The Effects of Fiscal Decentralization on Publicly Provided Services and Labor Markets

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Fiscal Decentralization and Labor Markets

- A lot of research on how fiscal decentralization affects the provision of publicly provided services.
  - Economic theory suggests different channels, both positive and negative.
  - Empirical analysis is challenging: sharp changes rare, reliance on cross-country comparisons.
- Not clear to what extent fiscal decentralization affects local economies.
  - Exclusive focus on government spending.
  - But a change in the level of public services can affect labor supply and demand.

Introduction of LPT in 1992/93, Italy

- This paper studies a 1992 reform that increased fiscal decentralization of Italian municipalities
  - Introduced local property tax (LPT) for municipalities.
  - They could choose tax rate (between 0.04% and 0.07%) and keep all revenues.
  - Replaced lira for lira govt. transfers.

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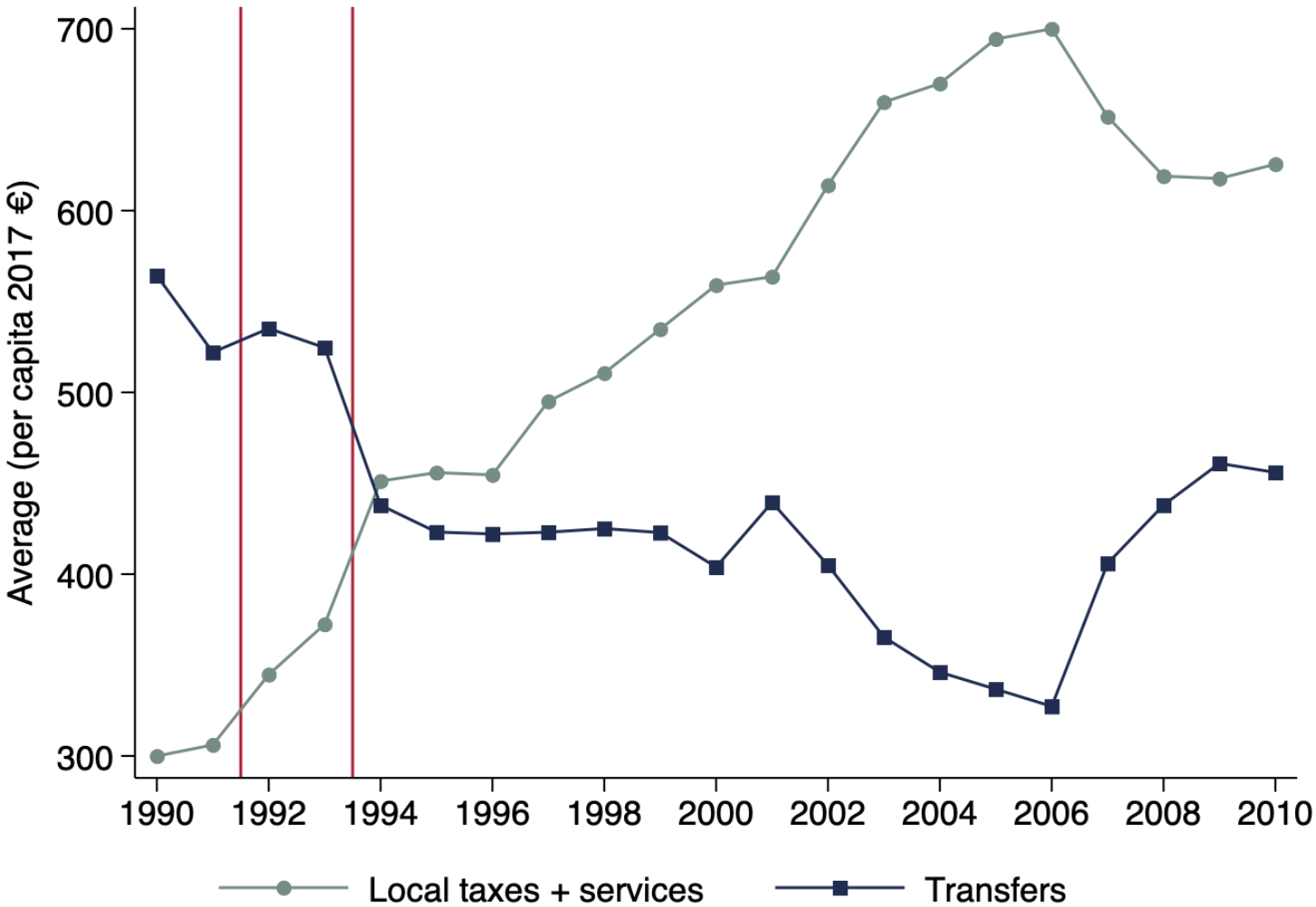
  - Local revenue streams (local taxes and service fees) increased by more than 50%.
  - Replaced government transfers as major source of municipal revenues.
- Very salient change for residents
  - Under pre-LPT system, residents paid personal income tax (PIT) to central got., which then redistributed part of it back to municipalities.
  - Under post-LPT system, residents paid LPT separately from PIT and directly to municipality.

A Drastic Change in Municipal Revenue Sources



Notes: Average municipal revenues from local taxes and services and from transfers issued by higher levels of government as 2017 € per resident.

Overview of the Main Results

Higher degree of fiscal decentralization linked to:

- Public services:
  - Shrinking of the overall municipal budget (Δrevenues=Δspending).
  - But more spending for revenue-generating local services (such as nursery schools).
  - Nursery schools: more spending (+18%), more schools (+20%), higher enrollment (+24%).
- Labor markets:
  - Higher women's employment (+5%), no effects of men, smaller gender gap in employment (-8%).
  - Effects larger in municipalities with more younger parents (+20%).
  - Effects on women limited to younger women (25-35 years old)
- Mechanisms
  - Our findings speak about the importance of high political competition.
  - Only suggestive, no random variation here.

Fiscal Decentralization and Public Services

- Fiscal decentralization can improve local services.
  - Local taxes can raise accountability of local administrators by easing the principal-agent problem (Fisman and Gatti, 2002; de Mello and Barenstein, 2001).
  - They can raise the level of competition between municipalities (Seabright, 1996; Hatfield and Kosec, 2013).
  - Local politicians might have better information on local preferences towards public services (Hayek, 1945).

- Fiscal decentralization does not improve delivery of local services:
  - More accountability requires high political competition (Albornoz and Cabrales, 2013).
  - Local administrators might be more easily influenceable by local elites (Oates, 1993; Bardhan and Mookherjee, 2000).
  - Increased competition as a race to the bottom to cut services and attract mobile capital (Zodrow and Mieszkowski, 1986).
  - Services with significant spillovers across localities and economies of scale (Oates, 1972; Prud'homme, 1995; Fernández and Rogerson, 1998; Calabrese, Epple and Romano, 2012).

Data and Empirical Strategy

Data

Census:

- Municipal-level data from both population and industry censuses.
- 5 pre-LPT (from 1951 to 1991) and 2 post-LPT observations (2001 and 2011).

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Social Security data:

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Municipal balance sheets (1990-2010):

- Panel dataset with yearly financial information about all 8,092 municipalities.
- Key variables, such as total revenues and spending, available every year from 1990 to 2010. More information after 1998.

Isolating the Effect of Fiscal Decentralization

Simplest approach would be to compare:

- Municipalities with more revenues from LPT and municipalities with fewer revenues from LPT.
- Before and after the introduction of the LPT.

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- For example, municipalities with higher exposure to fiscal decentralization may be richer.

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Leverage variation that stems from one historical event:

- Allied bombings during WWII $\rightarrow$ newer buildings $\rightarrow$ higher cadastral values $\rightarrow$ more fiscal decentralization.
- In Italy, cadastral values $\neq$ market values.
- What are ▸ cadastral values? Correlation with ▸ building age.

Baseline Specifications

$$y_{mt} = \alpha_m + \gamma_{rt} + \sum_t \delta_t \text{Exp. bombs}_m \times \text{Year}_t + \varepsilon_{mt}$$

- Exp. bombs$_m$ measures exposure to Allied bombs during WWII in municipality m (several options).
- y_{mt} is one of many variables describing provision of municipal services or labor market in municipality m and year t.
- Year$_t$ is a set of year fixed effects.
- Municipality fixed effects (α_m), region-year or province-year fixed effects + several trends correlated with baseline municipal characteristics (γ_{rt}).
- Standard errors clustered at the level of municipalities.

Several Refinements to Exp. bombs_m

1. Exp. bombs_m = Tons of bombs_m and sample includes all Italian municipalities
   - Large numerical imbalance between targeted (671) and nontargeted (7,421) municipalities
   - Measurement error in tons of bombs at city level.
   - Result: Unbalanced ▸ pre trends

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2. Match targeted and nontargeted municipalities based on characteristics in 1991:
   - Propensity score matching: 314 municipalities targeted by bombings and 314 matched municipalities.
   - But still plausible positive selection into being targeted during WWII.
   - Result: usually ▸ balanced char. in 1991, but signs of unbalanced ▸ pre trends

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3. Leverage imprecision of aerial bombings during WWII:
   - Municipalities next to targets likely bombed by mistake, but not selected.
   - Compare municipalities adjacent to 314 targets to those adjacent to 314 cities matched to targets.
   - Exp. $\text{bombs}_m = 1$ if target-adjacent municipality

Bypass Issues Related to Selection Into Bombings

- WWII bombings were often not precise and could hit areas around the intended target.
- Especially in the case of night time bombings, which were preferred for the lower probability of being spotted by anti-aircraft artillery units, area bombings were often the only viable option (Kirby and Capey, 1997).
- Our preferred sample:
  - Municipalities adjacent to locations hit after the armistice (yellow).
  - Municipalities adjacent to the matched locations (light blue).

Preferred Specification and Sample

$$y_{mt} = \alpha_m + \gamma_{rt} + \sum_t \delta_t \text{Near targets}_m \times \text{Year}_t + \varepsilon_{mt}$$

- y_{mt} is one of many variables describing provision of municipal services or labor market in municipality m and year t.
- Near targets$_m$ =1 for target-adjacent municipalities, =0 for target-distant municipalities.
- Sample: only target-adjacent mun. (adjacent to targeted mun.) and target-distant mun. (adjacent to mun. matched to targeted mun.)
- α_m = municipality fixed effects
- γ_{rt} = region-year or province-year fixed effects + several trends correlated with baseline municipal characteristics (deciles of pop. in 1991, deciles of minimum altitude, and dummy for rural municipalities interacted with year fixed effects)
- Standard errors clustered at the level of municipalities.
- When dep. var. available only after LPT implementation, equation loses the dummies Year$_t$, the municipality fixed effects α_m, and nonlinear yearly trends γ_{rt} due to collinearity with the treatment variable. However, it gains controls for city-level characteristics, such as population, altitude, and a dummy for rural cities.

Target-Adjacent Vs. Target-Distant in 1991

	Near targets	Mean		Near targets	Mean
			Panel A: Age of buildings and change in fiscal federalism		
Share of pre-WWII buildings	-2.670***	39.48	Δ Rev. local tax (94-90)	23.994***	135.47
	(0.974)			(6.263)	
			Panel B: Economic, demographic, geographical, and ideological characteristics of Italian municipalities		
Population in urban areas (%)	-0.450	17.26	Coastal city	-0.019	0.12
	(1.152)			(0.013)	
Dist. to econ. center (km)	-2.450	38.10	Share above 75	-0.286	8.37
	(1.515)			(0.191)	
Women in labor force	11.504	1020.84	Men in labor force	4.314	1881.58
	(12.508)			(6.170)	
Foreign residents	-2.058	33.59	Share women	0.022	51.03
	(1.518)			(0.079)	
Pupils in nursery school	-0.452	18.66	Residents with uni. degree	0.183	1270.76
	(0.406)			(15.563)	
Household (HH) size	0.025	2.74	m^2 per resident	0.406	35.24
	(0.017)			(0.257)	
Residents per building	-0.210	62.73	Inadequate housing (%)	0.142	0.20
	(0.457)			(0.087)	
HH in econ. distress (%)	-0.079	2.63	HH in need of caregiving (%)	-0.041	2.13
	(0.099)			(0.066)	
Vote share for DC	-0.387	34.82	Vote share for extreme left	0.172	4.60
	(0.660)			(0.173)	

Notes: This table shows differences in the levels of observables characteristics measured in 1991. All monetary values are expressed in 2017 €. Column 1 compares municipalities around targeted cities (near-target) to cities around municipalities matched to targeted locations (near-others). In panel A, the dependent variables measure the average age of buildings and the policy-induced change in fiscal federalism (the change in per-capita revenues from local taxes between 1990 and 1994). In panel B, the dependent variables primarily come from the population census of 1991, the industrial census of 1991, and the national elections in 1992. Regressions also include population, a dummy for rural cities, minimum altitude, and region fixed effects, as well as bombed-city fixed effects (columns 2 and 3). Standard errors clustered at the province level in parentheses.

Preferred Spec.: Pre-Reform Trends

	Revenues from local taxes	Revenues from gov. transfers	Revenues per capita	Spending per capita	Women in labor force	Employed women	Men in labor force	Employed men	Gender gap in labor force	Gender gap in employment
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
				Panel A: Linear pre-LPT trends						
Near targets x Trend	0.203	-0.262	-30.040	-24.530	0.060	0.065	-0.184	-0.041	-0.244	-0.105
	(1.144)	(2.423)	(25.356)	(25.145)	(0.469)	(0.416)	(0.734)	(0.668)	(0.496)	(0.477)
Observations	7,007	7,007	7,007	7,007	11,874	11,874	11,874	11,874	11,874	11,874
Dep. var.—mean	158.25	527.85	1675.00	1673.60	448.60	394.54	1049.55	974.73	600.95	580.19
Dep. var.—std. dev.	109.13	218.19	1196.34	1200.25	692.81	597.59	1476.77	1325.43	921.54	852.02
				Panel B: Nonlinear pre-LPT trends						
Near targets x 1951					-1.055	-1.450	8.675	2.331	9.731	3.780
					(17.777)	(15.492)	(27.957)	(25.263)	(19.637)	(18.575)
Near targets x 1961					-2.292	-2.872	4.999	-0.951	7.292	1.921
					(15.925)	(14.272)	(22.075)	(18.659)	(15.103)	(13.746)
Near targets x 1971					2.751	1.646	9.918	4.077	7.167	2.431
					(11.129)	(8.860)	(13.835)	(10.831)	(11.277)	(10.501)
Near targets x 1981					1.636	0.710	4.050	-0.374	2.414	-1.083
					(5.393)	(4.119)	(8.084)	(5.672)	(6.440)	(5.266)
Near targets x 1990	-0.489	0.614	61.630	41.927						
	(2.286)	(4.858)	(50.681)	(52.222)						
Near targets x 1991	1.695	-1.794	-5.483	-10.050						
	(2.566)	(6.828)	(49.972)	(54.871)						
Observations	7,007	7,007	7,007	6,988	11,874	11,874	11,874	11,874	11,874	11,874
Dep. var.—mean	158.25	527.85	1675.00	1673.60	448.60	394.54	1049.55	974.73	600.95	580.19
Dep. var.—std. dev.	109.13	218.19	1196.34	1200.25	692.81	597.59	1476.77	1325.43	921.54	852.02
F statistic	0.38	0.06	1.10	0.56	0.22	0.20	0.39	0.26	0.14	0.08
P value	0.69	0.94	0.33	0.57	0.93	0.94	0.81	0.90	0.97	0.99

Notes: "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. Panel A estimates linear pre-reform trends either between 1990 and 1992 using data from balance sheets of Italian municipalities (columns 1 to 4) or between 1951 and 1991 using data from the population censuses (columns 5 to 10). Panel B estimates nonlinear pre-reform trends. The F-statistic at the bottom tests for the joint significance of the nonlinear trends. The omitted year is 1992 in columns 1 to 4 and 1991 in columns 5 to 10. The regressions also include city fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors clustered at the city level in parentheses

Preferred Spec.: More Pre-Reform Trends

	Population density	Gender gap in education	Population in urban areas	Illiterate residents	Residents with univ. degree	Residents per building	Population	Log population	Youth outside labor force	Agricultural workers	Manufacturing workers
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					Panel A: Linear pre-LPT trends						
Near targets x Trend	-0.126	0.229*	0.005	0.161	0.843	0.045	0.886	0.000	0.012	0.046	-0.686
	(0.291)	(0.136)	(0.017)	(0.538)	(0.532)	(0.037)	(2.406)	(0.000)	(0.013)	(0.057)	(0.797)
Observations	11,874	11,773	11,874	11,874	11,874	11,872	11,874	11,874	7,176	7,176	7,176
Dep. var.—mean	204.80	150.88	26.01	245.68	261.60	92.47	3737.20	7.67	15.53	7.69	394.08
Dep. var.—std. dev.	486.01	89.55	23.43	611.75	645.10	46.03	5394.41	1.05	7.23	37.32	915.43
					Panel B: Nonlinear pre-LPT trends						
Near targets x 1951	6.510	-10.844*	-0.177	-6.118	-34.627	-1.574	-32.216	0.007			
	(10.903)	(6.040)	(0.640)	(21.511)	(21.454)	(0.988)	(91.636)	(0.013)			
Near targets x 1961	2.255	-2.858	-0.187	-4.965	-33.750	-1.522	-32.577	0.000			
	(9.924)	(4.059)	(0.578)	(13.699)	(20.518)	(2.708)	(71.698)	(0.011)			
Near targets x 1971	5.501	-0.085	-0.238	-2.721	-29.334*	-0.705*	-7.267	-0.009	-0.247	-0.926	13.723
	(5.547)	(2.905)	(0.485)	(8.672)	(17.434)	(0.405)	(43.527)	(0.008)	(0.268)	(1.138)	(15.939)
Near targets x 1981	2.627	-1.299	-0.042	-1.137	-19.105	-0.199	-8.484	-0.009**	-0.083	0.341	10.270
	(3.594)	(1.739)	(0.420)	(3.192)	(11.614)	(0.215)	(24.961)	(0.004)	(0.204)	(1.654)	(9.545)
Observations	11,874	11,773	11,874	11,874	11,874	11,872	11,874	11,874	7,176	7,176	7,176
Dep. var.—mean	204.80	150.88	26.01	245.68	261.60	92.47	3737.20	7.67	15.53	7.69	394.08
Dep. var.—std. dev.	486.01	89.55	23.43	611.75	645.10	46.03	5394.41	1.05	7.23	37.32	915.43
F statistic	1.45	0.93	0.07	0.05	0.74	0.89	0.21	2.38	0.43	1.15	0.60
P value	0.22	0.45	0.99	0.99	0.56	0.47	0.93	0.05	0.65	0.32	0.55

Notes: "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to targeted locations. Panel A estimates linear pre-reform trends between 1951 and 1991 using data from the population censuses. Panel B estimates nonlinear pre-reform trends. The F-statistic at the bottom tests for the joint significance of the nonlinear trends. The omitted year is 1991. The gender gap in education is the ratio of men with HS diploma over women with HS diploma, multiplied by 100. Youth outside labor force is the share of the population between 15 years old and 29 years old who is not working nor studying. The regressions also include city fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors clustered at the city level in parentheses.

Preferred Spec.: Pre-Reform Trends With Soc. Sec. Data

	New entry in labor market		Reentry in labor market		Median wage		Median days worked	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Near targets x 20-24 x Trend	-0.004		0.001		-54.335		0.055	
	(0.012)		(0.006)		(60.010)		(0.091)	
Near targets x 25-29 x Trend	0.005		0.017		-78.372		0.057	
	(0.005)		(0.016)		(66.623)		(0.084)	
Near targets x 30-34 x Trend	0.004		0.012		-66.336		0.027	
	(0.003)		(0.015)		(74.253)		(0.051)	
Near targets x 35-39 x Trend	-0.002		0.004		-37.662		0.193	
	(0.003)		(0.005)		(69.301)		(0.213)	
Near targets x 40-44 x Trend	0.001		0.003		-120.064		0.276	
	(0.003)		(0.004)		(73.640)		(0.293)	
Near targets x 45-49 x Trend	-0.005		0.006		-9.620		0.148	
	(0.003)		(0.009)		(77.999)		(0.084)	
Nonlinear trends—Partial F-test		0.70		0.70		0.87		0.96
Observations	765,872	765,872	723,678	723,678	765,872	765,872	765,872	765,872
R^2	0.428	0.428	0.321	0.321	0.269	0.269	0.219	0.219
Dep. var.—mean	0.45	0.45	0.35	0.35	14,198.22	14,198.22	3.457	3.457
Dep. var.—std. dev.	1.89	1.89	0.93	0.93	6,826.85	6,826.85	1.234	1.234

Notes: "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to targeted locations. The table shows estimates of pre-reform linear ("Trend") and nonlinear trends using Social Security data on female employees of privately owned firms. The pre-reform years span from 1974 to 1992 for all variables, but "Reentry in labor market" (1976-1992). In the case of nonlinear trends, the table reports the p-values from the partial f-tests on the triple interactions between the age bins, a dummy equal to 1 for near-target locations, and individual pre-reform year dummies. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors clustered at the city level in parentheses.

Were Target-Adjacent Municipalities Hit?

