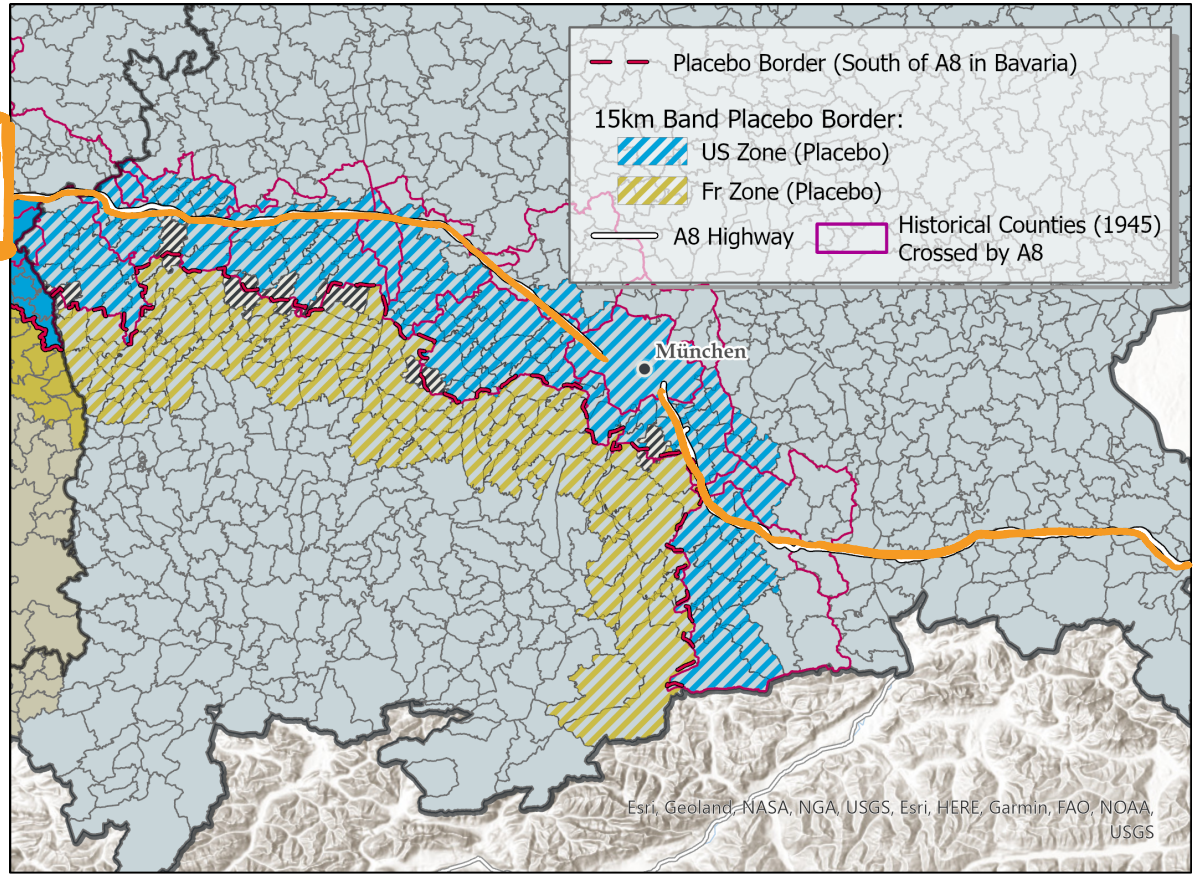
Border Region and Highway A8



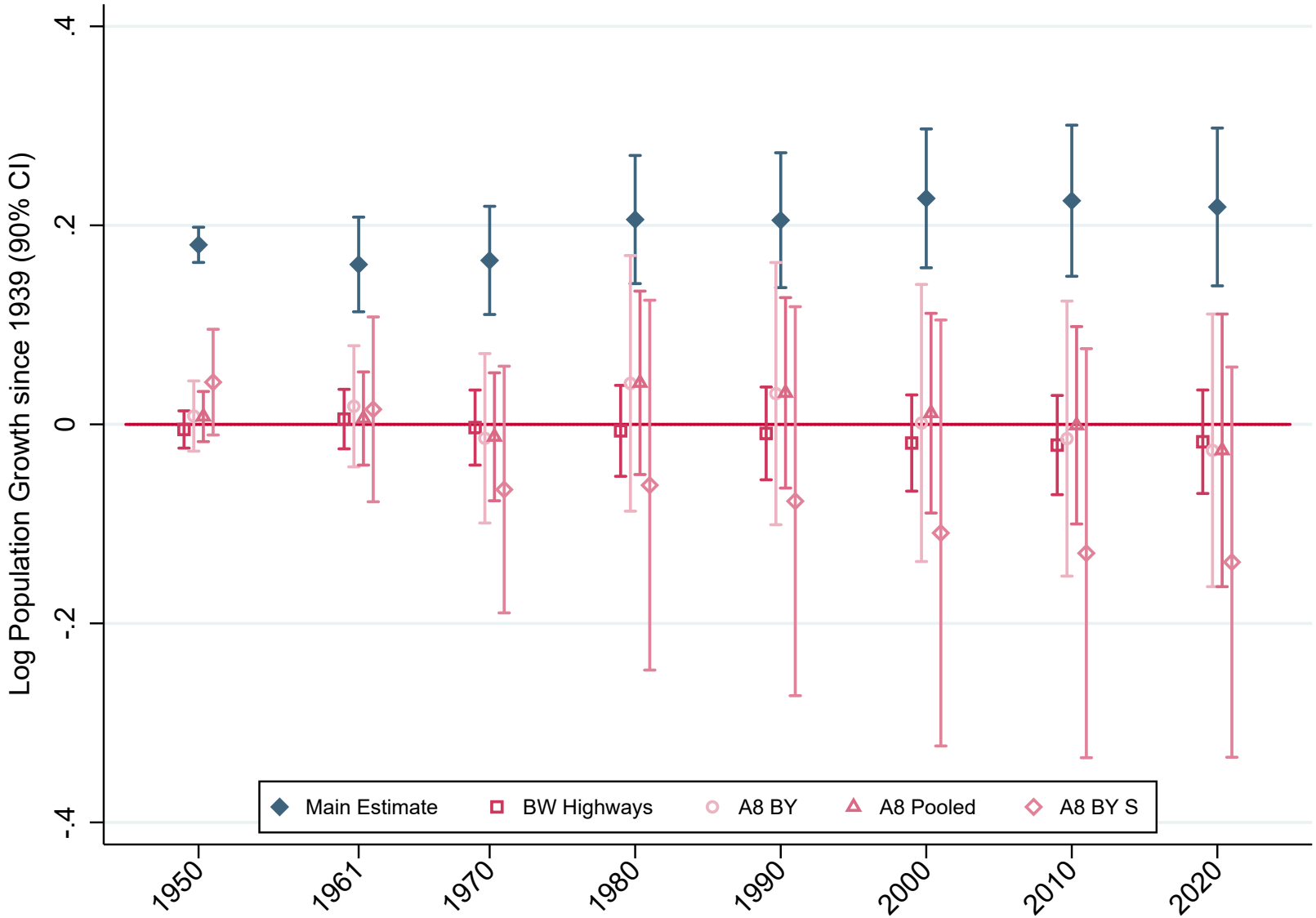
Highway A8

Placebo Region and Highway A8

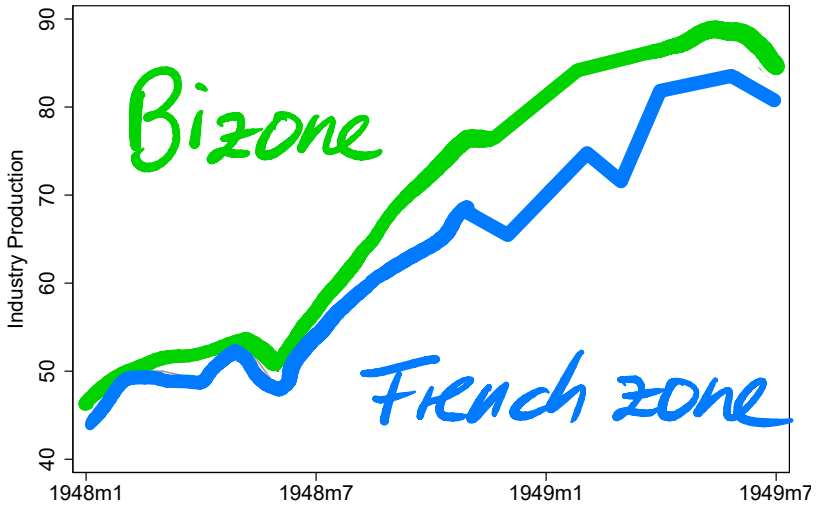
Highway A8



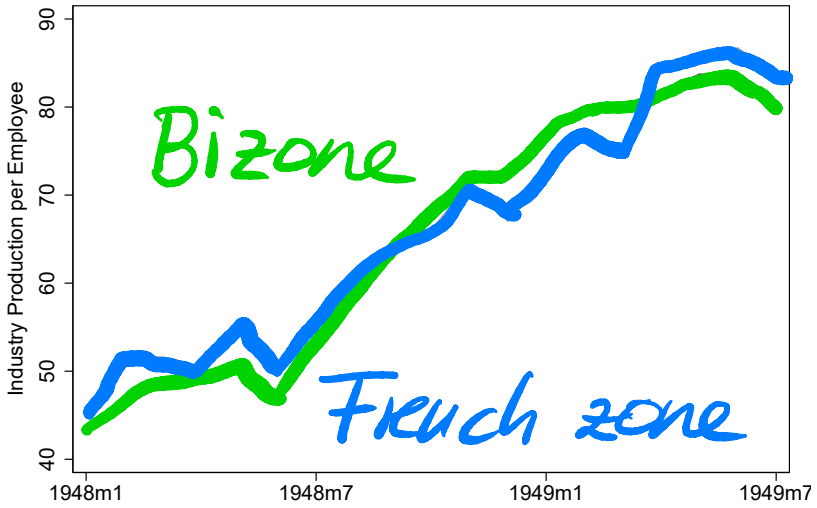
No Differences in Population Growth at Placebo Borders



Alternative Mechanisms: UK+US Policies vs. French Policies



Industry Production (1936=100)



Per Worker (1936=100)

Data from Ritschl (1985)

Everything Else

- Former US zone exports more ☒
- Former US zone exports more outside Europe ☒
- More firm headquarters in the former US zone ☒
- Larger establishments in the former US zone ☒
- Larger firms in the former US zone ☒
- Former US zone residents work more hours ☒
- Former US zone is less unionized ☒
- Residents of former US zone are less risk-averse or have more liberal values ☒
- Greater affinity to Anglosphere in former US zone ☒
- Former US zone kept Allied military bases longer ☒
- Second-generation refugees are better educated ☒
- Negative health effects in former French zone ☒

Conclusion

- Strong spatial discontinuity in inflow of refugees at the former border between the 1945-49 French and US occupation zones
- Despite common policies, laws, and institutions since 1949 still strong differences at this border today
- Coincides with higher income, productivity, rents, wages, and education
- Proposed channel: Agglomeration economies that
  - operate via input sharing, labor market matching, and knowledge spillovers
  - range beyond municipalities
  - built up gradually

Pre-WWII Characteristics of Refugees and the Local Population in the US Zone in South-West Germany