	(1)	(2)	(3)	(4)	(5)
Panel A: Dependent variable is share of buildings **in target-adjacent municipalities** still damaged by WWII in 1947					
IHST post-armistice bombs **on adjacent targets**	0.441***	0.368***	0.368***	0.342***	0.211***
	(0.066)	(0.059)	(0.087)	(0.076)	(0.066)
Population in 1991					0.001***
					(0.000)
Minimum altitude					-0.006***
					(0.001)
Rural city					-1.388**
					(0.587)
Observations	2,342	2,342	2,342	2,336	2,321
Dep. var.—mean	33.82	33.82	33.82	33.82	33.82
Dep. var.—std. dev.	8.60	8.60	8.60	8.60	8.60
Controls	No	Region FE	Region FE	Province FE	Region FE
Cluster	Robust	Robust	Province	Province	Province

Notes: The dependent variable, measured in *target-adjacent municipalities*, is regressed on the inverse hyperbolic sine transformation (IHST) of post-armistice Allied bombings that hit *the adjacent targeted location*. In the table, the dep. var. is the share of buildings damages during WWII in target-adjacent municipalities from the 1947 Italy Country Study prepared by the U.S. Economic Cooperation Administration). Among targeted locations, the 25th percentile of the tons of bombings is equal to 39 tons, while the median is equal to 114 tons.

Many Anecdotes About Imprecise Bombings

Venafro was repeatedly hit during the heavy bombings of Cassino, even though it was already under Allied control (`https://bit.ly/3617iHn`).

Main Results

Overview of Effects of Municipal Spending

In target-adjacent municipalities, we observe:

1. Size of government shrank: spending $\downarrow$ €61 and revenues $\downarrow$ €64.
    1.1. Type of spending changed (more emphasis on local services, less on admin. costs)

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2. Increased access to local services:
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   - 2.2. Nursery schools: higher spending (+18%), more schools (+20%), higher likelihood of having at least one (+9%).

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   - 2.2. Nursery schools: higher spending (+18%), more schools (+20%), higher likelihood of having at least one (+9%).
3. More admissions into public nurseries (+24%) and no changes in private nurseries.
   - 3.1. Relative increase in share of residents $\leq$3yo (+2%).
   - 3.2. Relative increase in pupils enrolled in nursery schools even after accounting for increase in the number of children $\leq$3yo. Share of pupils in nursery schools increased by 11% when denominator is total number of children $\leq$3yo and by 13% when denominator is total population.
   - 3.3. No effects on pupils who did not benefit from public nurseries (children $>$3yo).

Results compatible with waste cutting and better local services.

Overview of Effects of Municipal Spending

	Region-year fixed effects			Province-year fixed effects				
	Near targets x Post	Obs.	R^2	Near targets x Post	Obs.	R^2	Mean outcome	Std. Dev.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Panel A: Dependent variables from municipal balance sheets before and after LPT				
Rev. from local taxes	12.321***	47,157	0.892	14.122***	47,028	0.903	158.54	108.92
	(4.481)			(4.745)				
Rev. from gov. transfers	-19.357***	47,156	0.843	-16.759***	47,027	0.854	528.31	218.83
	(5.655)			(5.966)				
Revenues per capita	-64.355**	47,153	0.608	-26.235	47,024	0.630	1677.24	1197.95
	(31.944)			(35.098)				
Spending per capita	-60.612*	47,140	0.607	-24.035	47,012	0.629	1674.14	1203.15
	(32.496)			(35.998)				
Deficit per capita	1.994	47,120	0.106	4.160	46,992	0.131	-4.24	148.30
	(4.601)			(6.155)				
				Panel B: Dependent variables from censuses before and after LPT				
Pupils in nursery schools	2.475***	7,277	0.879	2.774***	7,259	0.900	10.43	21.23
	(0.746)			(0.775)				
IHST pupils in nursery schools	0.135***	7,277	0.886	0.149***	7,259	0.896	2.28	1.05
	(0.029)			(0.033)				
Share below 3 in nursery schools	1.122**	7,228	0.649	1.376**	7,210	0.666	10.25	11.48
	(0.479)			(0.568)				
Share of population in nursery schools	0.039***	7,271	0.693	0.039***	7,253	0.712	0.30	0.26
	(0.008)			(0.010)				
Share below 3	0.057**	9,687	0.723	0.067**	9,663	0.745	2.84	1.03
	(0.026)			(0.030)				
Share between 4 and 5	-0.023	9,687	0.691	-0.061***	9,663	0.709	2.14	0.78
	(0.021)			(0.024)				
Share between 4 and 9	-0.064	9,687	0.840	-0.168***	9,663	0.857	7.81	2.50
	(0.051)			(0.055)				
Foreign residents	49.582***	7,271	0.662	50.568***	7,253	0.713	18.64	40.89
	(10.176)			(9.868)				

Notes: Monetary values are expressed in 2017 €. "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. Panel A uses dependent variables from municipal balance sheets that are available every year between 1990 and 2010. Panel B uses dependent variables from the census that are available in 1991, 2001, and 2011 (pupils in nursery schools) or in 1981, 1991, 2001, and 2011. These regressions also include all controls described in slide about preferred specification and sample. Standard errors clustered at the city level in parentheses.

Overview of Effects of Municipal Spending

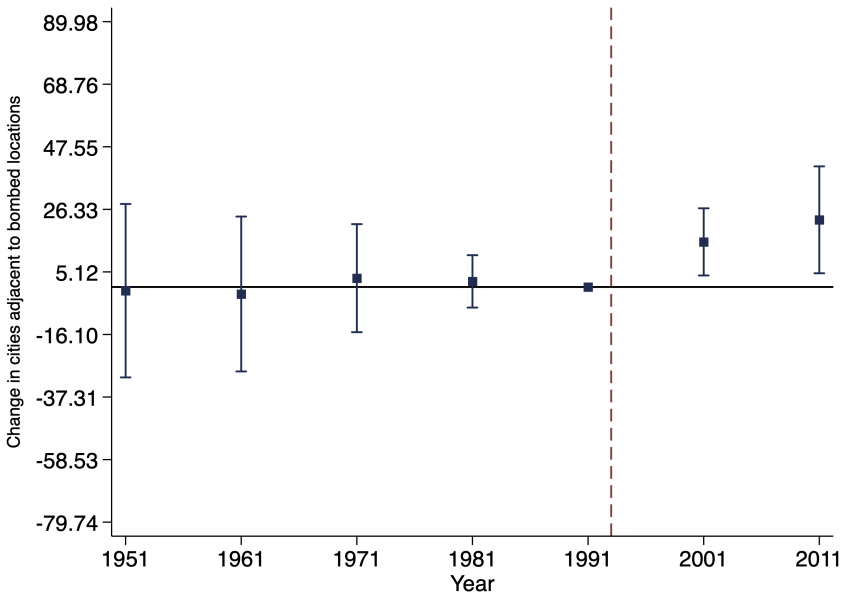
	Region-year fixed effects			Province-year fixed effects				
	Near targets x Post	Obs.	R^2	Near targets x Post	Obs.	R^2	Mean outcome	Std. Dev.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel C: Dependent variables are available only after LPT							
Has fiscal infraction	-0.006	17,954	0.192	-0.011	17,888	0.243	0.51	0.5
	(0.012)			(0.013)				
Spending for local services (%)	1.195***	28,401	0.266	0.835**	28,319	0.327	54.8	16.25
	(0.337)			(0.365)				
Rev. for admin. tasks per employee	257.568**	28,560	0.063	292.717**	28,478	0.123	2244.73	3756.45
	(121.449)			(136.087)				
Has program for local develop.	0.074***	28,430	0.163	0.050***	28,347	0.233	0.61	0.49
	(0.016)			(0.018)				
Has nursery schools	0.054***	28,430	0.222	0.042***	28,347	0.296	0.63	0.48
	(0.014)			(0.016)				
Spending for nursery schools (%)	0.178***	28,248	0.283	0.045	28,165	0.387	1.01	2.03
	(0.065)			(0.065)				
Public nursery schools	0.052***	17,326	0.391	0.005	17,194	0.504	0.26	0.61
	(0.015)			(0.016)				
Pupils in private nursery schools	0.015	2,403	0.771	0.159	2,397	0.804	11.88	21.18
	(0.403)			(0.414)				

Notes: Monetary values are expressed in 2017 €. "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. Panel C uses dependent variables from balance sheets that are available only between 1998 and 2010 (the number of pupils in private nursery schools is available from the census only in 2011). In this case, the treatment variable is just "Near targets," not its interaction with "Post." These regressions also include all controls described in slide on preferred specification and sample. Standard errors clustered at the city level in parentheses.

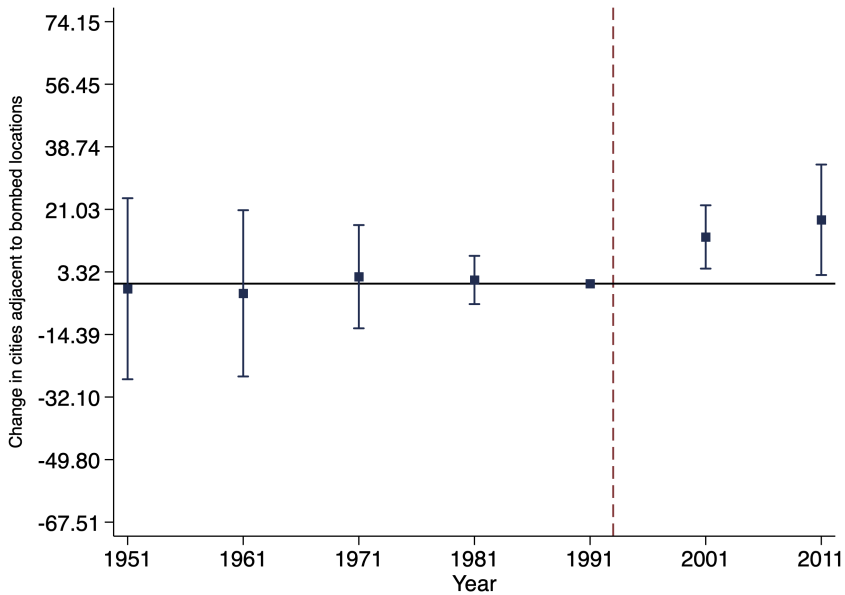
Looking at Effects on Labor Markets

In target-adjacent municipalities, we observe:

1. Increase in women's labor-force participation and employment (+5%)



A. Women in labor force



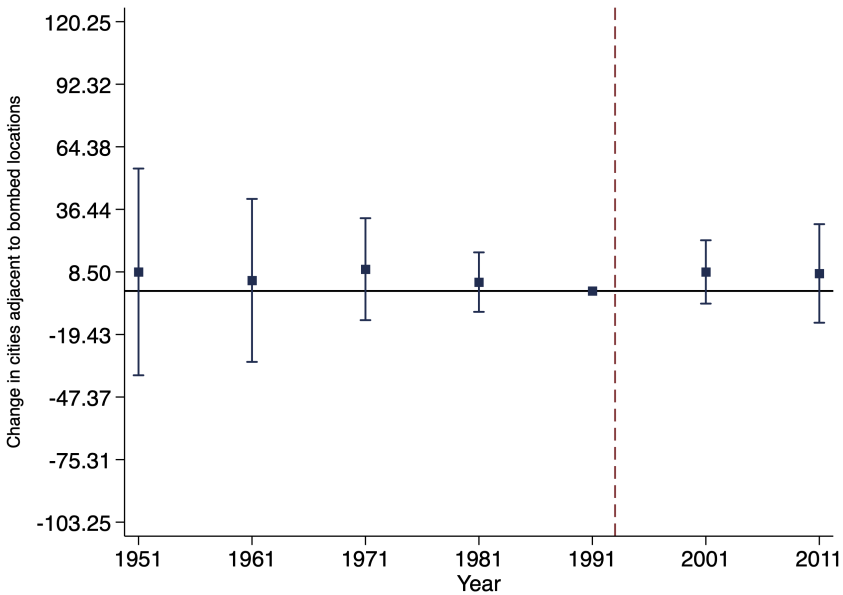
B. Employed women

Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

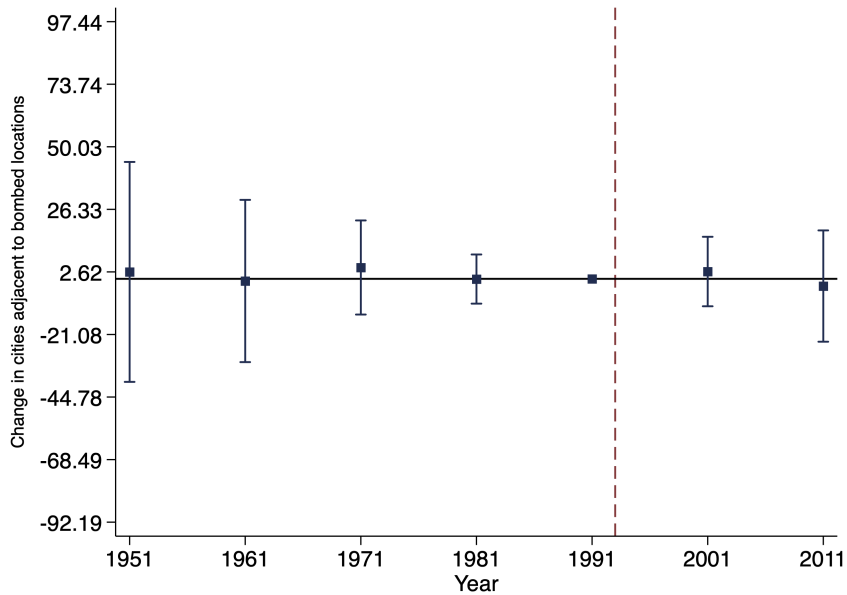
Looking at Effects on Labor Markets

In target-adjacent municipalities, we observe:

2. No large effect on men (=reduction in gender gap in employment)



C. Men in labor force

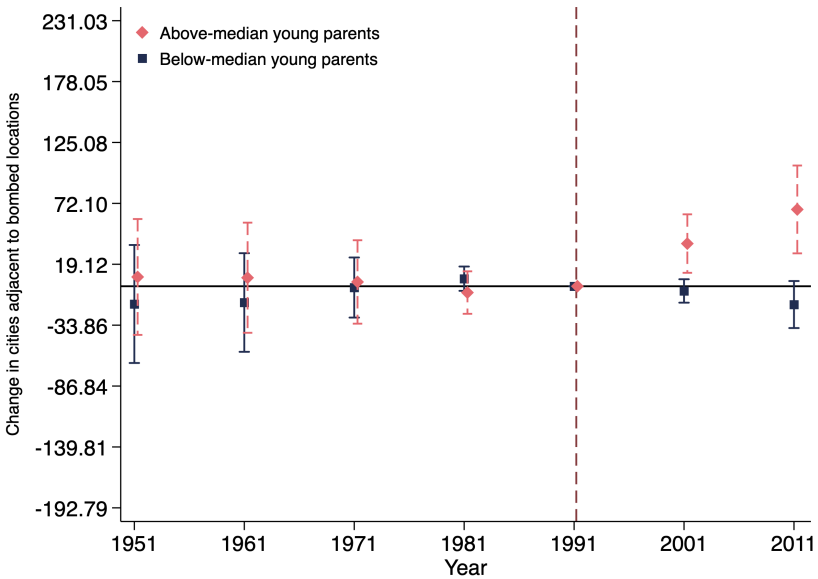


D. Employed men

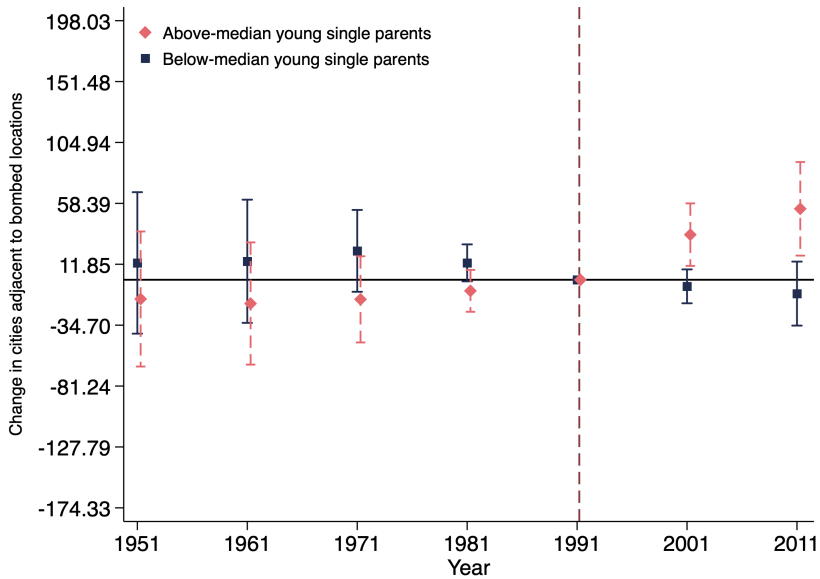
Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Overview of Effects on Labor Markets

Results come from municipalities with more younger (<35yo) parents (+20% in women's participation)



Above-median share of younger parents



Above-median share of younger single parents

Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII, further distinguishing between cities with a higher share of young parents and cities with a lower share of young parents. Specifically, we use the share of residents who are below 35 years old and have children or the share of residents who are below 35 years old, are single, and have children, computed relative to the total number of residents who are below 35 years old. These variables are all measured in 1991 and interacted with the main treatment variable in our preferred specification (Near target x Year FE). The regressions also include city fixed effects, the dummy for a high share of young parents interacted with year fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

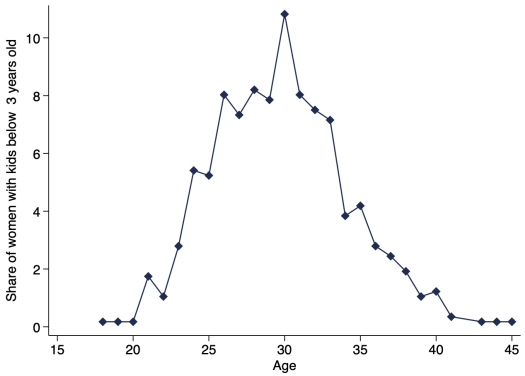
Social Security Data

Heterogeneities By Age and Gender

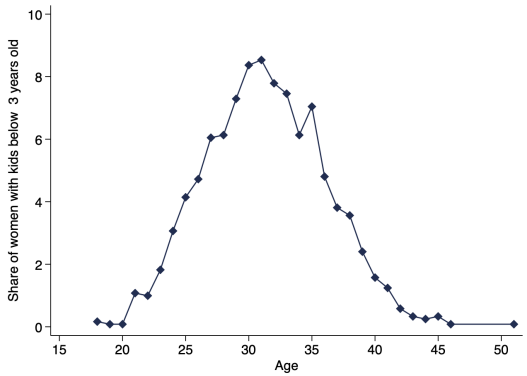
- Prior results suggestive of role of nursery schools
- But we can dig deeper with Social Security data
  - Triple differences with Near-target x Age x Year.
  - Sample includes only women. Control group is employed women between 50yo and 54yo

Heterogeneities By Age and Gender

- Prior results suggestive of role of nursery schools
- But we can dig deeper with Social Security data
  - Triple differences with Near-target x Age x Year.
  - Sample includes only women. Control group is employed women between 50yo and 54yo
- Goal: Expect larger results for younger women



A. 1977-1993



B. 1977-2010

Notes: These graphs show the probability of having a child below three years old for women working in the private sector (qualp3==1 and settp9!=8 in the SHIW data). The data comes from sequential waves of the Bank of Italy's Survey of Household and Income Wealth. Panel A stops before the full implementation of the LPT, while panel B shows data from all the waves until 2010.

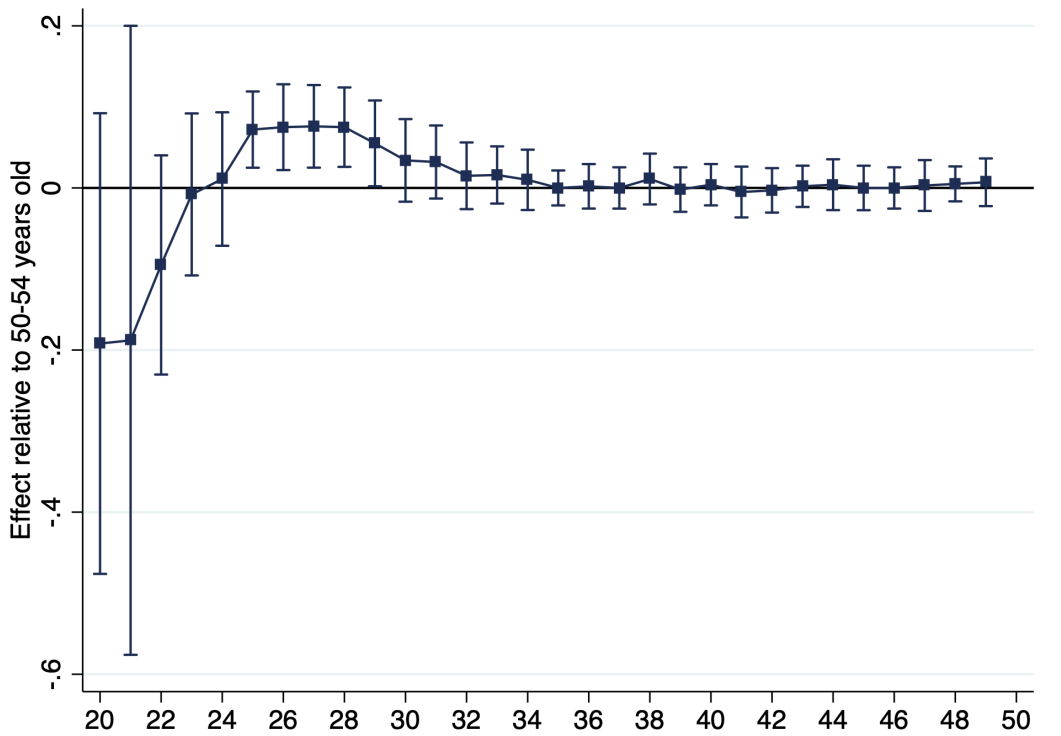
Triple Interactions Using SS Data

$$
\begin{aligned}
y_{amt} \quad = \quad & \alpha_m + \gamma_{rt} + \zeta_{at} + \sum_a \delta_0^a \text{Age}_a \times \text{Near targets}_m \times \text{Post}_t \\
& + \sum_a \delta_1^a \text{Age}_a \times \text{Near targets}_m + \delta_2 \text{Near targets}_m \times \text{Post}_t \\
& + \varepsilon_{amt}
\end{aligned}
$$

- Unit of observation is an age group a living in municipality m in year $t \in [1974, 2011]$.
- Age_a is set of dummies identifying individual ages or age bins.
- ζ_{at} denotes age-year fixed effects.
- All other variables already defined.
- Only women in sample. Control group is employed women between 50 and 54 years old.

Overview of Effects By Age and Gender

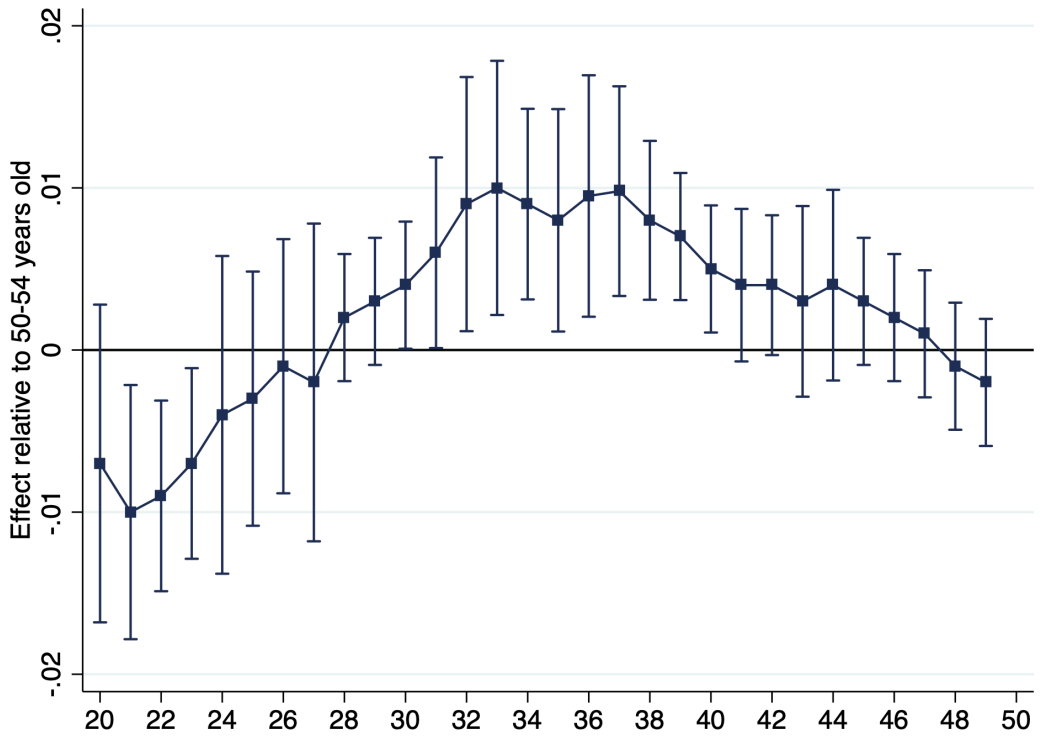
New entrants: 26-33 y.o. (+18%) vs $\geq$ 34 y.o. (no change).



Notes: These graphs show triple interactions of age dummies, a dummy equal to 1 for near-targets locations, and a post-1993 dummy. The sample includes only women. The control group is formed by municipalities adjacent to cities matched to target locations. The omitted age group is composed of 50- to 54-year-old women. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 95 percent CIs.

Overview of Effects By Age and Gender

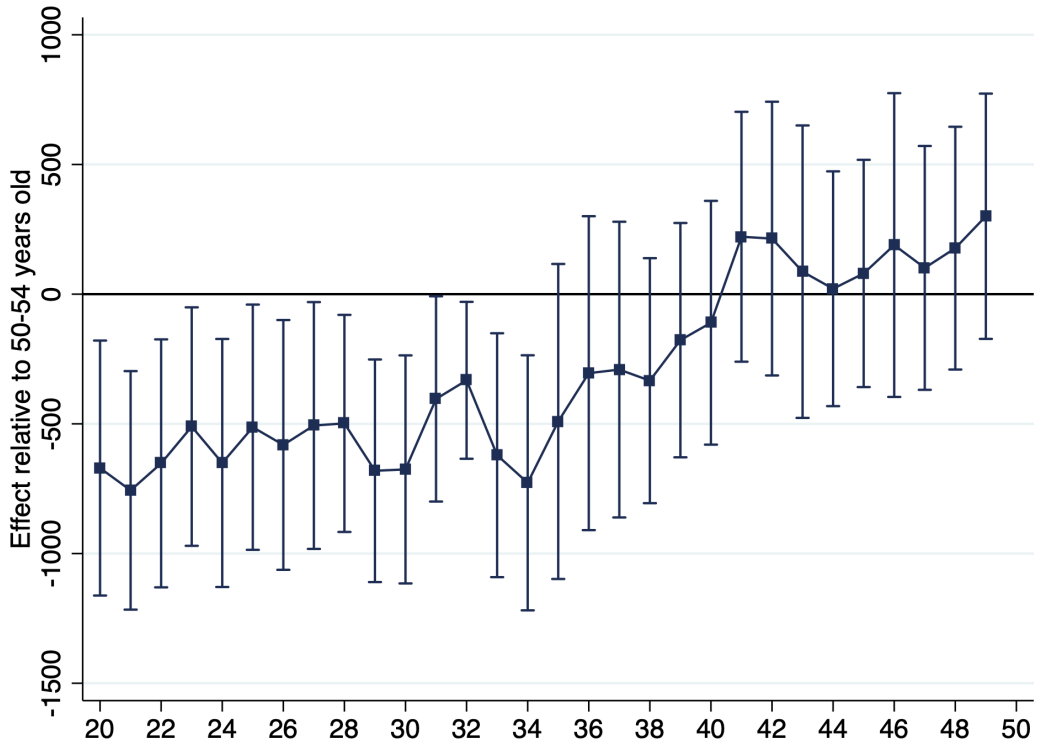
Re-entry after hiatus: 30-40 y.o. (+25%) vs. $>$ 40 y.o. (no change).



Notes: These graphs show triple interactions of age dummies, a dummy equal to 1 for near-targets locations, and a post-1993 dummy. The sample includes only women. The control group is formed by municipalities adjacent to cities matched to target locations. The omitted age group is composed of 50- to 54-year-old women. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 95 percent CIs.

Overview of Effects By Age and Gender

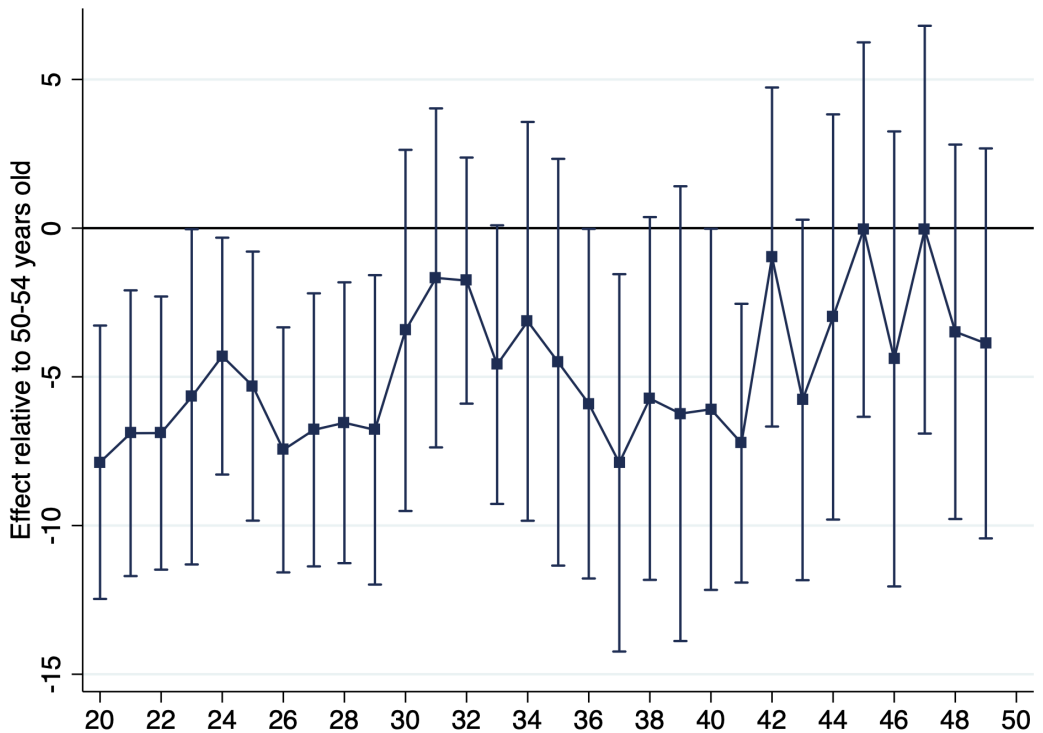
Median wage: $<$40 y.o. (-5%) vs. $\geq$ 40 y.o. (no change).



Notes: These graphs show triple interactions of age dummies, a dummy equal to 1 for near-targets locations, and a post-1993 dummy. The sample includes only women. The control group is formed by municipalities adjacent to cities matched to target locations. The omitted age group is composed of 50- to 54-year-old women. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 95 percent CIs.

Overview of Effects By Age and Gender

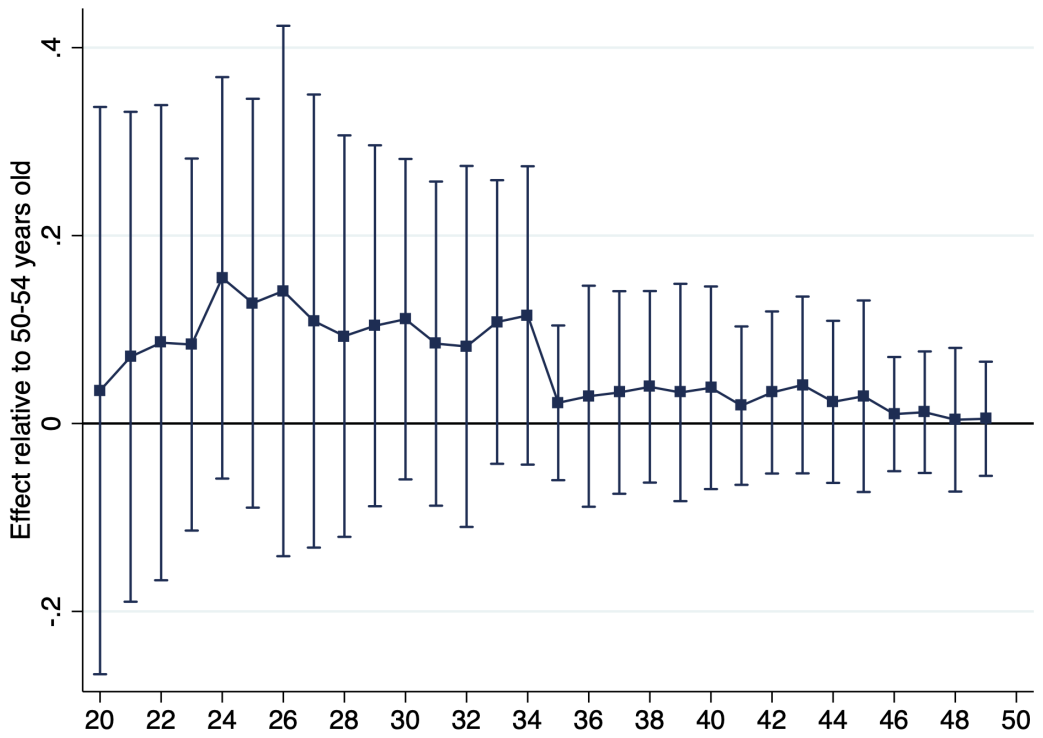
Younger women became more likely to work fewer days (-3%)



Notes: These graphs show triple interactions of age dummies, a dummy equal to 1 for near-targets locations, and a post-1993 dummy. The sample includes only women. The control group is formed by municipalities adjacent to cities matched to target locations. The omitted age group is composed of 50- to 54-year-old women. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 95 percent CIs.

Overview of Effects By Age and Gender

Younger women became more likely to work outside province of residence (21%)



Notes: These graphs show triple interactions of age dummies, a dummy equal to 1 for near-targets locations, and a post-1993 dummy. The sample includes only women. The control group is formed by municipalities adjacent to cities matched to target locations. The omitted age group is composed of 50- to 54-year-old women. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 95 percent CIs.

Overview of Effects By Age and Gender

Extensions and robustness checks of results using Social Security data:

- Results on median wages robust to using log median wages ▸ Go
- Results hold after including city-year fixed effects ▸ Go
- Results hold if standard error clustered at province level, rather than city level ▸ Go
- Zero placebo effects when sample includes only women above 45yo ▸ Go
- Quadruple interaction by including men in the estimating sample ▸ Go
- Pre-reform yearly trends since 1974 ▸ Go, ▸ Go, ▸ Go

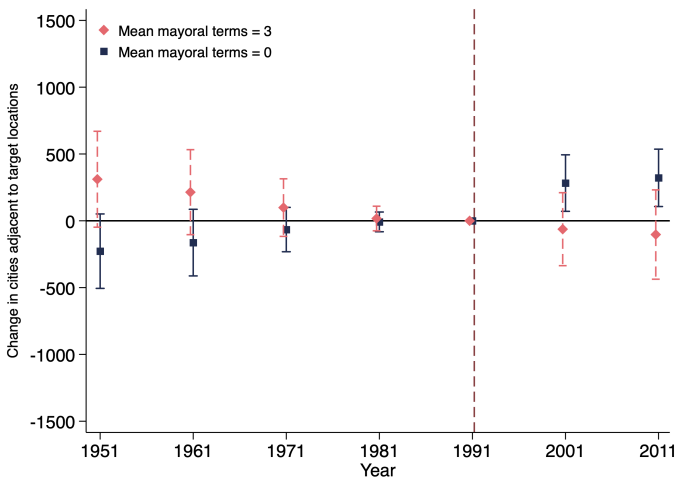
Main takeaway: As expected, younger women more affected than women over 40 years old

Channels

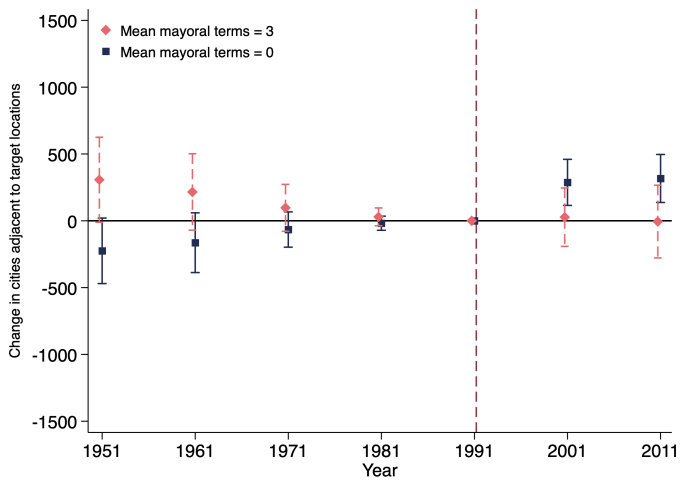
Political Competition Correlated with Treatment Effects

In triple-interaction specifications, we interact the following variables with Near target$_m$ $\times$ Years$_t$:

1. Political competition: Mayoral term$_m$ = average # of terms held by mayors after 1993 in municipality m.



A. Women's participation—Political competition



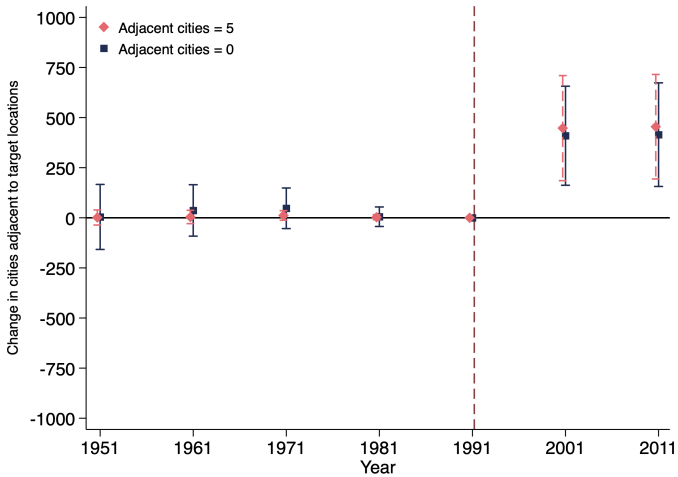
B. Women's employment—Political competition

Notes: Panels show heterogeneity effects in women's labor-force participation and employment based on the mean number of mayoral terms after 1993. The regressions also include city fixed effects, the new heterogeneity variables interacted with year fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

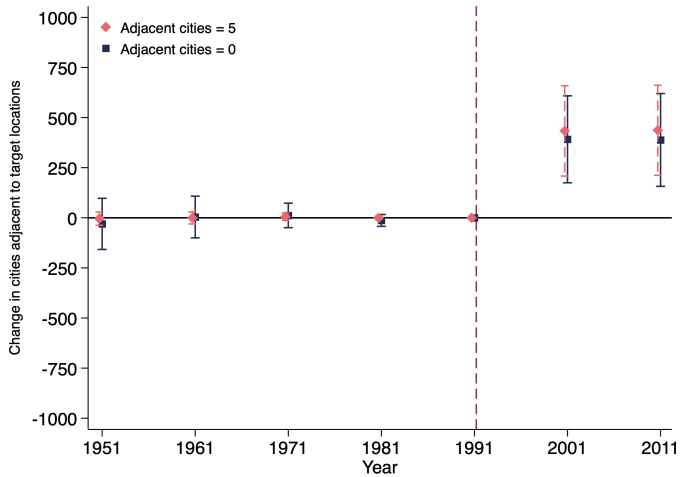
Others Not Correlated with Treatment Effects

In triple-interaction specifications, we interact the following variables with Near target$_m$ $\times$ Years$_t$:

2. Municipal competition: Adjacent cities$_m$ = # of municipalities bordering city m.



A. Women's participation—Municipal competition



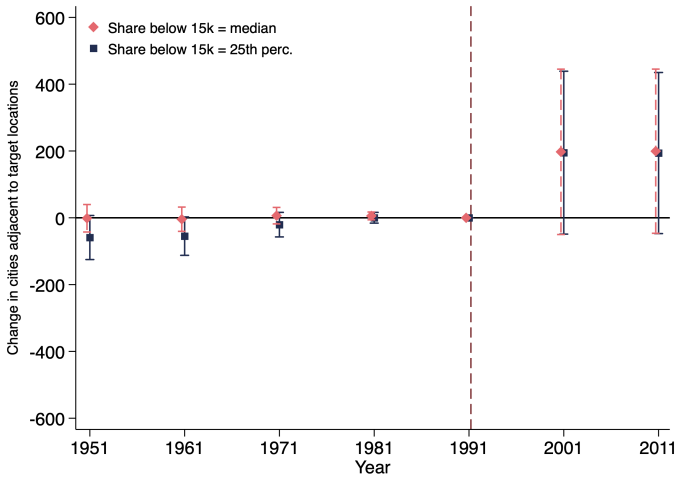
B. Women's employment—Municipal competition

Notes: Panels show heterogeneity effects based on the number of adjacent municipalities. The regressions also include city fixed effects, the new heterogeneity variables interacted with year fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

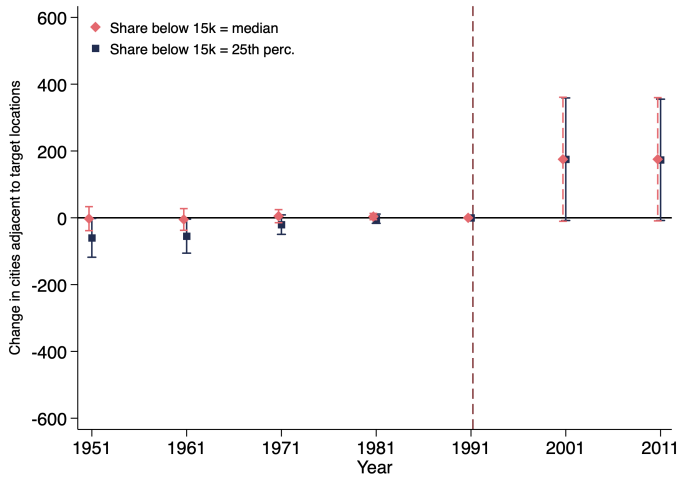
Others Not Correlated with Treatment Effects

In triple-interaction specifications, we interact the following variables with Near target$_m$ $\times$ Years$_t$:

3. Preference for welfare: Below €15,000$_m$ = % of income earners with a yearly taxable income <€15,000 in 2000.



A. Women's participation—Local preferences



B. Women's employment—Local preferences

Notes: Panels show heterogeneity effects based on the share of income earners with yearly taxable income below €15,000. The regressions also include city fixed effects, the new heterogeneity variables interacted with year fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Other Results and Robustness Analysis

Magnitudes

- Elasticities from an increase in revenues from local taxes:
  - total revenues and spending -0.3%.
  - spending for local services +0.2%.
  - probability of having nursery school +0.7%.