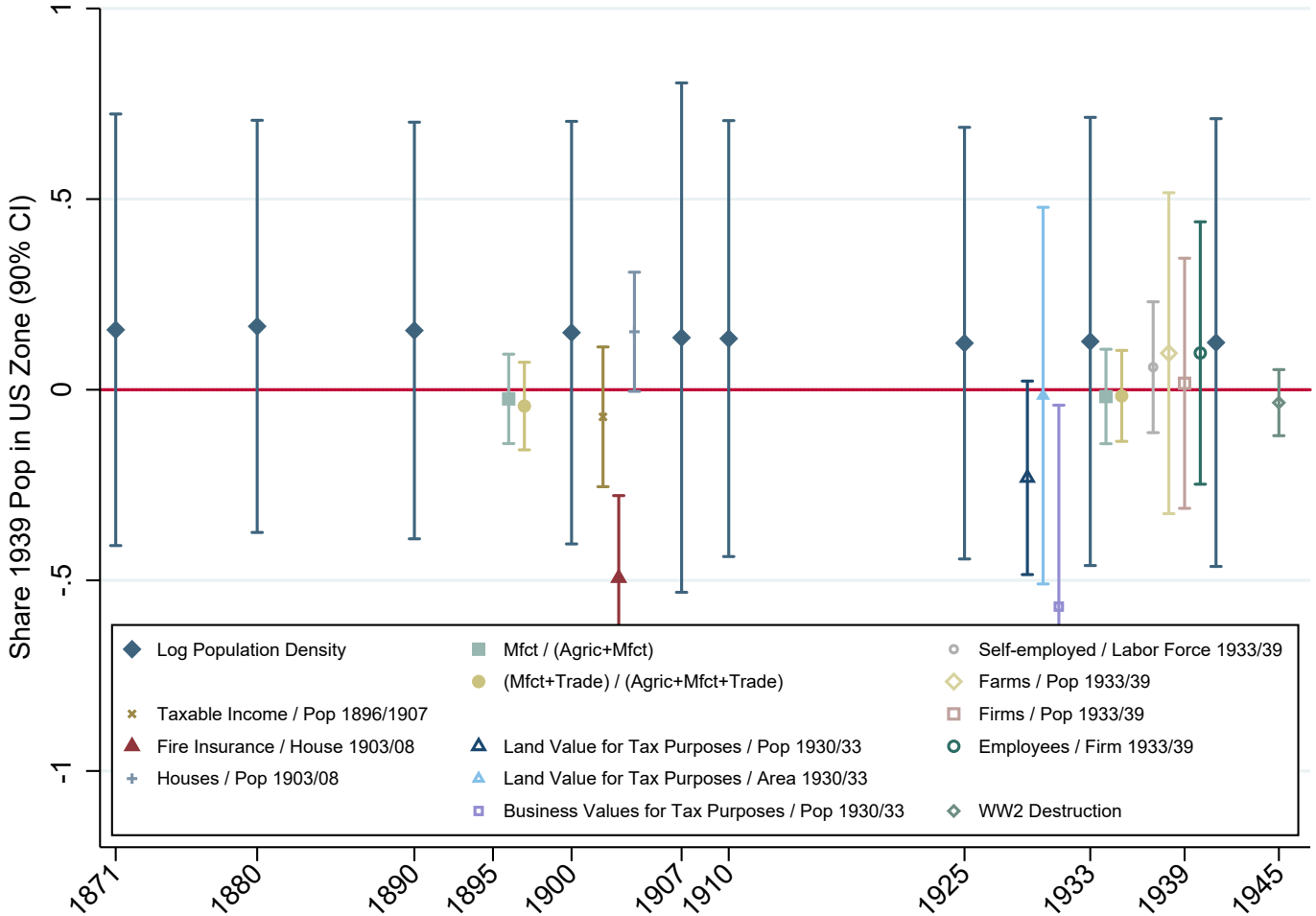
	Refugees	Locals	Difference
Education			
Years of education	8.4	8.6	-0.2
No elementary school degree	3.9	2.1	1.8
Elementary school degree	61.3	57.4	3.9
Vocational school degree	15.3	20.0	-4.7
Comprehensive school degree	13.6	13.6	0.0
High school degree	3.1	3.2	-0.1
University degree	2.4	3.0	-0.6
Employment and Occupational Status			
Employed	66.2	65.8	0.3
Self-employed farmers	7.9	4.7	3.1
Self-employed	5.4	5.3	0.1
Family members working in family businesses	9.2	7.0	2.2
Civil servants	4.1	4.8	-0.7
White-collar workers	10.1	13.7	-3.6
Unskilled blue-collar workers	17.8	17.8	0.1
Skilled blue-collar workers	11.1	10.7	-0.4
Foremen	1.0	1.5	-0.5
Unemployed	0.1	0.1	0.0
Out of labor force	27.0	26.6	0.4

Notes: The table reproduces the data in Grosser (2006) for refugees and the local population in the former US occupation zone in Baden-Württemberg. The original source is the supplementary micro census in 1971 (*Mikrozensus Zusatzerhebung "Berufliche und soziale Umschichtungen der Bevölkerung"*). Education refers to the highest educational degree in 1971 for individuals born before 1930. Employment and occupational status in 1939 is retrospective information for individuals born before 1920. The sample consists of individuals who lived in the 1945-1949 US occupation zone in 1971 and therefore also captures relocation after the initial arrival of refugees.

Adjustments: Municipality Level

	(1)	(2)	(3)
Panel C: Population			
	Gain 1949-1950	Annual Growth 1950-1960	Refugees from SZ 1960
US Zone	-0.048***	-0.002	-0.001
	(0.008)	(0.003)	(0.004)
Municipalities	215	217	216
Panel D: Manufacturing Share			
		Annual Growth	
	1933/39-1950	1950-1960	1960-1970
US Zone	0.005***	-0.003***	0.002
	(0.001)	(0.001)	(0.002)
Municipalities	216	216	216

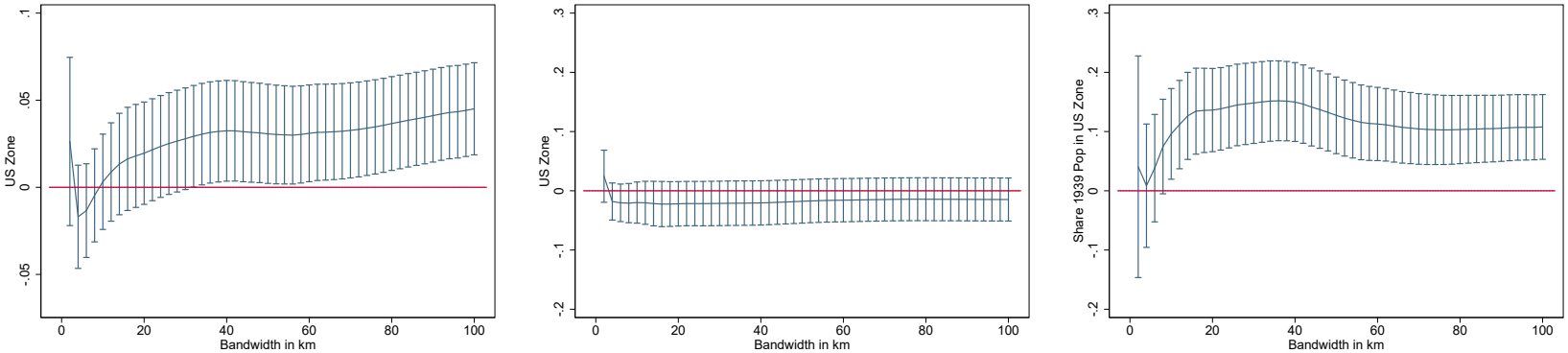
No Differences in pre-WWII Economic Characteristics (Model 2)