Gadenne (2017): elasticity of education spending to revenues from local taxes = 0.5.

Martinez (2018): elasticity of local spending from property tax revenues = 0.2.

- Elasticities from an increase in childcare subsidies:
  - 1% increase in enrollment increased women's labor force participation by up to 0.21%.
  - 1% increase in subsidies to childcare costs increased women's labor force participation by up to 0.14%.

Carta and Rizzica (2018): elasticity of women's participation to childcare subsidies between 0.14 percent and 0.22 percent.

Endogenous Responses of Local Administrators

	Region-year fixed effects			Province-year fixed effects				
	Near targets	Obs.	R^2	Near targets	Obs.	R^2	Mean outcome	Std. Dev.
	(1)	(2)	(3)	(6)	(7)	(8)	(9)	(10)
LPT rate (‰)	-0.049*	28,536	0.320	-0.056**	28,454	0.387	5.62	0.88
	(0.026)			(0.028)				
LPT rate for homeowners (‰)	-0.062**	28,526	0.200	-0.097***	28,444	0.273	5.15	0.74
	(0.024)			(0.026)				
Max LPT rate (dummy)	-0.026**	28,536	0.137	-0.028**	28,454	0.202	0.13	0.33
	(0.012)			(0.014)				
Max LPT rate for homeowners (dummy)	-0.006	28,526	0.013	-0.009	28,444	0.048	0.02	0.12
	(0.005)			(0.005)				
Tax benefits for homeowners	-0.001	28,579	0.174	0.030*	28,497	0.244	0.31	0.46
	(0.016)			(0.018)				
Share of issued building permits	-1.369**	16,159	0.094	-1.879***	16,098	0.148	82.75	19.89
	(0.550)			(0.615)				

Notes: This table shows differences in LPT tax rates and rate of construction of new buildings, using variables from balance sheets that are available between 1998 and 2010. "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to targeted locations. The regressions also include region-year (column 1) or province-year (column 4) fixed effects, as well as controls for population, area of the municipality, a dummy for coastal cities, and a dummy for urban cities. Standard errors clustered at the city level in parentheses.

Extensions and Robustness Analysis (1)

Extensions and robustness checks:

- Results with more dependent variables from census: No large effects on population and firms ▸ Go
- Robustness for heterogeneity with share of younger parents: ▸ Go
- Instrumental variable: ΔRev. local tax (90-94)$_m$ instrumented with baseline treatment Near targets$_m$. Results qualitatively robust. ▸ Go
- Logged dependent variables: Increase for women robust, but results for men more noisy. Hence, no decrease in log gap. ▸ Women, ▸ Men, ▸ Gap
- Share of women active in labor market: Increased noise for 1961 and 1971 coefficients, but trend from 1981 qualitatively robust. ▸ 15-64 mean, ▸ Pop. mean, ▸ 15-64 in 1991, ▸ Pop. in 1991, ▸ Yearly 15-64, ▸ Yearly pop.
- Controlling for Marshall Plan aid. ▸ Tot, ▸ Build., ▸ Priv.

Extensions and Robustness Analysis (2)

Extensions and robustness checks:

- Matching target-adjacent and target-distant municipalities based on 1991 characteristics. Similar results but slightly worse pre-trends. ▸ Women, ▸ Men, ▸ Gap
- Different initial matching between targeted and nontargeted municipalities. Results robust to several variations. ▸ Macro, ▸ Regions, ▸ 24, ▸ 33
- Different clustering of standard errors at province level and to account for spatial and serial correlation. ▸ Prov, ▸ Spatial
- Province-year FE instead of region-year FE ▸ Go
- Preferred spec. includes minimum set of nonlinear trends needed to achieve parallel pre trends: no pop. trends (▸ Go), no altitude trends (▸ Go), no rural trends (▸ Go). But results robust to inclusion of several additional trends beyond minimum set: ▸ Geo, ▸ RE, ▸ Pop.
- Correcting for multiple hypothesis testing: ▸ Go

Conclusions

Conclusions

- 1992 Italian reform that introduced LPT for municipalities
  - Contribution 1: Leverage variation in revenues from LPT across municipalities and over time
  - Contribution 2: Track effects into the labor markets.
- Public services:
  - Reduced waste and increased access.
  - Subsidized public nursery schools: +24% enrollment increase.
- Labor markets:
  - Female employment up to 20%, gender gap in employment -8%.
  - Effects larger among younger women (25-35 years old).
- Mechanisms
  - Our findings speak about the importance of high political competition.
  - Only suggestive, no random variation here.

Back-Up Slides

Formula for LPT Liability

◂ Back

- Formula for the individual LPT liability:
  - LPT paid = cadastral value × multiplier × tax rate.
  - Cadastral value: value assigned to buildings at the time of construction (only for tax purposes. After initial assessment, almost never reevaluated on a case-by-case basis, unless property undergoes major renovation.
  - Multiplier set by national government and constant across municipalities.
  - Tax rate under the direct control of local administrators, even though restricted by law to being between 0.4 percent and 0.7 percent.

- Cadastral values more promising component to leverage plausibly exogenous cross-municipality variation in tax liability:
  - Not under the control of local administrators (unlike tax rates).
  - Vary across municipalities (unlike multiplier)
  - Depend on construction year of buildings (use bombings as variation in average building age)

Correlation With Building Age

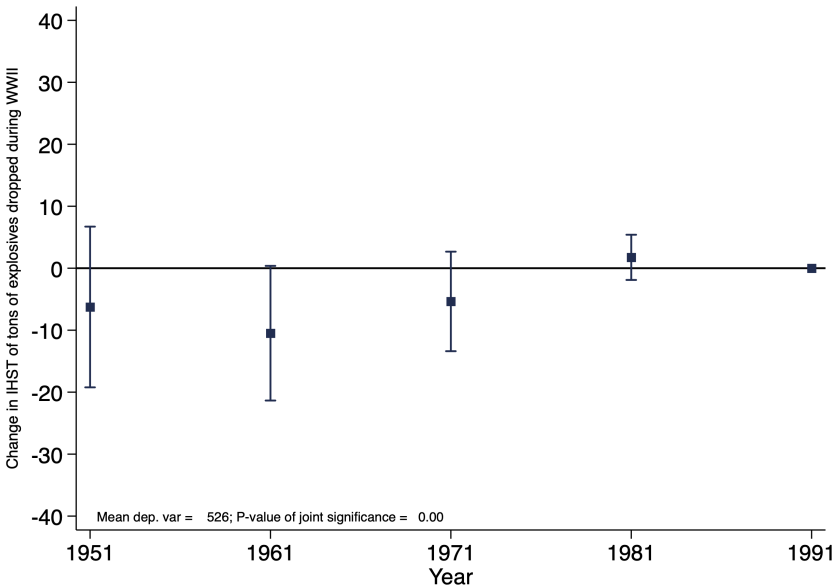
◂ Back

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Panel A: Dependent variable is average cadastral value in 2013 (first available year)						
Share of pre-WWII buildings	-3.631***	-3.522***	-3.116***	-2.934***	-1.638***	-0.800***	-0.546***
	(0.269)	(0.234)	(0.223)	(0.202)	(0.193)	(0.171)	(0.155)
Controls	Region FE	Province FE	(2) + building size	(3) + building qual.	(4) + geography	(5) + demography	(6) + economy
Observations	7,990	7,990	7,990	7,990	7,990	7,987	7,987
R^2	0.412	0.555	0.604	0.615	0.684	0.718	0.767
Dep. var.—mean	351.2	351.2	351.2	351.2	351.2	351.2	351.2
Dep. var.—std. dev.	149.95	149.95	149.95	149.95	149.95	149.98	149.98
Pre-WWII buildings—mean	40.24	40.24	40.24	40.24	40.24	40.24	40.24
Pre-WWII buildings—std. dev.	19.04	19.04	19.04	19.04	19.04	19.04	19.04

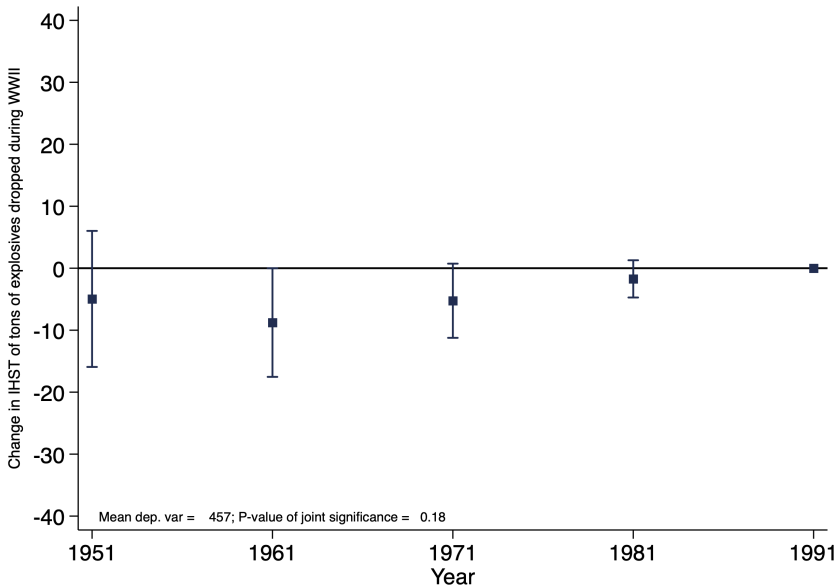
Notes: The dependent variable is the average cadastral value in 2013. Source: Agenzia del Territorio, Statistiche Catastali. Building size: average number of rooms of residential buildings. Building quality: share of high-quality residential buildings in the municipality (cadastral classes A1, A7, A8, A9). Geography: size of municipality, dummy for coastal cities, dummy for mountain cities, altitude. Demography: population, share of residents above 65 years old, share of household with 2 or fewer members, share of foreign-born residents, share of women. Economy: share of residents with university degree, share of unemployed. share working in the industrial sector, share working in the service sector. Standard errors clustered at the province level in parentheses.

Spec. 1: Pre-Reform Trends

◂ Back



A. Dep. var.: women in labor force;



B. Dep. var.: employed women;

Notes: In panels A to B, the sample includes all Italian municipalities, while the treatment variable is the inverse hyperbolic sine transformation (IHST) of the tons of post-armistice Allied bombings (Specification 1). All specifications include municipal fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Spec. 2: Balance Tests in 1991

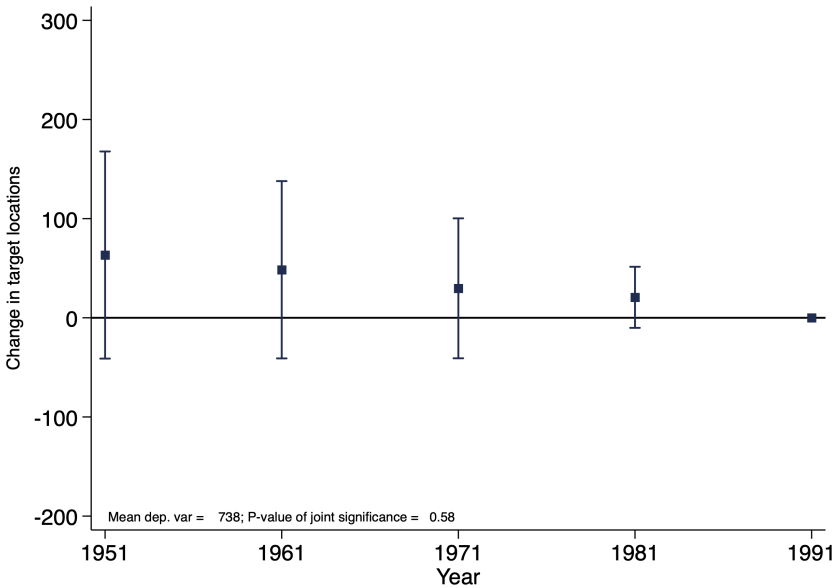
◂ Back

	Targeted (1)	Mean (2)	Std. dev. (3)		Targeted (1)	Mean (2)	Std. dev. (3)
Population in urban areas (%)	-1.403	17.26	17.76	Coastal city	-0.051*	0.12	0.32
	(1.572)				(0.027)		
Dist. to econ. center (km)	-5.271*	38.10	22.91	Aging index	-2.011	144.30	125.28
	(3.026)				(11.090)		
Share below 6	0.233**	5.54	1.70	Share above 75	-0.302	8.37	3.57
	(0.108)				(0.268)		
Women in labor force	-0.565	1020.84	1524.11	Men in labor force	-14.554	1881.58	2894.92
	(47.445)				(24.615)		
Women with jobs	6.776	783.84	1181.45	Men with jobs	10.848	1576.50	2306.98
	(59.882)				(60.633)		
Gender gap in labor force	-13.989	860.74	1492.29	Gender gap in employment	4.072	792.66	1251.64
	(38.415)				(25.893)		
Firms with $\leq$ 2 employees	6.155	288.00	382.15	Firms with $\geq$ 200 employees	0.042	0.07	0.36
	(11.866)				(0.028)		
Agricultural workers	-2.258	11.54	36.19	Manufacturing workers	11.447	648.30	1185.20
	(2.557)				(93.055)		
Retail workers	-7.503	366.95	600.15	Real-estate workers	-7.589	85.21	137.41
	(19.803)				(11.678)		
Foreign residents	-4.628	33.59	66.62	Share women	0.108	51.03	1.67
	(4.250)				(0.142)		
Pupils in nursery school	-0.257	18.66	37.49	Residents with uni. degree	-0.731	1270.76	2157.68
	(1.486)				(52.951)		
Household (HH) size	0.055**	2.74	0.38	m^2 per resident	0.497	35.24	5.38
	(0.023)				(0.388)		

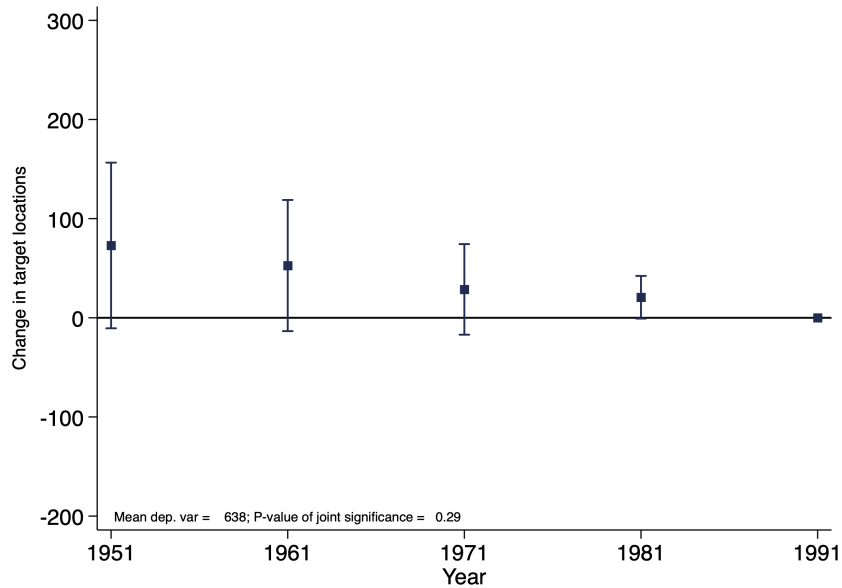
Notes: This table shows differences in the levels of observables characteristics measured in 1991. All monetary values are expressed in 2017 €. Column 1 compares municipalities targeted by Allied bombings after the Armistice of Cassibile to other matched nontargeted Italian cities. The matching process uses geographical and demographic characteristics measured in 1991 (population, area, population density, number of buildings, share of homeowners, share of residents under 3, and region fixed effects). Regressions also include population, a dummy for rural cities, minimum altitude, and region fixed effects. Standard errors clustered at the province level in parentheses.

Spec. 2: Pre-Reform Trends

◂ Back



A. Dep. var.: women in labor force;

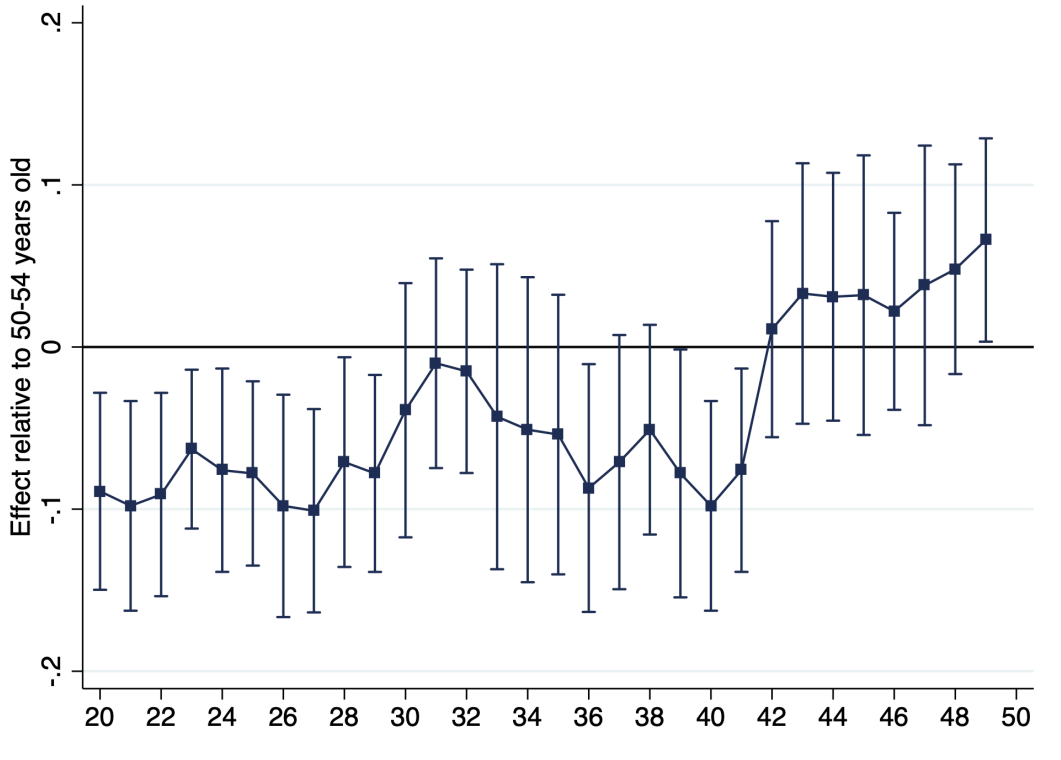


B. Dep. var.: employed women;

Notes: In panels A and B, the sample includes only locations targeted by Allied bombings and nontargeted locations matched to them based on observables, while the treatment variable is equal to 1 for targeted firms (Specification 2). The matching process uses several geographical and demographic characteristics measured in 1991 (population, area, population density, number of buildings, share of homeowners, share of residents under 3, and region fixed effects). All specifications include municipal fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Log Median Wages

◂ Back



Notes: These graphs show triple interactions of age dummies, a dummy equal to 1 for near-targets locations, and a post-1993 dummy. The sample includes only women. The control group is formed by municipalities adjacent to cities matched to target locations. The omitted age group is composed of 50- to 54-year-old women. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 95 percent CIs.

City-Year FE

◂ Back

	New entry in labor market (1)	Reentry in labor market (2)	Median wage (3)	Median days worked (4)	Working outside prov. (5)	Log median wage (6)
			Controls for city-year fixed effects			
Near targets x Post x 20-24	-0.096	-0.067***	-599.304**	-7.897***	0.180	-0.053**
	(0.073)	(0.025)	(243.029)	(2.176)	(0.256)	(0.023)
Near targets x Post x 25-29	0.063***	0.032	-507.602**	-5.218***	0.379***	-0.039*
	(0.013)	(0.029)	(226.134)	(1.509)	(0.141)	(0.020)
Near targets x Post x 30-34	0.039***	0.100***	-504.257**	-4.589***	0.350**	-0.037*
	(0.017)	(0.037)	(222.406)	(1.298)	(0.164)	(0.021)
Near targets x Post x 35-39	0.002	0.088***	-266.296	-1.543***	0.205	-0.021
	(0.016)	(0.033)	(250.235)	(1.340)	(0.137)	(0.024)
Near targets x Post x 40-44	0.001	0.047*	114.472	2.319	0.139	0.021
	(0.010)	(0.024)	(234.327)	(2.128)	(0.085)	(0.020)
Near targets x Post x 45-49	0.002	0.023	200.146	4.325**	0.080	0.029
	(0.009)	(0.015)	(201.271)	(1.943)	(0.060)	(0.018)
Observations	2,398,512	2,356,318	2,398,512	2,398,512	2,398,512	2,398,512
Mean	0.45	0.39	14,109.20	230.28	1.95	9.36
Std. dev.	1.89	0.98	7,175.81	89.29	4.69	0.73

Notes: Monetary values are expressed in 2017 €. All panels include only women. Regressions replace the region-year fixed effects with city-year fixed effects.

Cluster at Province Level

◂ Back

	New entry in labor market (1)	Reentry in labor market (2)	Median wage (3)	Median days worked (4)	Working outside prov. (5)	Log median wage (6)
			Standard errors clustered at the province level			
Near targets x Post x 20-24	-0.095	-0.073**	-647.523**	-7.532**	0.199	-0.060**
	(0.088)	(0.032)	(262.109)	(3.159)	(0.416)	(0.026)
Near targets x Post x 25-29	0.060***	0.026	-555.762**	-6.191**	0.405**	-0.047**
	(0.015)	(0.023)	(222.210)	(2.685)	(0.169)	(0.022)
Near targets x Post x 30-34	0.040***	0.093***	-549.956**	-4.622*	0.373**	-0.044**
	(0.010)	(0.033)	(232.850)	(2.503)	(0.152)	(0.022)
Near targets x Post x 35-39	0.003	0.082**	-315.301	-1.368	0.224*	-0.027
	(0.011)	(0.031)	(250.072)	(2.977)	(0.134)	(0.026)
Near targets x Post x 40-44	-0.008	0.042	82.953	1.731	0.151*	0.016
	(0.02)	(0.026)	(223.908)	(2.774)	(0.080)	(0.022)
Near targets x Post x 45-49	0.007	0.022	165.886	3.804	0.071	0.025
	(0.010)	(0.014)	(230.417)	(2.613)	(0.045)	(0.021)
Observations	2,398,512	2,356,318	2,398,512	2,398,512	2,398,512	2,398,512
Mean	0.45	0.39	14,109.20	230.28	1.95	9.36
Std. dev.	1.89	0.98	7,175.81	89.29	4.69	0.73

Notes: Monetary values are expressed in 2017 €. All panels include only women. Regressions cluster standard errors at the province level, rather than city level.

Placebo Effects

◂ Back

	New entry in labor market (1)	Reentry in labor market (2)	Median wage (3)	Median days worked (4)	Working outside prov. (5)	Log median wage (6)
			Placebo effects			
Near targets x Post x 45-49	0.004	0.007	-18.761	-5.028	0.218	-0.037
	(0.008)	(0.023)	(395.865)	(4.333)	(0.135)	(0.039)
Near targets x Post x 50-54	0.002	-0.015	-176.973	-7.925*	0.144	-0.062
	(0.007)	(0.017)	(388.864)	(4.317)	(0.123)	(0.039)
Near targets x Post x 55-59	0.003	-0.019	-120.489	-4.145	0.064	-0.032
	(0.007)	(0.014)	(331.457)	(4.201)	(0.081)	(0.037)
Observations	958,947	916.974	958,947	958,947	958,947	958,947
Mean	0.45	0.39	14,109.20	230.28	1.95	9.36
Std. dev.	1.89	0.98	7,175.81	89.29	4.69	0.73

Notes: Monetary values are expressed in 2017 €. All panels include only women. Regressions estimate placebo treatment effects including only women over 45. In this case, the excluded age category is composed by 60year-olds.

Quadruple Interactions

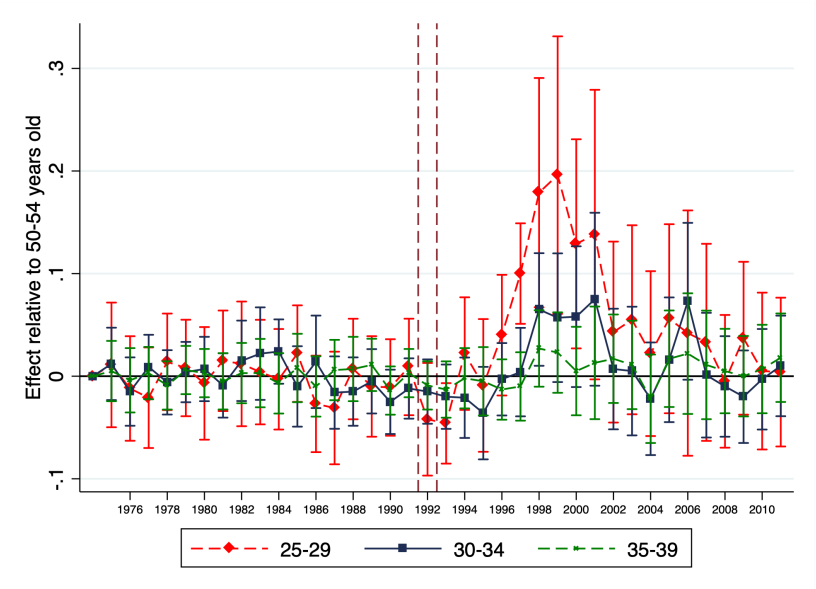
◂ Back

	Near targets x Post x 20-24 x Woman	Near targets x Post x 25-29 x Woman	Near targets x Post x 30-34 x Woman	Near targets x Post x 35-39 x Woman	Near targets x Post x 40-44 x Woman	Near targets x Post x 45-49 x Woman	Mean outcome	Std. Dev.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Entry and reentry into the labor market								
New entry into the labor market	-0.023	-0.025	-0.045***	-0.041***	-0.035***	-0.010	0.45	1.89
	(0.047)	(0.028)	(0.015)	(0.010)	(0.012)	(0.008)		
Reentry into the labor market	0.777***	0.343***	0.297***	0.253***	0.248***	0.275***	0.55	1.89
	(0.066)	(0.077)	(0.078)	(0.071)	(0.060)	(0.052)		
Entry into a new firm	1.949***	2.048***	1.447***	1.090***	1.112***	1.190***	2.39	5.78
	(0.238)	(0.235)	(0.226)	(0.217)	(0.213)	(0.181)		
Reentry into the same firm	0.222***	0.108***	0.117***	0.097***	0.104***	0.112***	0.22	0.55
	(0.016)	(0.017)	(0.020)	(0.019)	(0.019)	(0.019)		
Panel B: Characteristics of labor contracts								
Median wage	-126.790	-100.240	-268.722	-62.175	124.081	72.747	14,198.22	6,826.85
	(251.578)	(243.661)	(266.358)	(309.529)	(294.435)	(245.725)		
Log median wage	-0.030	-0.037*	-0.042*	-0.035	0.001	0.012	9.78	0.89
	(0.023)	(0.021)	(0.024)	(0.028)	(0.023)	(0.021)		
Median hourly wage	0.005	0.040	-0.039	0.063	0.006	-0.028	9.51	2.48
	(0.075)	(0.075)	(0.080)	(0.086)	(0.087)	(0.072)		
Median days worked	-4.647	-4.152	-3.979	-2.476	0.465	2.863	236.89	86.71
	(3.057)	(2.684)	(2.979)	(3.191)	(2.765)	(2.478)		
Working outside province of res.	0.213	0.094	-0.211	-0.253***	-0.229***	-0.139***	1.93	4.67
	(0.170)	(0.126)	(0.129)	(0.054)	(0.033)	(0.037)		

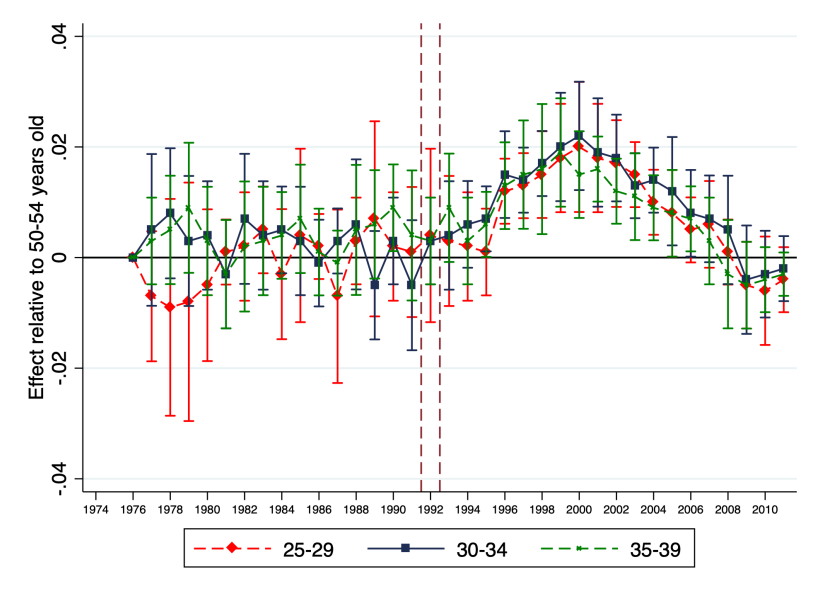
Notes: Monetary values are expressed in 2017 €. The sample includes both men and women. "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to targeted locations. "Post" is 1 starting in 1993, when the LPT was introduced. The excluded age category is composed by 50- to 54-year-olds. The regressions also include the triple and pairwise interactions between the main variables, city fixed effects, age-year fixed effects, gender-age fixed effects, gender-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors clustered at the city level in parentheses.

Panel Analysis with Social Security Data

◂ Back



A. New entry in labor market

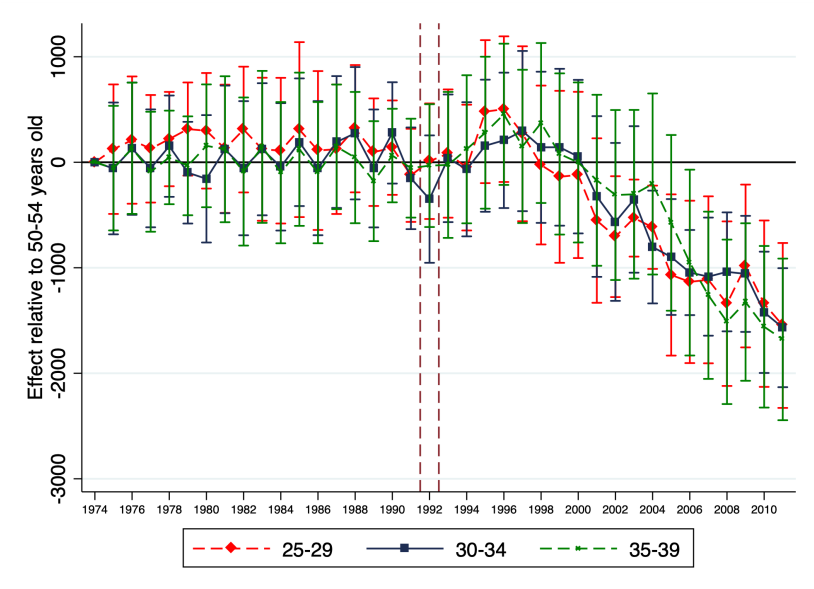


B. Reentry in labor markets

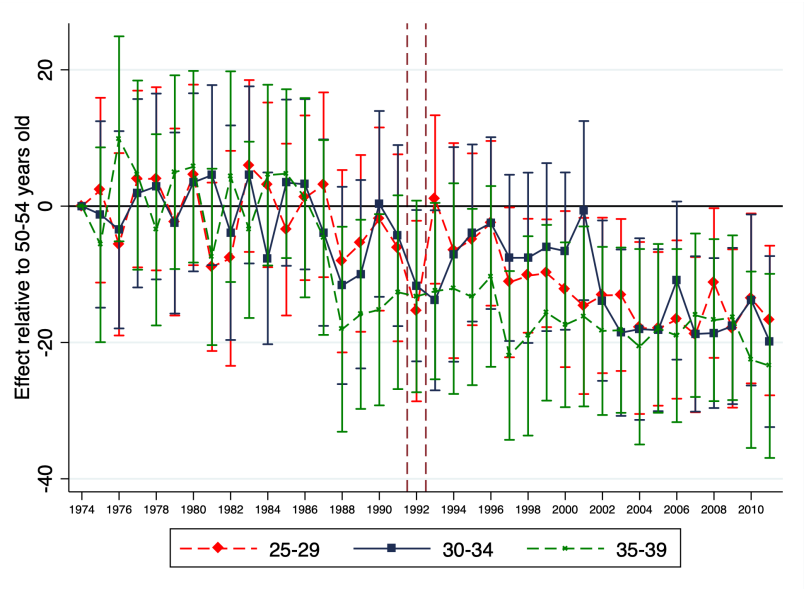
Notes: These graphs show triple interactions of age bins, a dummy equal to 1 for near-target locations, and year dummies. The sample includes only women. The control group is composed of municipalities adjacent to cities matched to target locations. For sake of clarity, the graphs shows the coefficients for only three age bins (25-29, 30-34, 35-39 years old). The omitted age group is composed by 50- to 54-year-olds. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 95 percent CIs.

Panel Analysis with Social Security Data

◂ Back



C. Median wage

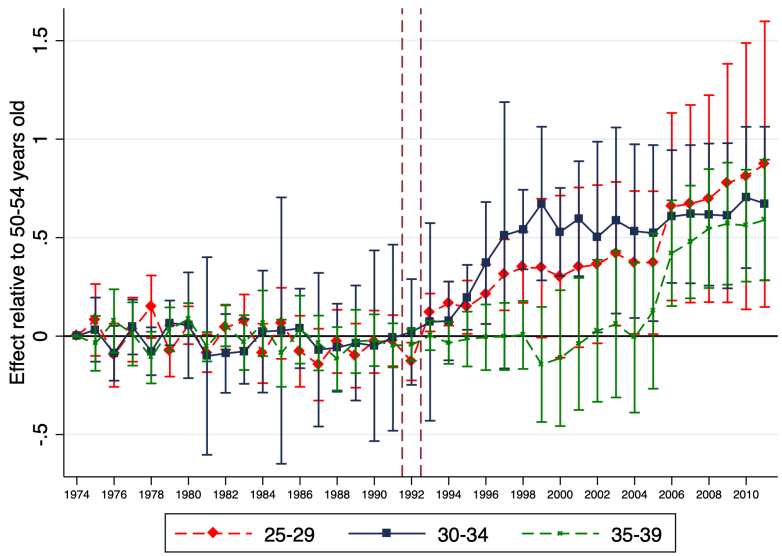


D. Median days worked

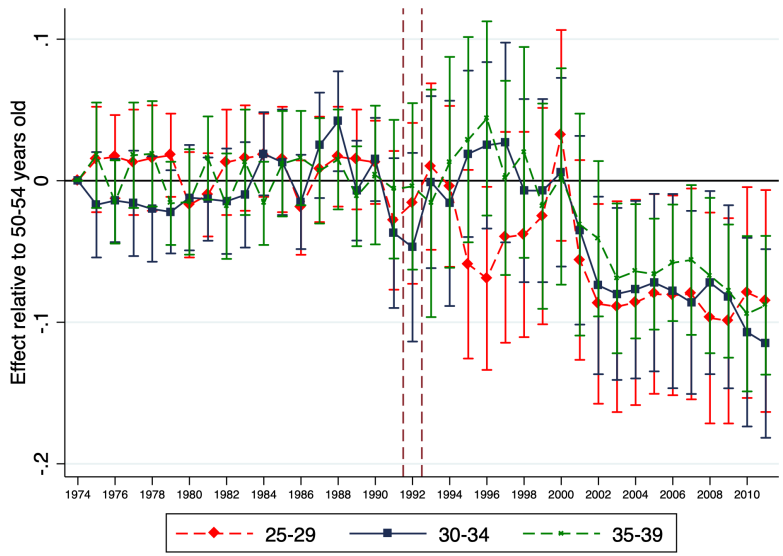
Notes: These graphs show triple interactions of age bins, a dummy equal to 1 for near-target locations, and year dummies. The sample includes only women. The control group is composed of municipalities adjacent to cities matched to target locations. For sake of clarity, the graphs shows the coefficients for only three age bins (25-29, 30-34, 35-39 years old). The omitted age group is composed by 50- to 54-year-olds. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 95 percent CIs.

Panel Analysis with Social Security Data

◂ Back



E. Working outside province of residence

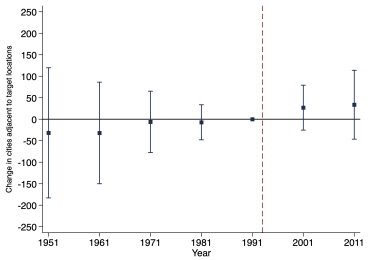


F. Log median wage

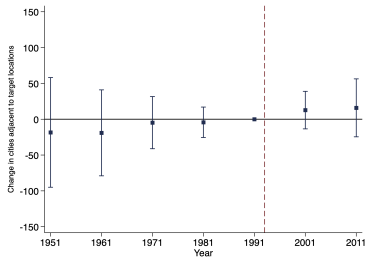
Notes: These graphs show triple interactions of age bins, a dummy equal to 1 for near-target locations, and year dummies. The sample includes only women. The control group is composed of municipalities adjacent to cities matched to target locations. For sake of clarity, the graphs shows the coefficients for only three age bins (25-29, 30-34, 35-39 years old). The omitted age group is composed by 50- to 54-year-olds. The regressions also include the pairwise interactions between the main variables, city fixed effects, age-year fixed effects, region-year fixed effects, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 95 percent CIs.

More Census Outcomes

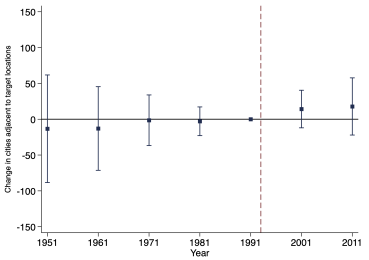
◂ Back



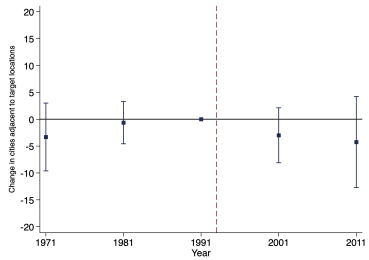
A. Population



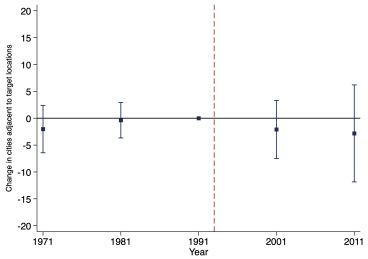
B. Population—women



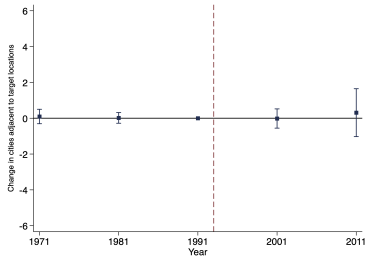
C. Population—men



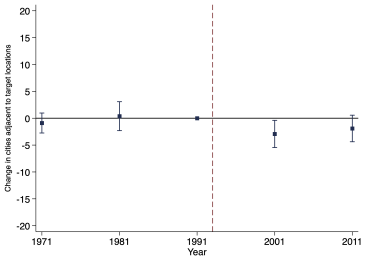
D. Firms



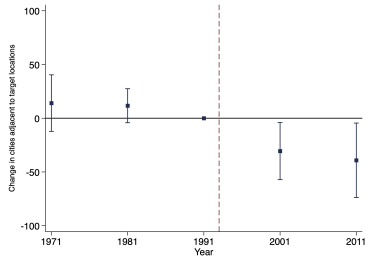
E. Firms with $<$ 3 employees



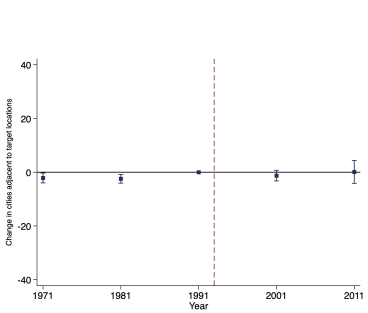
F. Public-owned firms



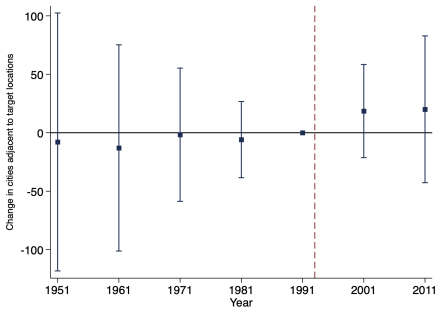
G. Agricultural workers



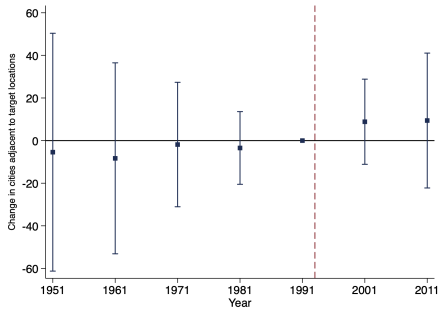
H. Manufacturing workers



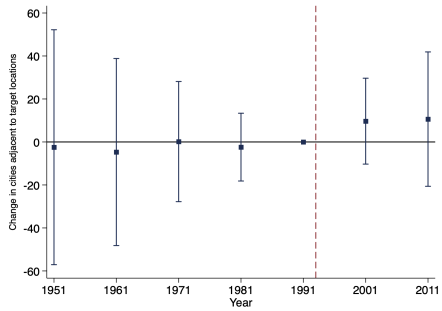
I. Public employees



K. Population 15-64



L. Women 15-64



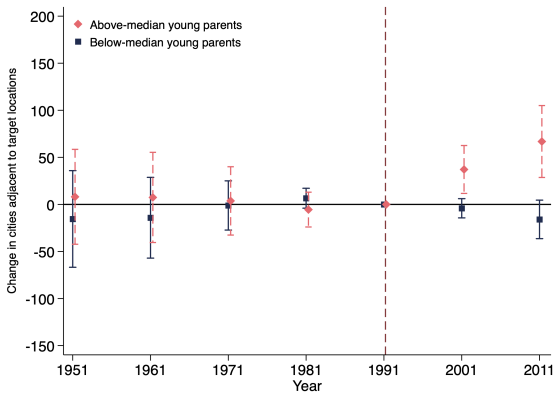
L. Men 15-64

Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

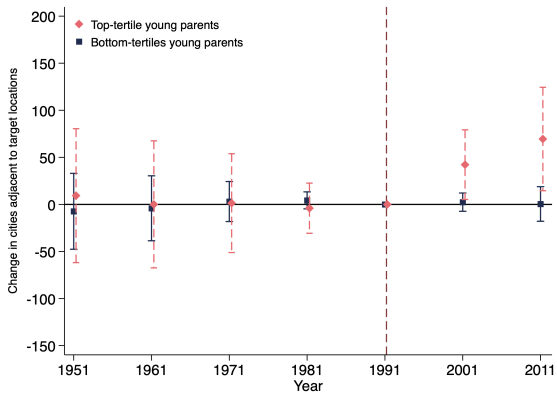
Het. With Younger Parents (1/4)

◂ Back

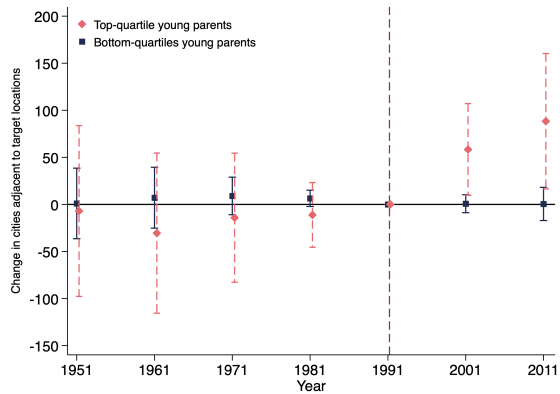
Dependent variable: women active in the labor market. Different classification of municipalities with respect to share of younger parents.