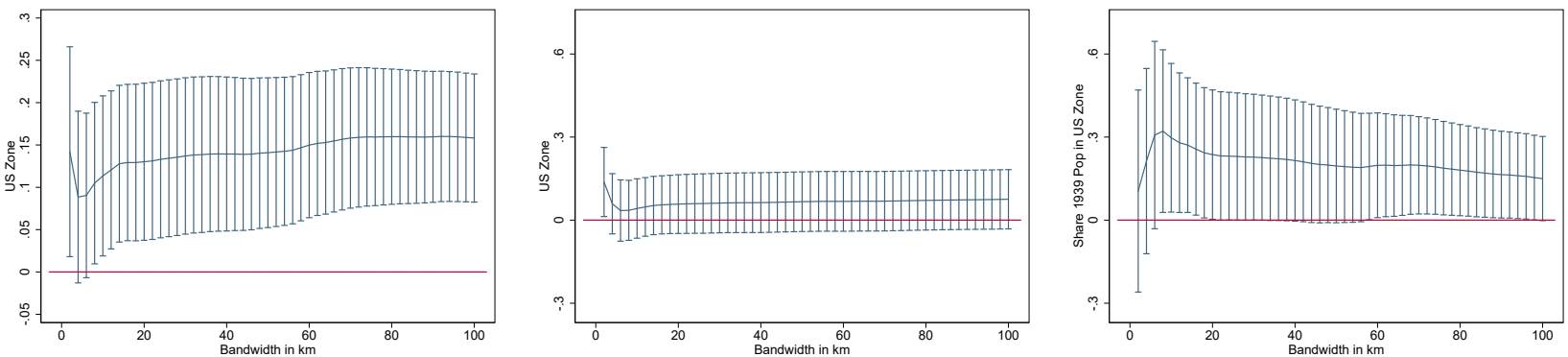
back

Robustness: Bandwidth

(a) Income per capita (2007-2017)



(b) Aggregate Productivity (2006-2018)



back

Robustness: Standard Errors

	(1)	(2)	(3)	(4)
Income per capita				
	Conley 10km		Conley 50km	
US Zone	0.015	-0.022	0.015	-0.022
	(0.018)	(0.024)	(0.018)	(0.023)
Share 1939 Pop in US Zone (10km circle)		0.131***		0.131***
		(0.045)		(0.043)
N	1,510	1,510	1,510	1,510
Aggregate Productivity				
	Conley 10km		Conley 50km	
US Zone	0.129**	0.054	0.129**	0.054
	(0.057)	(0.064)	(0.056)	(0.064)
Share 1939 Pop in US Zone (10km circle)		0.265*		0.265*
		(0.146)		(0.146)
N	2,773	2,773	2,773	2,773

back

Robustness: RD Polynomial

	(1)	(2)	(3)	(4)
Income per capita				
	Quadratic		Cubic	
US Zone	0.017	-0.020	-0.004	-0.032
	(0.018)	(0.023)	(0.018)	(0.021)
Share 1939 Pop in US Zone (10km circle)		0.130***		0.116***
		(0.044)		(0.043)
N	1,510	1,510	1,510	1,510
Aggregate Productivity				
	Quadratic		Cubic	
US Zone	0.128**	0.051	0.138**	0.057
	(0.057)	(0.065)	(0.064)	(0.067)
Share 1939 Pop in US Zone (10km circle)		0.267*		0.336**
		(0.146)		(0.156)
N	2,773	2,773	2,773	2,773

back

Robustness: One-dimensional RD

	(1)	(2)	(3)	(4)
Income per capita				
	Linear		Quadratic	
US Zone	-0.023	-0.035	-0.042	-0.033
	(0.020)	(0.022)	(0.034)	(0.034)
Share 1939 Pop in US Zone (10km circle)		0.102*		0.102*
		(0.056)		(0.059)
N	1,510	1,510	1,510	1,510
Aggregate Productivity				
	Linear		Quadratic	
US Zone	0.134*	0.095	0.102	0.137
	(0.073)	(0.073)	(0.107)	(0.107)
Share 1939 Pop in US Zone (10km circle)		0.353**		0.378**
		(0.174)		(0.183)
N	2,773	2,773	2,773	2,773

back

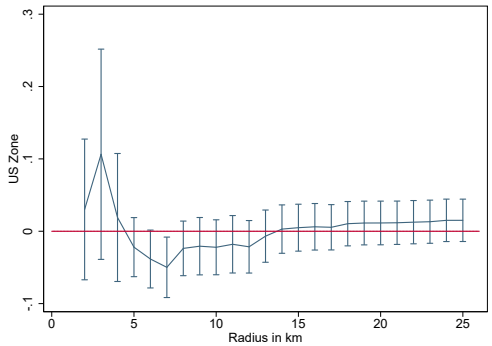
Robustness: Boundary Segments

	(1)	(2)	(3)	(4)
Income per capita				
	10		50	
US Zone	0.011	-0.023	-0.006	-0.050****
	(0.018)	(0.023)	(0.014)	(0.016)
Share 1939 Pop in US Zone (10km circle)		0.122***		0.168***
		(0.047)		(0.036)
N	1,510	1,510	1,510	1,510
Aggregate Productivity				
	10		50	
US Zone	0.137**	0.064	0.169***	0.052
	(0.057)	(0.067)	(0.055)	(0.062)
Share 1939 Pop in US Zone (10km circle)		0.257*		0.446***
		(0.145)		(0.142)
N	2,773	2,773	2,773	2,773

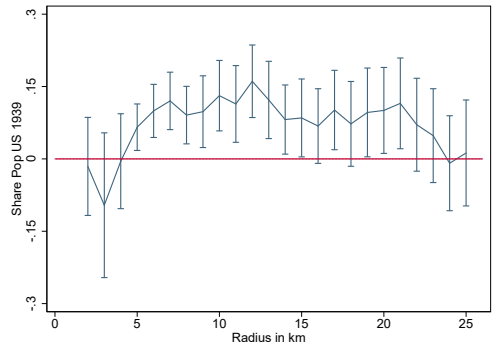
back

Robustness: Radius

(a) Income per capita

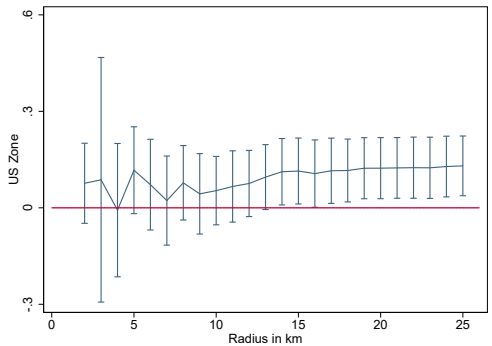


US Zone

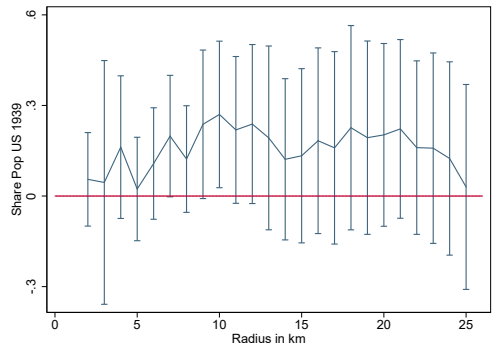


Share US Pop 1939

(b) Aggregate Productivity



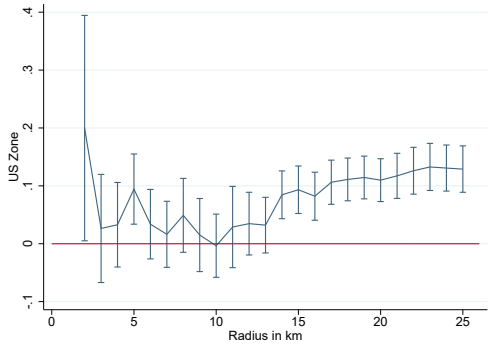
US Zone



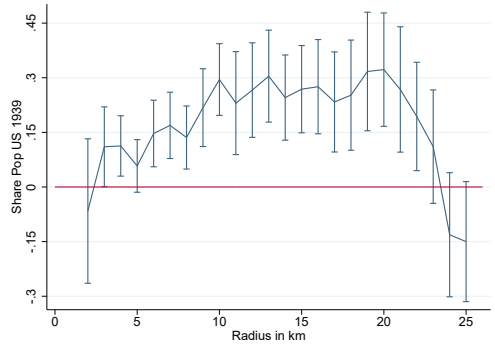
Share US Pop 1939

Robustness: Radius

(a) Rents

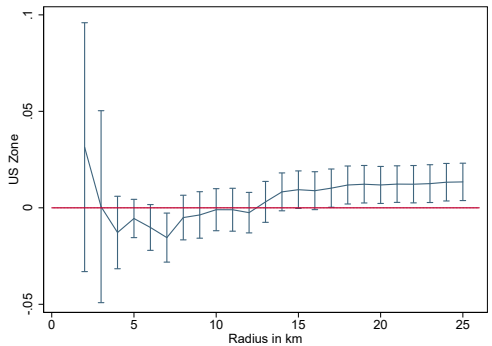


US Zone

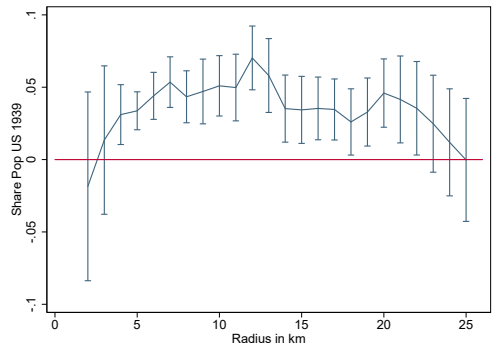


Share US Pop 1939

(b) Education



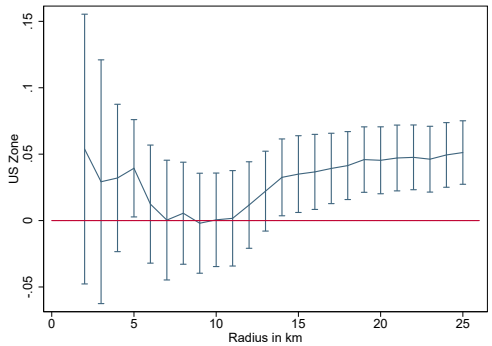
US Zone



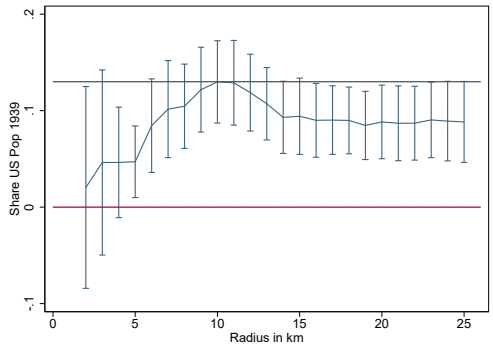
Share US Pop 1939

Robustness: Radius

(a) Simulation: Municipality Data

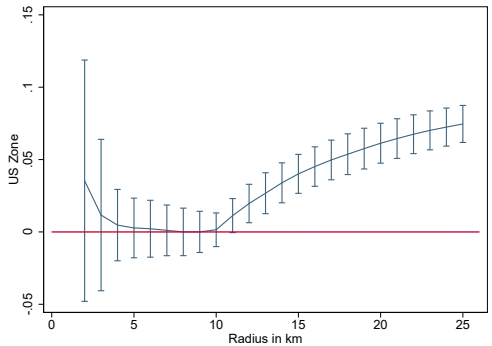


US Zone

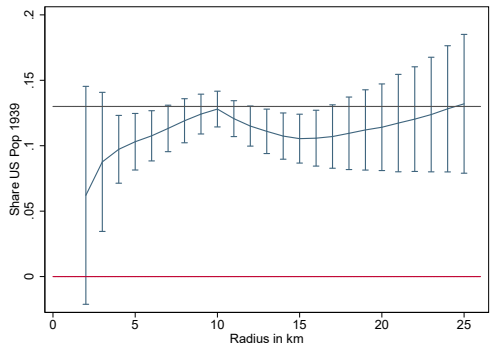


Share US Pop 1939

(b) Simulation: Synthetic Data



US Zone



Share US Pop 1939

back

Placebo: Highways pooled

	(1)	(2)	(3)	(4)
Income per capita				
	BW Highways		A8 pooled	
US Zone	0.022	0.011	-0.003	0.012
	(0.022)	(0.040)	(0.020)	(0.022)
Share 1939 Pop in US Zone (10km radius)		0.019		-0.041
		(0.047)		(0.037)
Observations	7,759	7,759	4,785	4,785
Aggregate Productivity				
	BW Highways			
US Zone	-0.079	0.049		
	(0.053)	(0.115)		
Share 1939 Pop in US Zone (10km radius)		-0.199		
		(0.142)		
Observations	13,801	13,801		