A. Above-median share of younger parents



B. Top-tertile share of younger parents



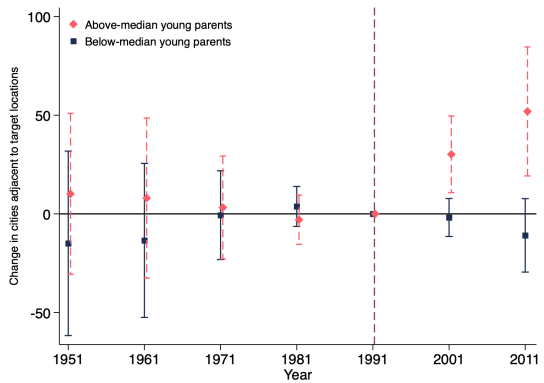
C. Top-quartile share of younger parents

Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII, further distinguishing between cities with a high share of younger parents (who therefore are more likely to have pre-kindergarten children). Specifically, we use the share of residents who are below 35 years old and have children, computed relative to the total number of residents who are below 35 years old. The variable is observed in 1991. The regressions also include city fixed effects, the dummy for a high share of young parents interacted with year fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

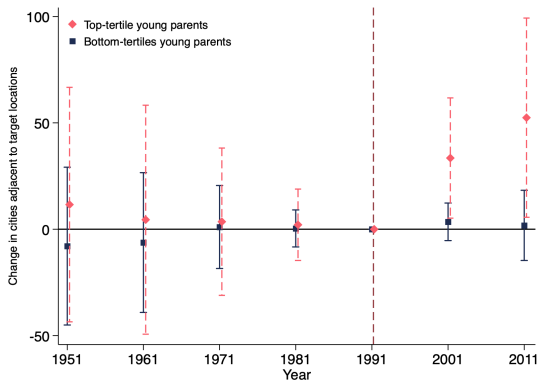
Het. With Younger Parents (2/4)

◂ Back

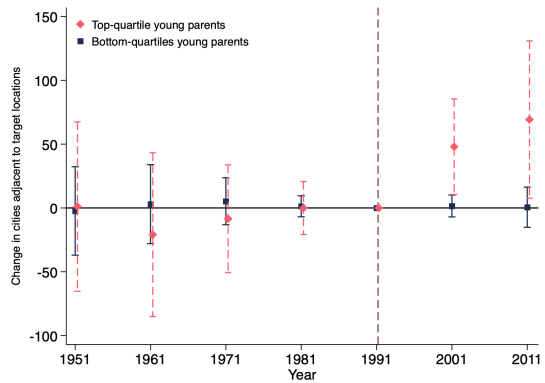
Dependent variable: employed women. Different classification of municipalities with respect to share of younger parents.



A. Above-median share of younger parents



B. Top-tertile share of younger parents



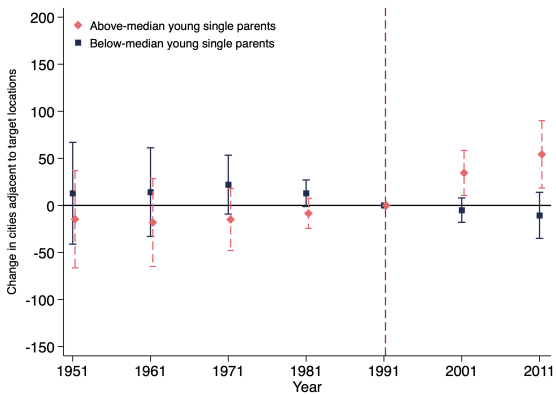
C. Top-quartile share of younger parents

Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII, further distinguishing between cities with a high share of younger parents (who therefore are more likely to have pre-kindergarten children). Specifically, we use the share of residents who are below 35 years old and have children, computed relative to the total number of residents who are below 35 years old. The variable is observed in 1991. The regressions also include city fixed effects, the dummy for a high share of young parents interacted with year fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

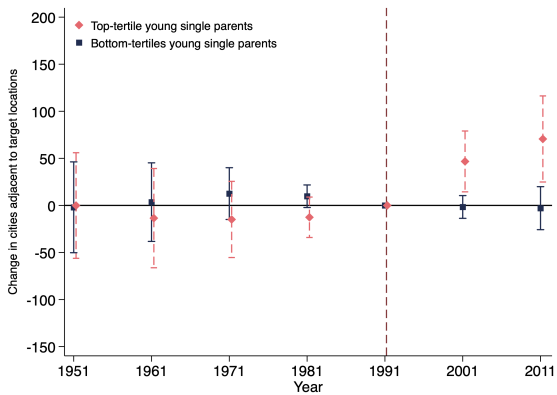
Het. With Younger Single Parents (3/4)

◂ Back

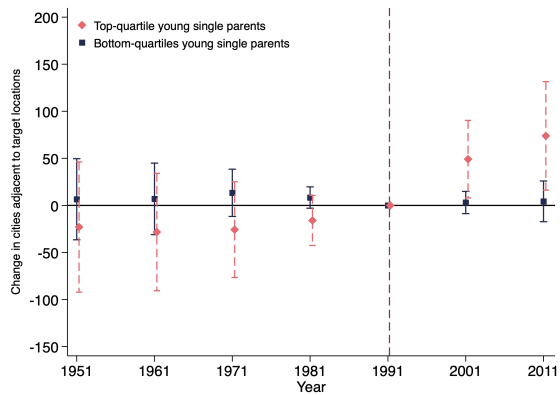
Dependent variable: women active in the labor market. Different classification of municipalities with respect to share of younger single parents.



A. Above-median share of younger single parents



B. Top-tertile share of younger single parents



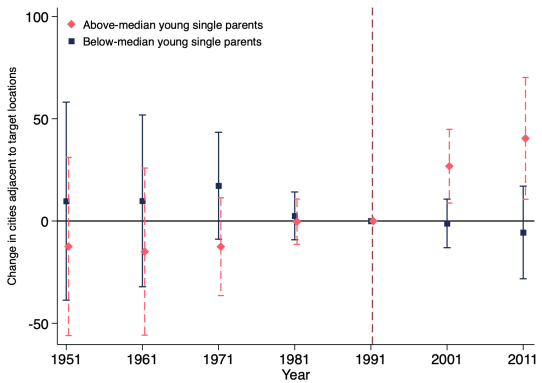
C. Top-quartile share of younger single parents

Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII, further distinguishing between cities with a high share of younger single parents. Specifically, we use the share of residents who are below 35 years old, are single, and have children, computed relative to the total number of residents who are below 35 years old. The variable is observed in 1991. The regressions also include city fixed effects, the dummy for a high share of young parents interacted with year fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

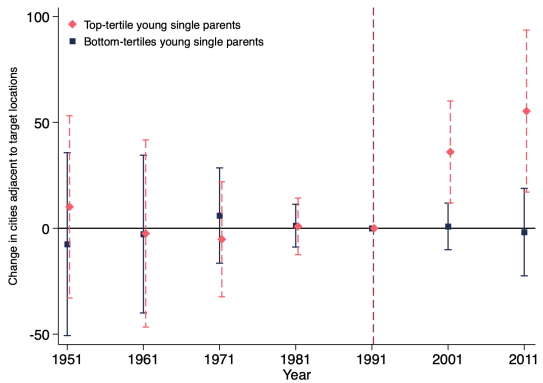
Het. With Younger Single Parents (4/4)

◂ Back

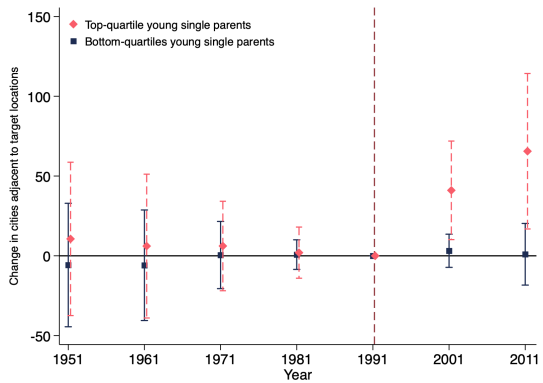
Dependent variable: employed women. Different classification of municipalities with respect to share of younger single parents.



A. Above-median share of younger single parents



B. Top-tertile share of younger single parents

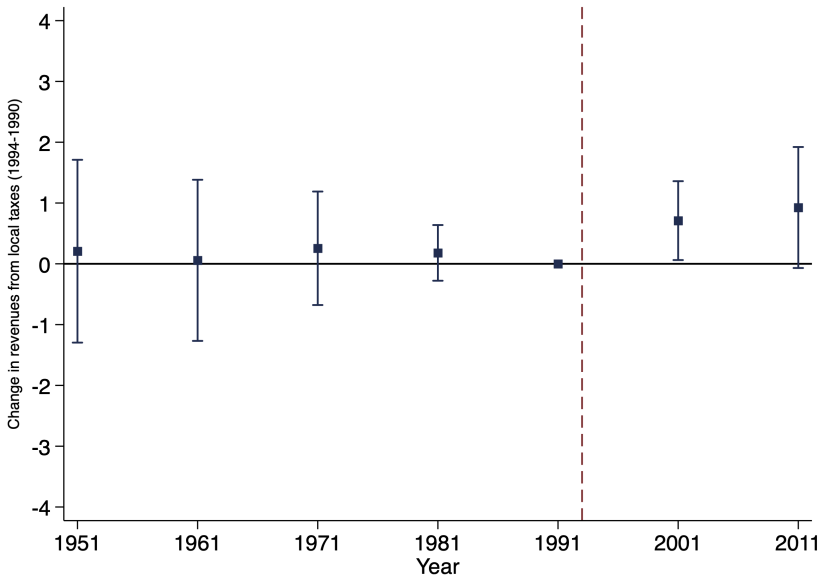


C. Top-quartile share of younger single parents

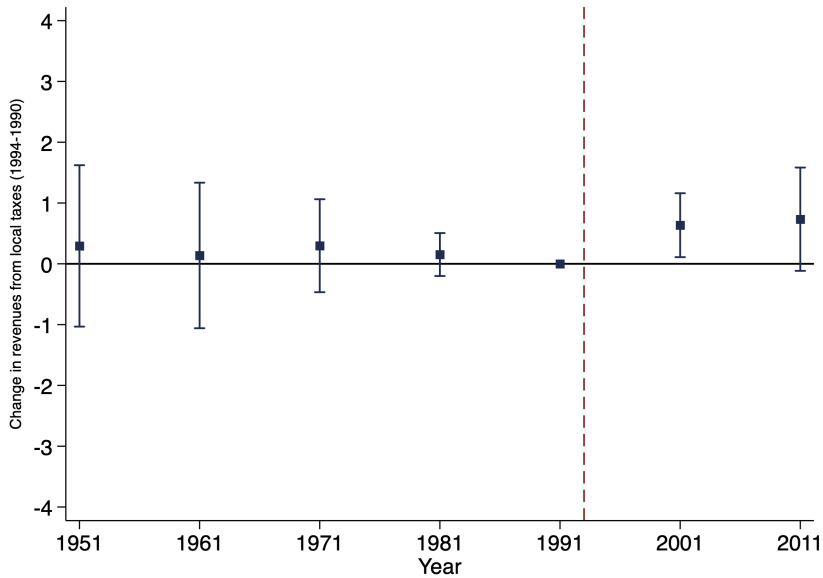
Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII, further distinguishing between cities with a high share of younger single parents. Specifically, we use the share of residents who are below 35 years old, are single, and have children, computed relative to the total number of residents who are below 35 years old. The variable is observed in 1991. The regressions also include city fixed effects, the dummy for a high share of young parents interacted with year fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Instrumental Variable (1/3)

◂ Back



A. Women in labor force

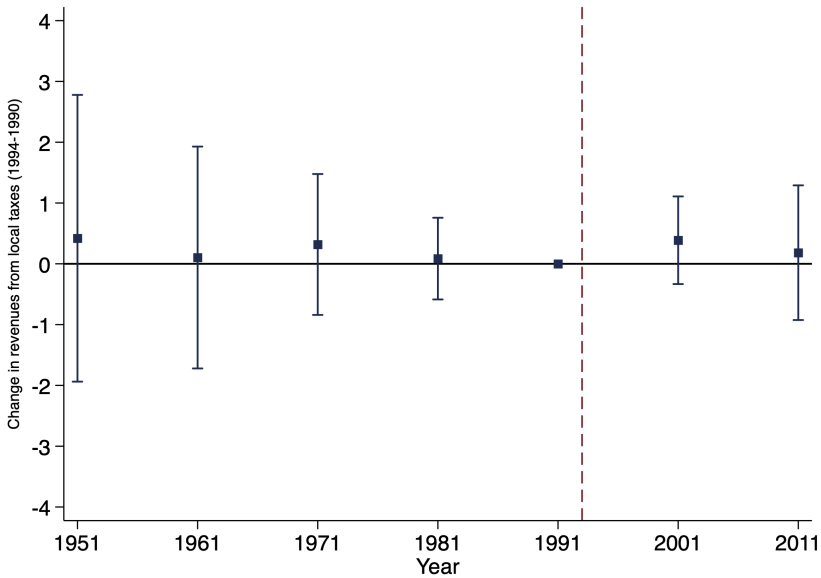


B. Employed women

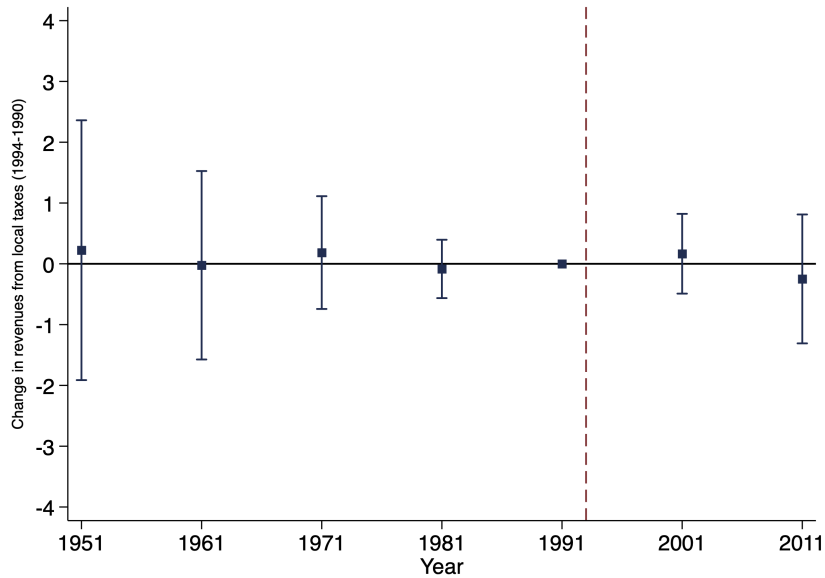
Notes: The coefficients show the effect of an increase (€1) in the per-capita revenues from local taxes. This variable is instrumented by a dummy that identifies cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Instrumental Variable (2/3)

◂ Back



C. Men in labor force

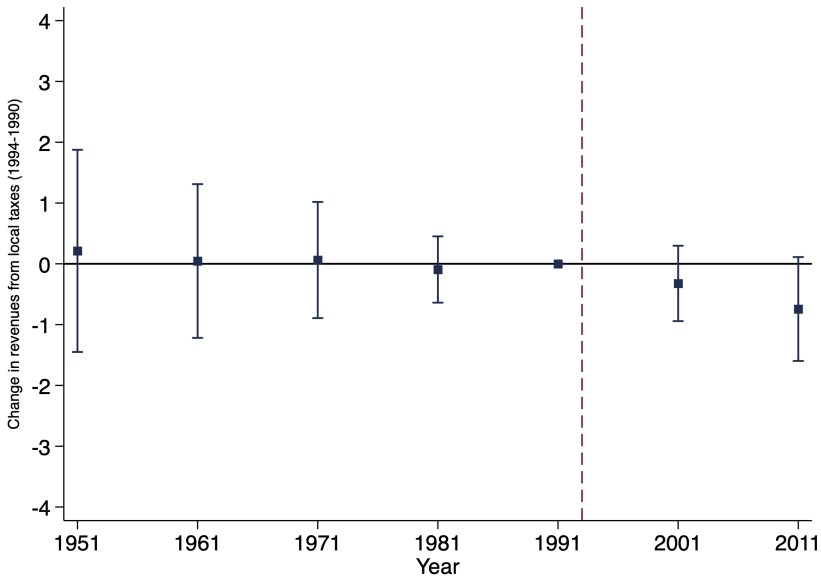


D. Employed men

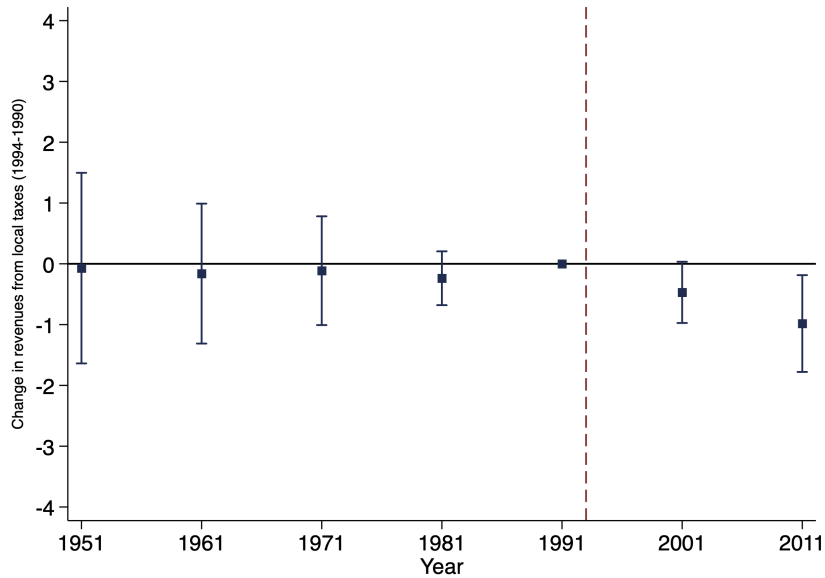
Notes: The coefficients show the effect of an increase (€1) in the per-capita revenues from local taxes. This variable is instrumented by a dummy that identifies cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Instrumental Variable (3/3)

◂ Back



E. Gender gap in labor force

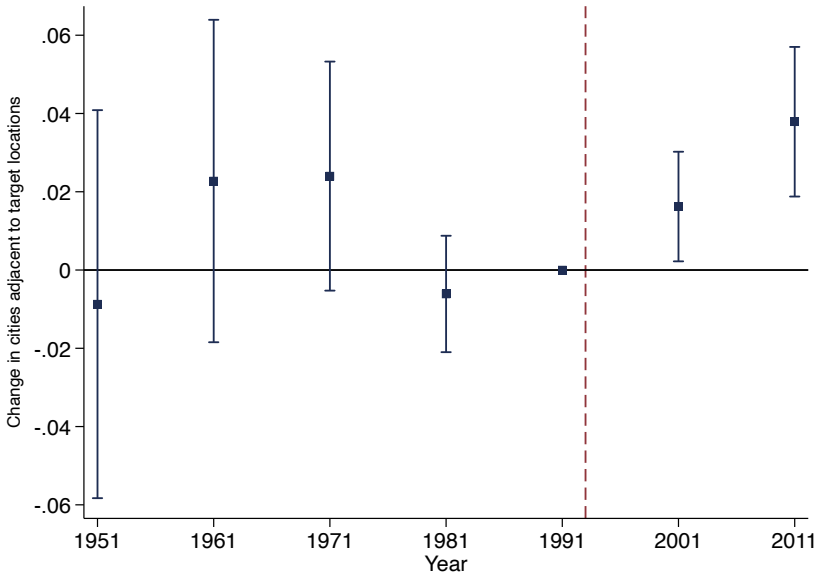


F. Gender gap in employment

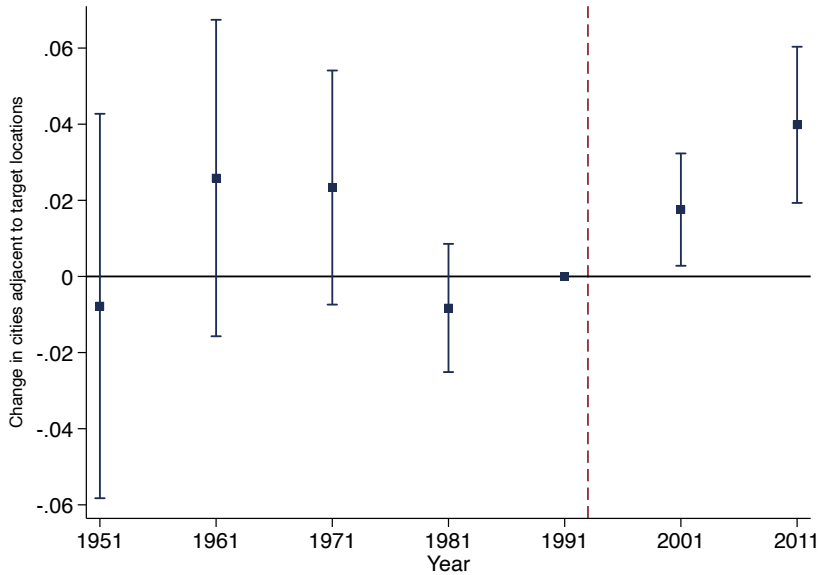
Notes: The coefficients show the effect of an increase (€1) in the per-capita revenues from local taxes. This variable is instrumented by a dummy that identifies cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Log Number of Women Active in Labor Market

◂ Back



Log women in labor force

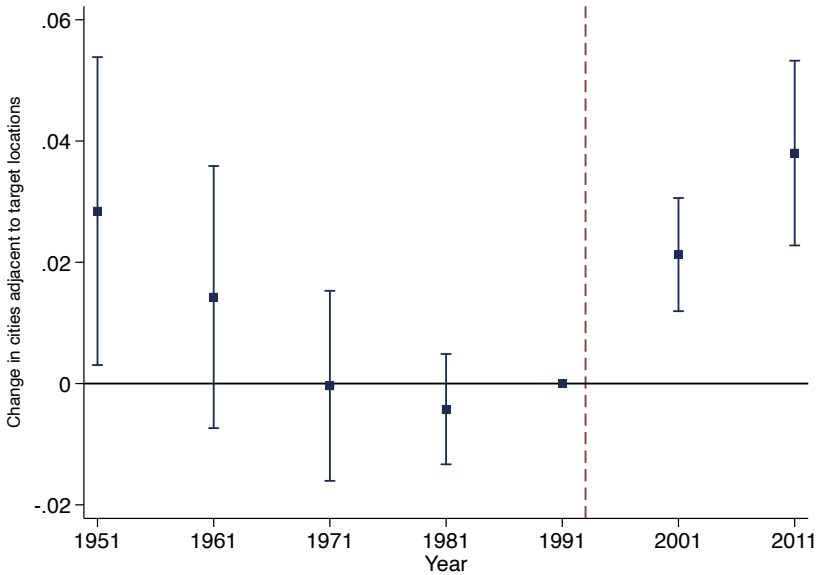


Log employed women

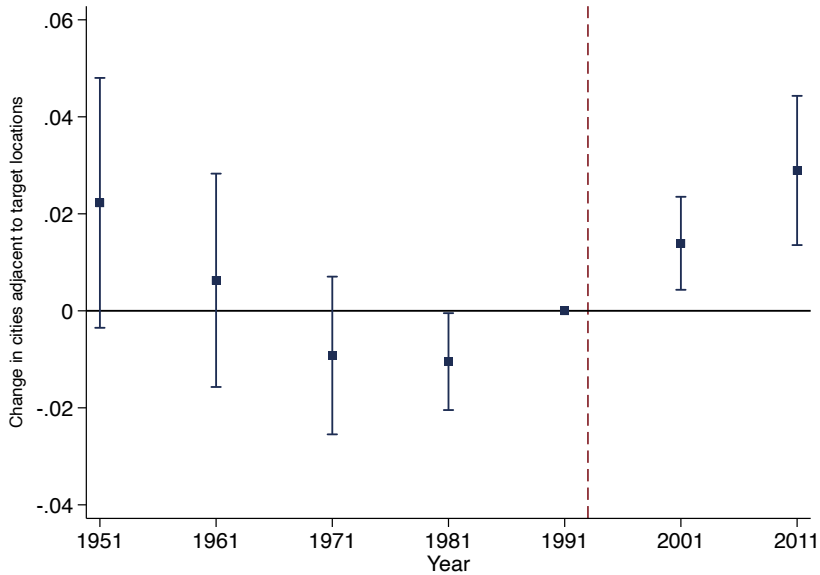
Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Log Number of Men Active in Labor Market

◂ Back



Log men in labor force

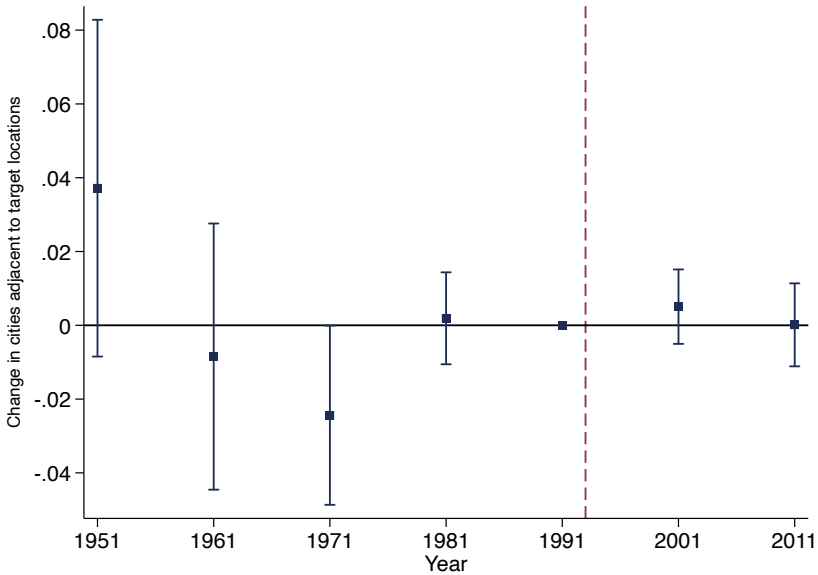


Log employed men

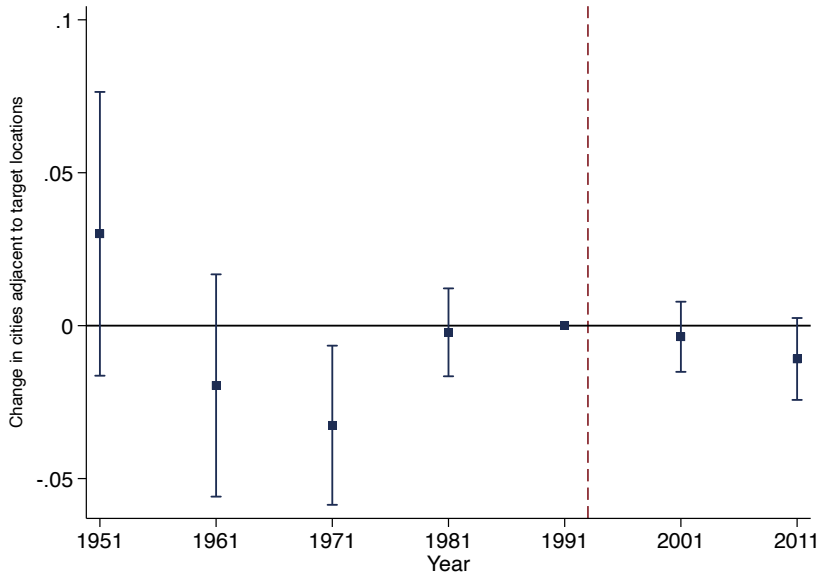
Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Log(Men) - Log(Women) Active in Labor Market

◂ Back



Gender gap in labor force



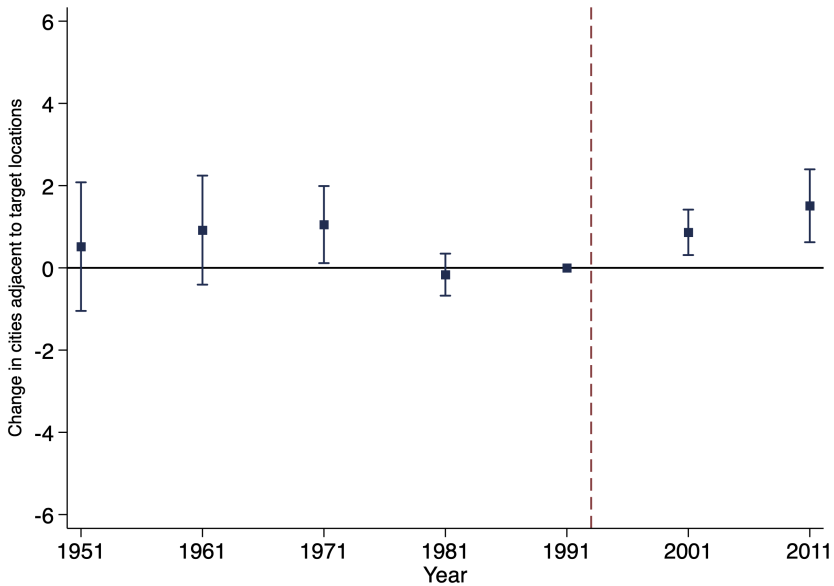
Gender gap in employment

Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

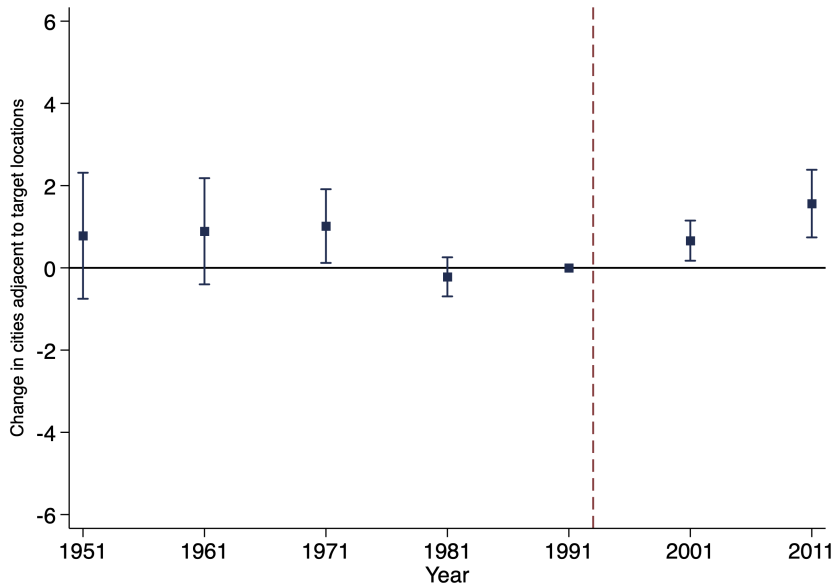
Share of Women Active in Labor Market (1/6)

◂ Back

Dependent variable: share of women active in labor market or employed divided by average number of women between 15 and 64 across available years.



A. Share of women in labor force



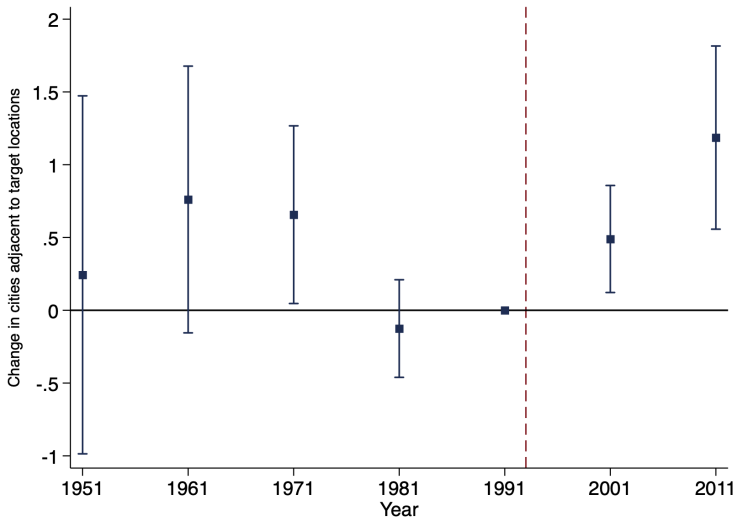
B. Share of employed women

Notes: The dependent variables are shares of women active in the labor market out of average number of women between 15 and 65 years old in a municipality across available census years. These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

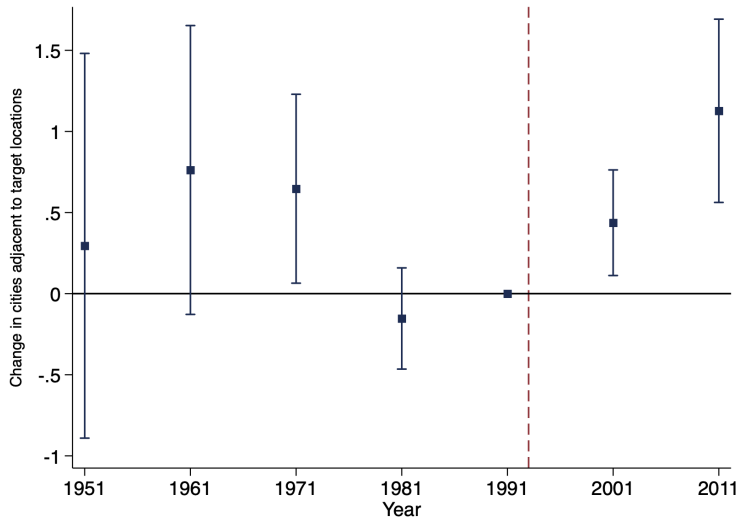
Share of Women Active in Labor Market (2/6)

◂ Back

Dependent variable: share of women active in labor market or employed divided by average female population across available years.



A. Share of women in labor force



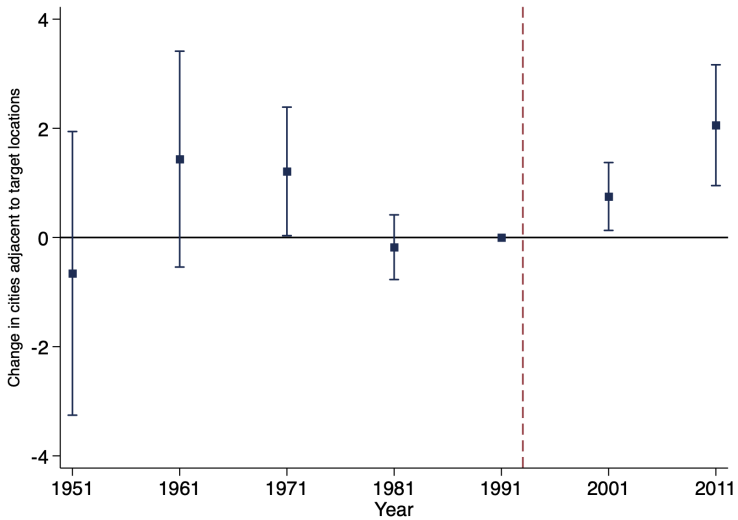
B. Share of employed women

Notes: The dependent variables are shares of women active in the labor market out of average female population in a municipality across available census years. These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

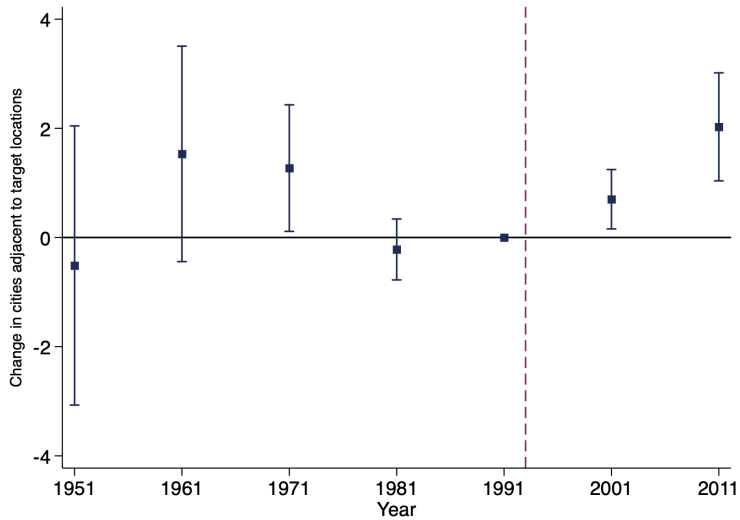
Share of Women Active in Labor Market (3/6)

◂ Back

Dependent variable: share of women active in labor market or employed divided by number of women between 15 and 64 in 1991.



A. Share of women in labor force



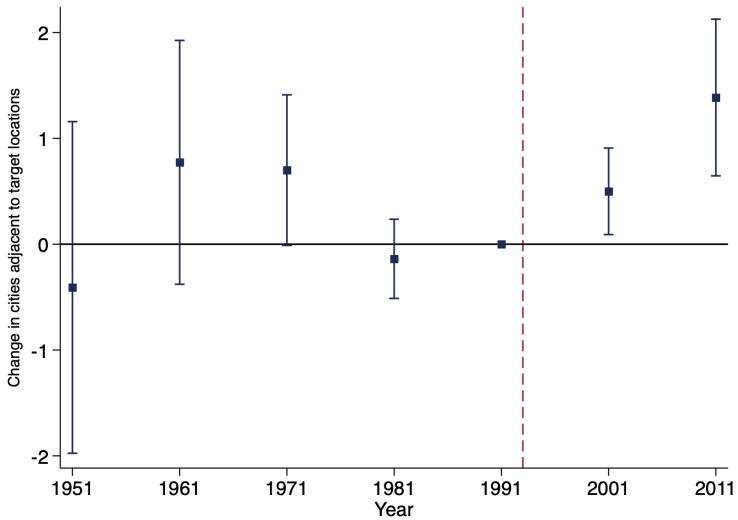
B. Share of employed women

Notes: The dependent variables are shares of women active in the labor market out of total number of women between 15 and 64 in a municipality in 1991. These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

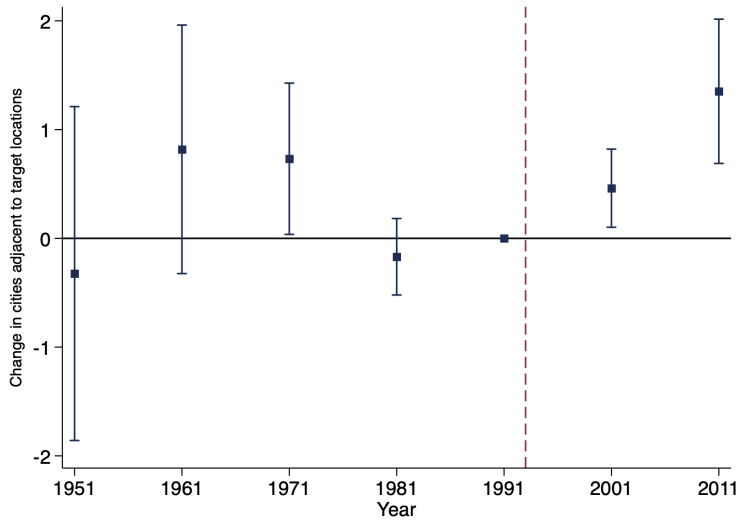
Share of Women Active in Labor Market (4/6)

◂ Back

Dependent variable: share of women active in labor market or employed divided by female population in 1991.