Note: Our measure of aggregate productivity is not available on the municipality level for Bavaria.

back

Placebo: Highways Bavaria

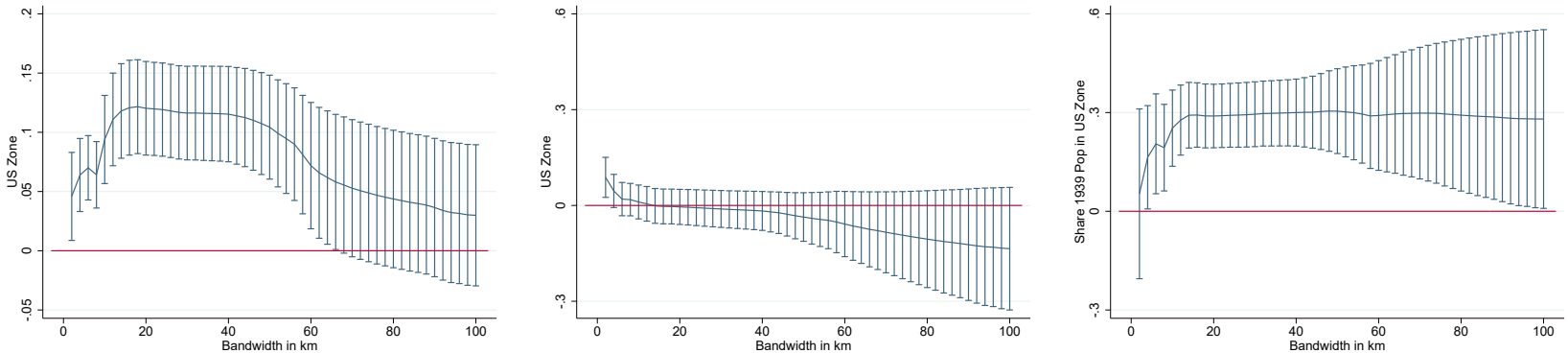
	(1)	(2)	(3)	(4)
Income per capita				
	A8 BY		A8 BY South	
US Zone	-0.016	-0.024	0.023	-0.010
	(0.029)	(0.029)	(0.050)	(0.043)
Share 1939 Pop in US Zone (10km radius)		0.023		0.119
		(0.053)		(0.093)
Observations	3,226	3,226	1,443	1,443

Note: Our measure of aggregate productivity is not available on the municipality level for Bavaria.

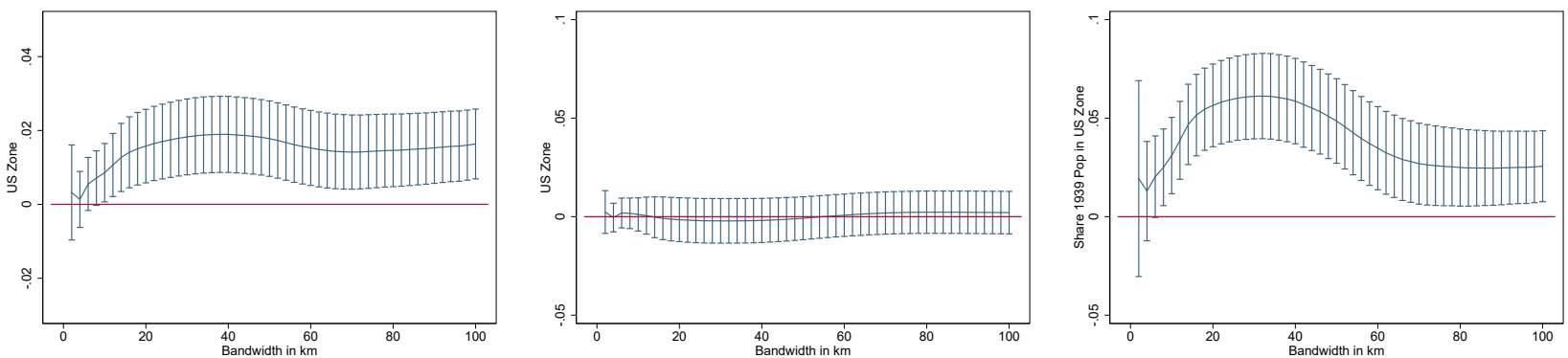
back

Robustness: Bandwidth

(a) Rents Immoscout (2008-2016)



(b) Share University (1999-2020)



back

Robustness: Standard Errors

	(1)	(2)	(3)	(4)
Rents Immoscout				
	Conley 10km		Conley 50km	
US Zone	0.120***	0.011	0.120***	0.011
	(0.025)	(0.027)	(0.027)	(0.027)
Share 1939 Pop in US Zone (10km circle)		0.232***		0.232***
		(0.057)		(0.058)
N	314,765	314,765	314,765	314,765
Share University				
	Conley 10km		Conley 50km	
US Zone	0.013**	-0.001	0.013**	-0.001
	(0.006)	(0.006)	(0.006)	(0.006)
Share 1939 Pop in US Zone (10km circle)		0.049***		0.049***
		(0.013)		(0.012)
N	4,786	4,786	4,786	4,786

back

Robustness: RD Polynomial

	(1)	(2)	(3)	(4)
Rents Immoscout				
	Quadratic		Cubic	
US Zone	0.107***	0.010	0.065***	0.010
	(0.022)	(0.027)	(0.020)	(0.023)
Share 1939 Pop in US Zone (10km circle)		0.212***		0.212***
		(0.054)		(0.050)
N	314,765	314,765	314,765	314,765
Share University				
	Quadratic		Cubic	
US Zone	0.015***	0.001	0.003	-0.005
	(0.006)	(0.007)	(0.006)	(0.006)
Share 1939 Pop in US Zone (10km circle)		0.048***		0.032**
		(0.013)		(0.014)
N	4,786	4,786	4,786	4,786

back

Robustness: One-dimensional RD

	(1)	(2)	(3)	(4)
Rents Immoscout				
	Linear		Quadratic	
US Zone	0.058	-0.012	0.103*	0.069
	(0.039)	(0.031)	(0.060)	(0.045)
Share 1939 Pop in US Zone (10km circle)		0.274***		0.298***
		(0.074)		(0.070)
N	314,765	314,765	314,765	314,765
Share University				
	Linear		Quadratic	
US Zone	0.000	-0.004	-0.012	-0.009
	(0.007)	(0.007)	(0.011)	(0.011)
Share 1939 Pop in US Zone (10km circle)		0.038***		0.037**
		(0.014)		(0.014)
N	4,786	4,786	4,786	4,786

back

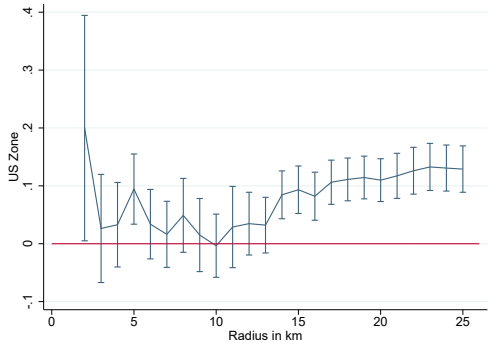
Robustness: Boundary Segments

	(1)	(2)	(3)	(4)
Rents Immoscout				
	10		50	
US Zone	0.108***	-0.016	0.061***	0.001
	(0.024)	(0.030)	(0.019)	(0.019)
Share 1939 Pop in US Zone (10km circle)		0.262***		0.148***
		(0.057)		(0.046)
N	314,765	314,765	314,765	314,765
Share University				
	10		50	
US Zone	0.014**	0.003	0.003	-0.004
	(0.006)	(0.006)	(0.006)	(0.005)
Share 1939 Pop in US Zone (10km circle)		0.039***		0.028**
		(0.014)		(0.013)
N	4,786	4,786	4,786	4,786

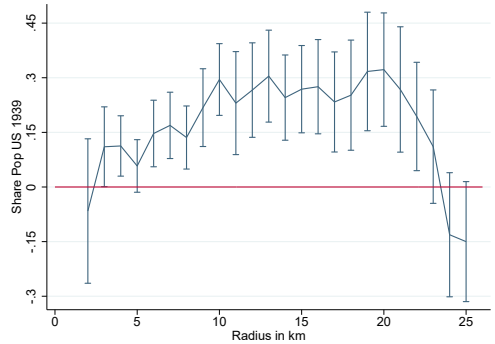
back

Robustness: Radius

(a) Rents

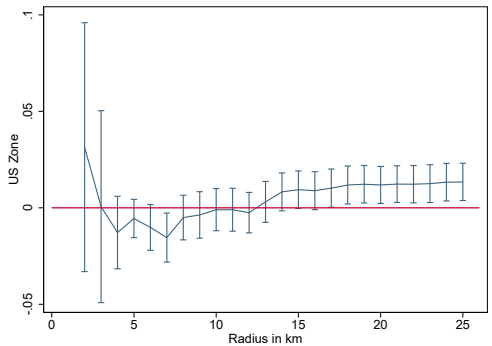


US Zone

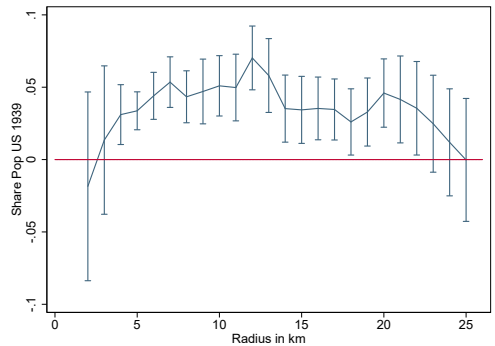


Share US Pop 1939

(b) Education



US Zone



Share US Pop 1939

Placebo: Highways pooled

	(1)	(2)	(3)	(4)
Income per capita				
	BW Highways		A8 pooled	
US Zone	0.008	0.008	0.002	0.000
	(0.007)	(0.008)	(0.005)	(0.006)
Share 1939 Pop in US Zone (10km radius)		0.001		0.005
		(0.014)		(0.010)
Observations	3,568	3,568	2,061	2,061
Aggregate Productivity				
	BW Highways		A8 pooled	
US Zone	-0.016	0.047	0.012	0.015
	(0.044)	(0.038)	(0.023)	(0.022)
hare 1939 Pop in US Zone (10km radius)		-0.086		-0.010
		(0.086)		(0.023)
Observations	1,150,461	1,150,461	1,608,070	1,608,070

back

Placebo: Highways Bavaria

	(1)	(2)	(3)	(4)
Rents Immoscout				
	A8 BY		A8 BY South	
US Zone	0.016	0.004	0.012	-0.008
	(0.033)	(0.029)	(0.026)	(0.024)
hare 1939 Pop in US Zone (10km radius)		0.042		0.074
		(0.034)		(0.055)
Observations	1,125,004	1,125,004	554,498	554,498
Share University				
	A8 BY		A8 BY South	
US Zone	-0.006	-0.014*	-0.017*	-0.024**
	(0.007)	(0.007)	(0.010)	(0.010)
Share 1939 Pop in US Zone (10km radius)		0.021		0.027
		(0.014)		(0.023)
Observations	1,389	1,389	621	621

back

Placebo: Highways pooled

	(1)	(2)	(3)	(4)
Value added / hr.				
	BW highways		A8 Pooled	
US Zone	-0.004	0.032	0.011	-0.020
	(0.035)	(0.070)	(0.039)	(0.055)
Share 1939 Pop in US Zone (10km radius)		-0.050		0.077
		(0.093)		(0.077)
Observations	16,064	16,064	8,896	8,896
Wages / hr.				
	BW highways		A8 Pooled	
US Zone	0.015	-0.006	0.043	0.024
	(0.026)	(0.059)	(0.026)	(0.045)
Share 1939 Pop in US Zone (10km radius)		0.030		0.047
		(0.071)		(0.072)
Observations	16,218	16,218	9,036	9,036

back

Placebo: Highways Bavaria

	(1)	(2)	(3)	(4)
Value added / hr.				
	A8 BY		A8 BY South	
US Zone	0.015	0.013	0.068	0.045
	(0.068)	(0.089)	(0.084)	(0.106)
Share 1939 Pop in US Zone (10km radius)		0.008		0.086
		(0.154)		(0.222)
Observations	4,537	4,537	2,160	2,160
Wages / hr.				
	A8 BY		A8 BY South	
US Zone	0.067	0.089	0.106*	0.087
	(0.049)	(0.073)	(0.058)	(0.075)
Share 1939 Pop in US Zone (10km radius)		-0.074		0.074
		(0.126)		((0.142))
Observations	4,640	4,640	2,211	2,211

back

Alternative Mechanisms: Industry Dismantling and Military Bases

	(1)	(2)	(3)	(4)
	Share Dismantled Establishments		Military Base Indicator	
US Zone	-0.0011**	-0.0014***	0.005	0.046
	(0.00058)	(0.00054)	(0.023)	(0.033)
Share 1939 Pop in US Zone (10km circle)		0.0010		-0.143
		(0.00078)		(0.094)
Observations	218	218	218	218

back

Alternative Mechanisms: Controlling for Dismantling

	(1)	(2)	(3)	(4)
	Aggregate Productivity		Income per capita	
US Zone	0.128**	0.050	0.014	-0.024
	(0.058)	(0.063)	(0.018)	(0.022)
Share 1939 Pop in US Zone (10km circle)		0.268*		0.133***
		(0.144)		(0.043)
N	2,773	2,773	1,510	1,510
	Rents Immoscout		Share University	
US Zone	0.135***	0.025	0.013**	-0.002
	(0.022)	(0.027)	(0.006)	(0.006)
Share 1939 Pop in US Zone (10km circle)		0.186***		0.051***
		(0.046)		(0.012)
N	314,765	314,765	4,786	4,786

back

Alternative Mechanisms: Food rations

back

Alternative Mechanisms: Health

	(1)	(2)	(3)	(4)
Health				
	Body Height	Body Weight	Mental Health	Physical Health
Occupation Period	-0.000	0.009	0.027	0.006
	(0.004)	(0.021)	(0.014)	(0.016)
US Zone	0.000	0.005	-0.002	-0.009
	(0.004)	(0.019)	(0.014)	(0.016)
US Zone × Occupation Period	0.006	-0.012	0.001	0.046
	(0.008)	(0.038)	(0.022)	(0.032)
Demographic controls	Y	Y	Y	Y
Years of Education	Y	Y		
Log Income			Y	Y
Years Unemployed			Y	Y
Observations	1,098	1,090	1,818	1,818

back

Alternative Mechanisms: Education

	(1)	(2)	(3)
Education			
	Years of Education	Unemployment Duration	Log Income
Occupation Period	0.006	0.048	0.290
	(0.013)	(0.175)	(0.239)
US Zone	-0.005	0.256	0.662**
	(0.014)	(0.139)	(0.226)
US Zone × Occupation Period	0.034	-0.161	-0.359
	(0.020)	(0.233)	(0.442)
Demographic controls	Y	Y	Y
Years of Education		Y	Y
Log Income	Y		
Years Unemployed	Y		
Observations	3,815	2,094	2,093

back

Alternative Mechanisms: Language Preferences

	(1)	(2)	(3)	(4)
	English as first foreign language		English as intense class	
US Zone	-0.006	0.001	-0.006	-0.006
	(0.006)	(0.005)	(0.016)	(0.022)
Share 1939 Pop in US Zone (10km radius)		-0.016		0.000
		(0.015)		(0.028)
Observations	218	218	218	218

back

Alternative Mechanisms: Norms and Attitudes

	(1)	(2)	(3)	(4)
	Interest in Politics	Leaning towards Party	Union in Estab	Risk Preferences
US Zone	0.036	-0.037	-0.049	-0.002
	(0.023)	(0.024)	(0.044)	(0.131)
	The most important objective for politicians is			
	Peace and Order	More Citizen Influence	Price Stability	Free Speech
US Zone	0.024	0.002	0.024	-0.008
	(0.038)	(0.034)	(0.087)	(0.091)

All regressions control for gender, age, partner in the household, work experience, unemployment, years of education, income, and immigrant status.

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Alternative Mechanisms: Exogenous Geography

	(1)	(2)	(3)	(4)
	Elevation		Ruggedness	
US Zone	-0.125**	-0.129***	-0.276	-0.204
	(0.052)	(0.042)	(0.197)	(0.196)
Share 1939 Pop in US Zone (10km radius)		0.014		-0.252
		(0.141)		(0.290)
Observations	218	218	218	218

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Alternative Mechanisms: Trade

	(1)	(2)	(3)	(4)
International Revenue				
	Internat. Revenue / Revenue		non-EU Revenue / Revenue	
US Zone	-.0125	-.0155	-.00603	-.00354
	(.0208)	(.0239)	(.0147)	(.0153)
Share 1939 Pop in US Zone (10km radius)		.01		-.00808
		(.0318)		(.021)
Observations	3,840	3,840	1,468	1,468
Exports and Working Hours				
	Exporter		hr. / Worker	
US Zone	.0162	.00507	-.0533**	-.0421
	(.0222)	(.0246)	(.025)	(.0257)
Share 1939 Pop in US Zone (10km radius)		.0369		-.0376
		(.0475)		(.036)
Observations	3,884	3,884	3,415	3,415

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Alternative Mechanisms: Firm Size and Headquarters

	(1)	(2)	(3)	(4)
	Log(Emp Betriebe / Emp Unternehmen)		Headquarter in same muni	
US Zone	0.056	0.077	0.025	-0.031
	(0.064)	(0.069)	(0.103)	(0.130)
Share 1939 Pop in US Zone (10km radius)		-0.075		0.162
		(0.103)		(0.187)
Observations	218	218	6,119	6,119

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