A. Share of women in labor force



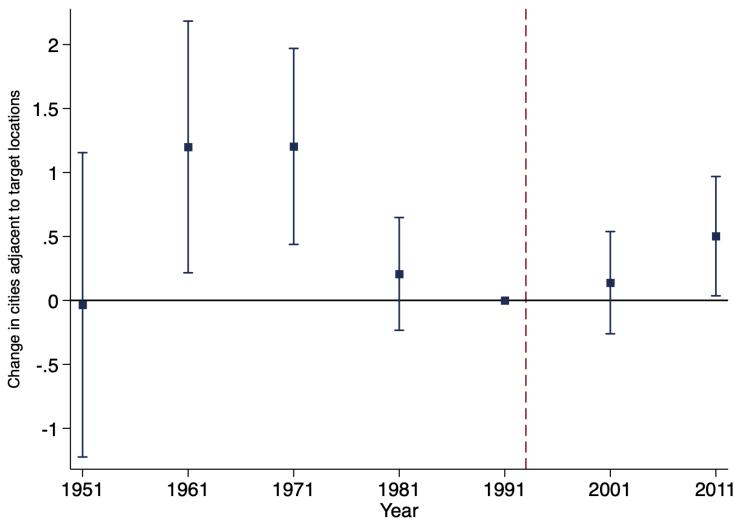
B. Share of employed women

Notes: The dependent variables are shares of women active in the labor market out of total female population in a municipality in 1991. These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

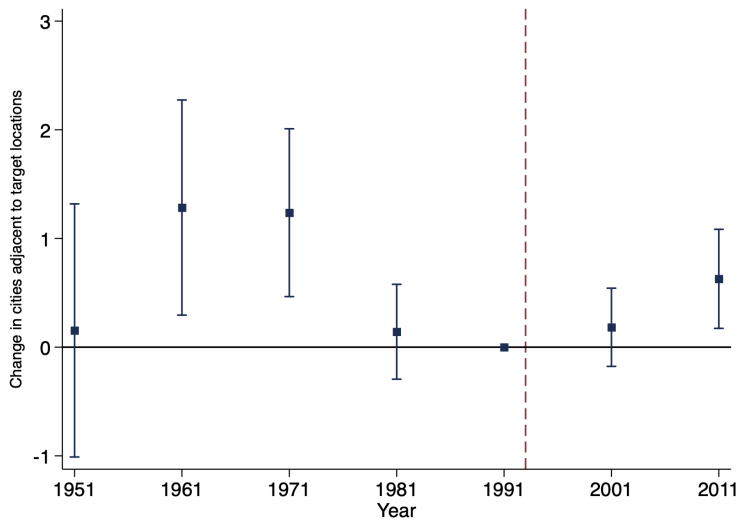
Share of Women Active in Labor Market (5/6)

◂ Back

Dependent variable: share of women active in labor market or employed divided by number of women between 15 and 64 in every available census year.



A. Share of women in labor force



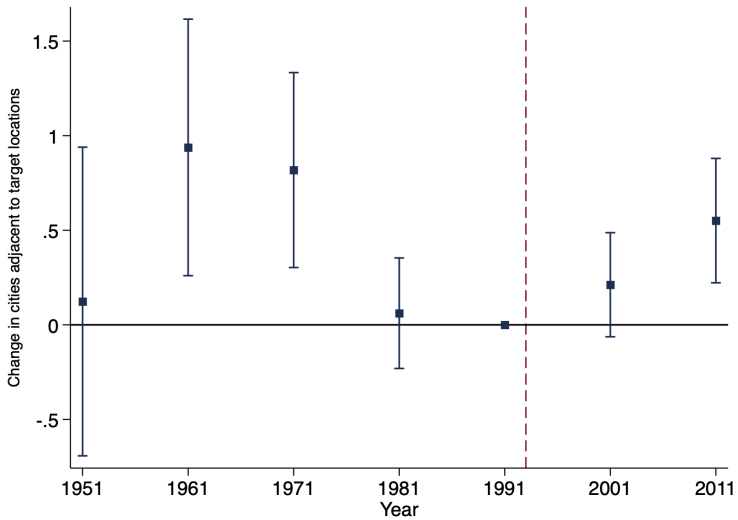
B. Share of employed women

Notes: The dependent variables are shares of women active in the labor market out of total number of women between 15 and 64 in a municipality in every available census year. These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

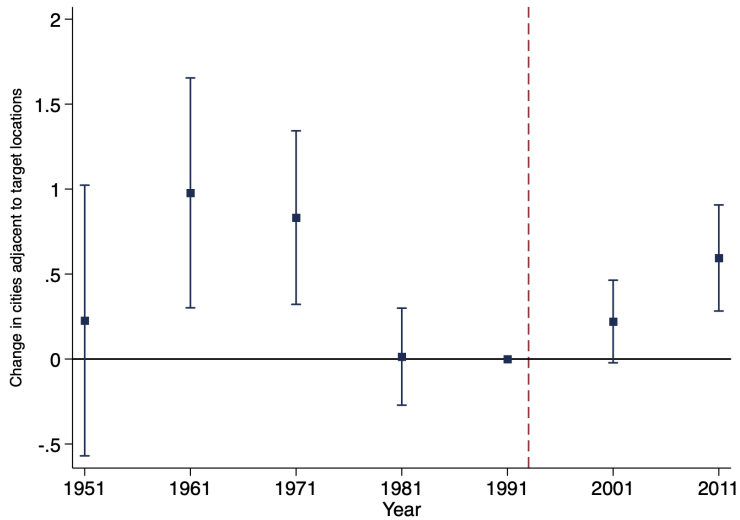
Share of Women Active in Labor Market (6/6)

◂ Back

Dependent variable: share of women active in labor market or employed divided by female population in every available census year.



A. Share of women in labor force

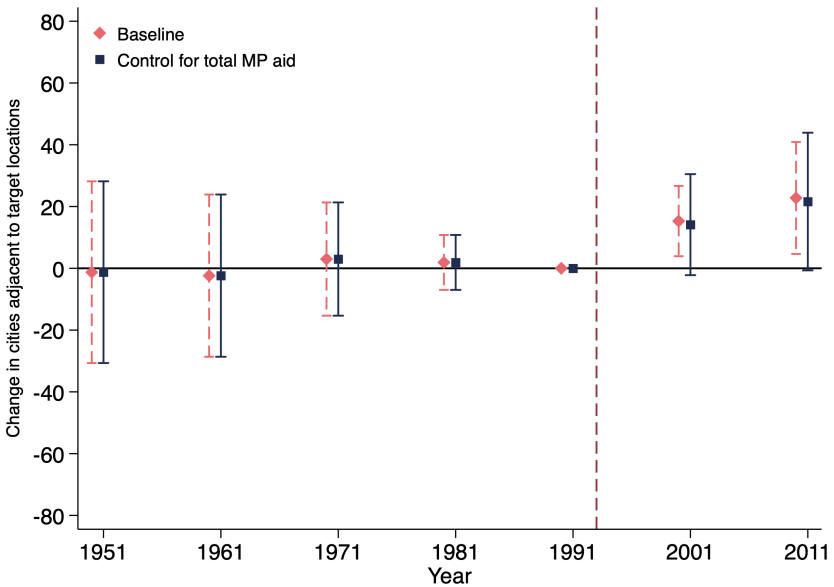


B. Share of employed women

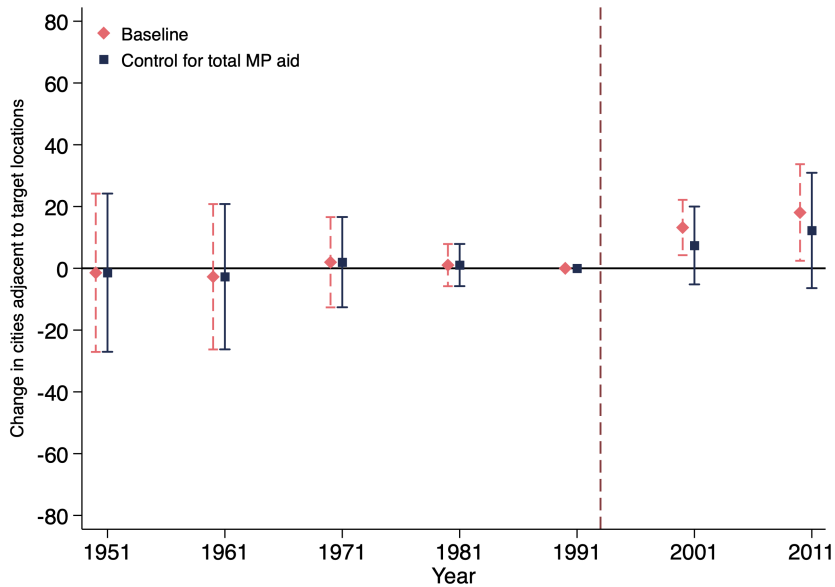
Notes: The dependent variables are shares of women active in the labor market out of total female population in a municipality in every available census year. These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Controlling for Total MP Aid

◂ Back



A. Women's participation—
Total MP aid

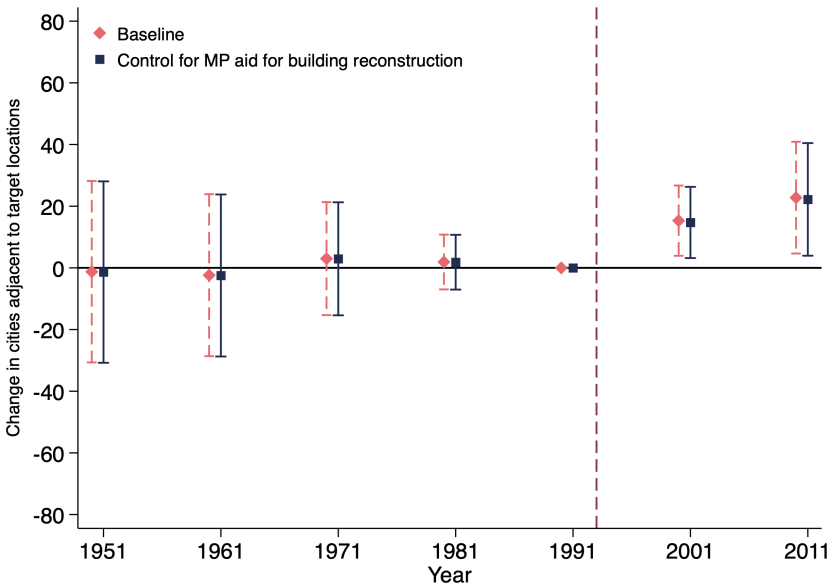


B. Women's employment—
Total MP aid

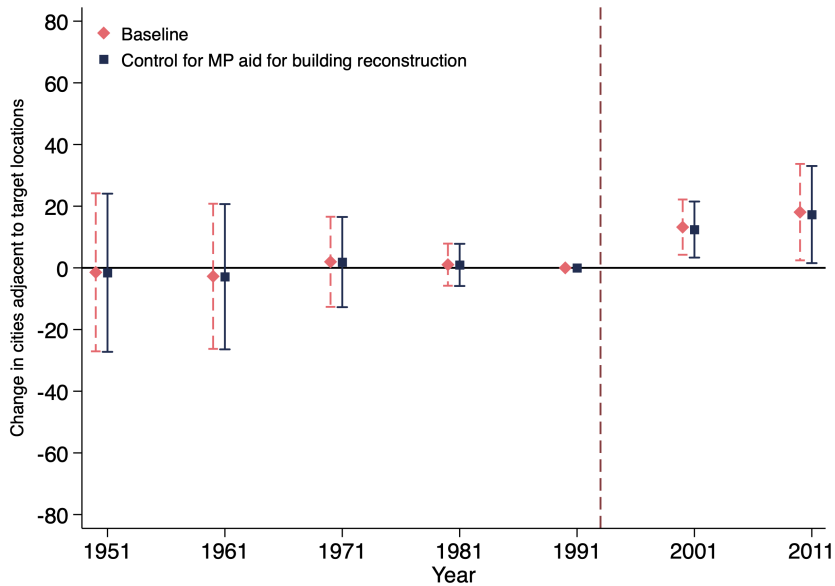
Notes: The regressions include the total amount of aid received by a province through the Marshall Plan. Aid is aggregated at the province level because none of the municipalities in the sample (target-adjacent and target-distant) directly received grants. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Controlling for MP Aid For Buildings

◂ Back



A. Women's participation—
Reconstruction of buildings

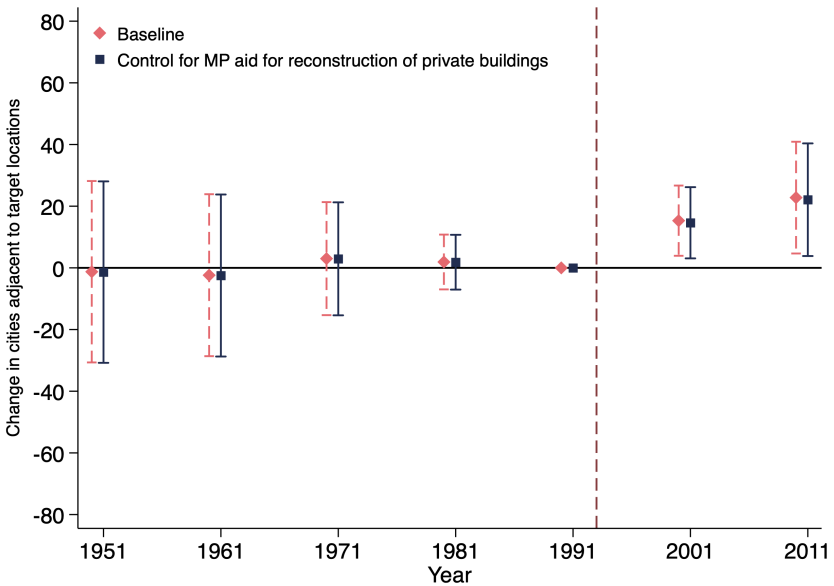


B. Women's employment—
Reconstruction of buildings

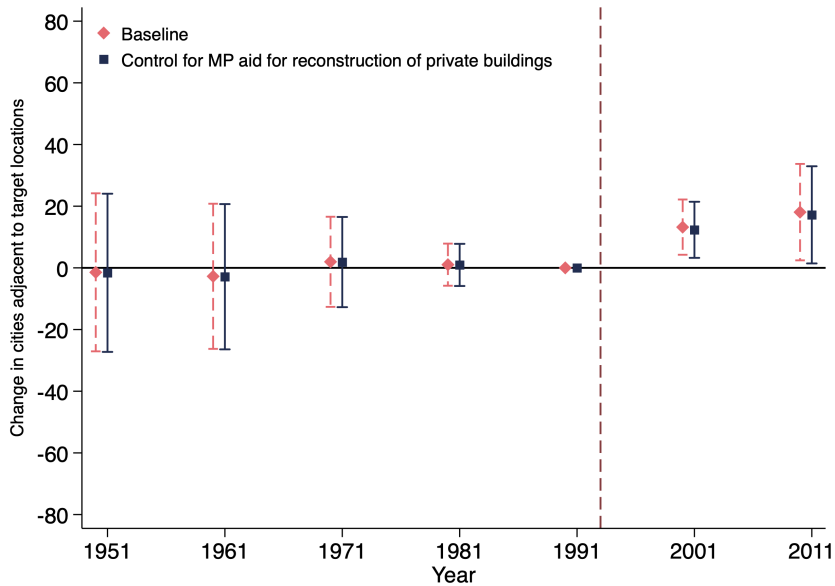
Notes: Aid is aggregated at the province level because none of the municipalities in the sample (target-adjacent and target-distant) directly received grants. The regressions include the amount of aid received by a province through the Marshall Plan to reconstruct public and private buildings. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Controlling for MP Aid For Private Buildings

◂ Back



A. Women's participation—
Reconstruction of private buildings

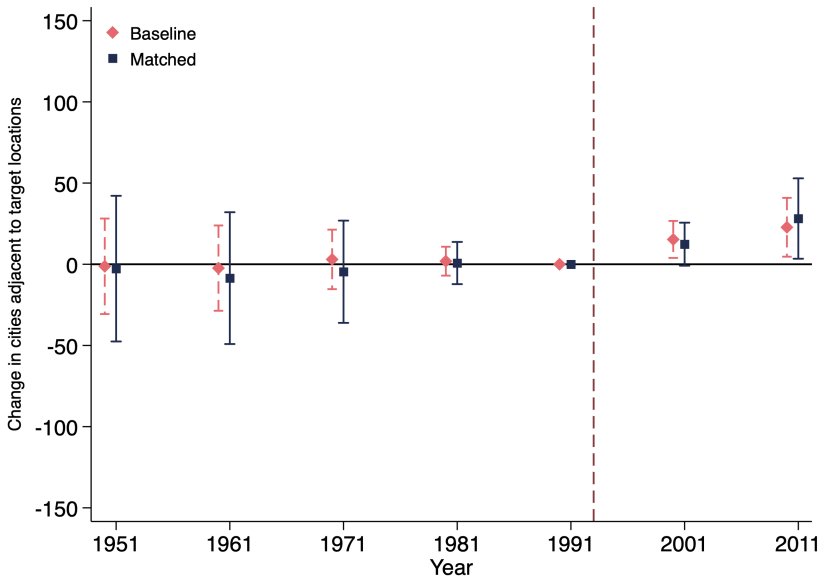


B. Women's employment—
Reconstruction of private buildings

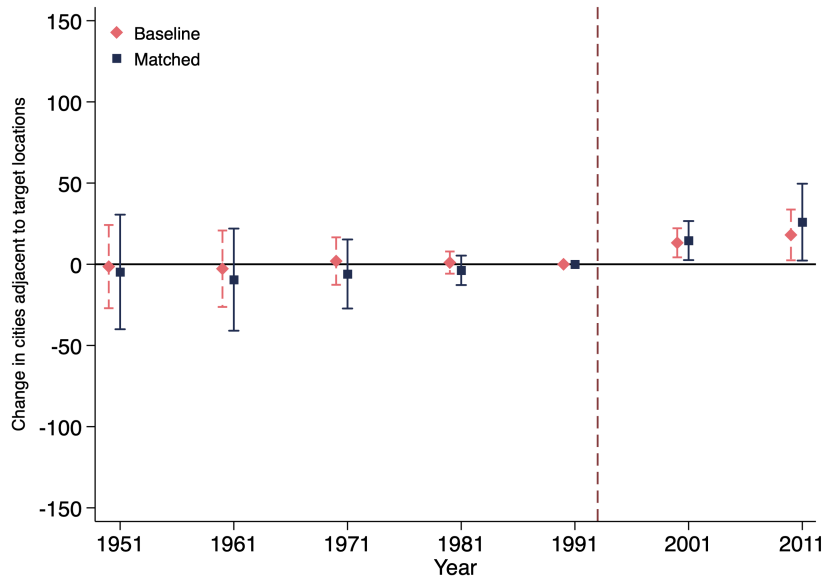
Notes: Aid is aggregated at the province level because none of the municipalities in the sample (target-adjacent and target-distant) directly received grants. The regressions include the amount of aid received by a province through the Marshall Plan to reconstruct only private buildings. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Matching Target-Adjacent and Target-Distant Municipalities (1/3)

◂ Back



A. Women in labor force

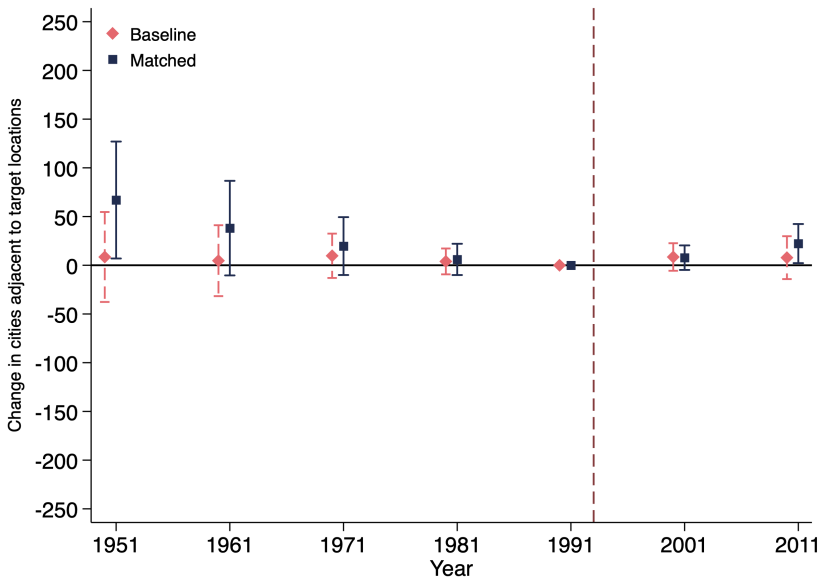


B. Employed women

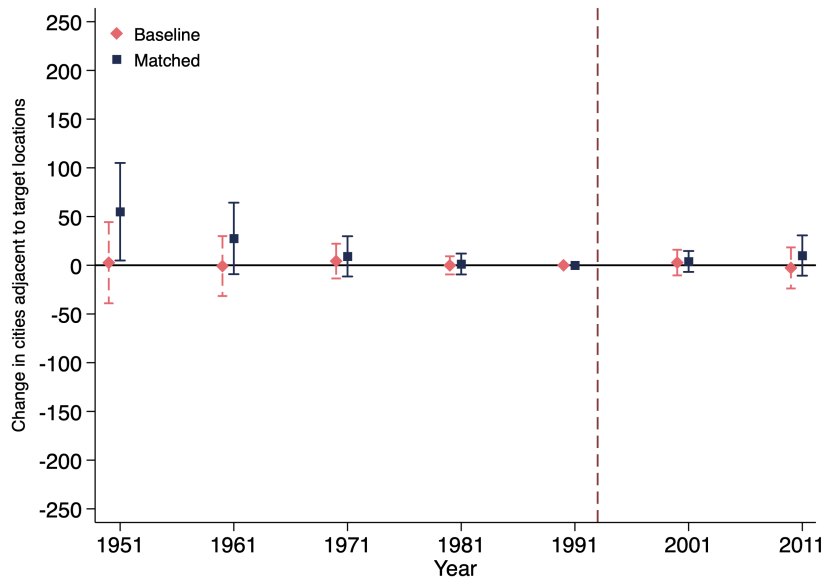
Notes: The control group is composed of target-distant municipalities matched to target-adjacent municipalities using population and area size in 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Matching Target-Adjacent and Target-Distant Municipalities (2/3)

◂ Back



C. Men in labor force

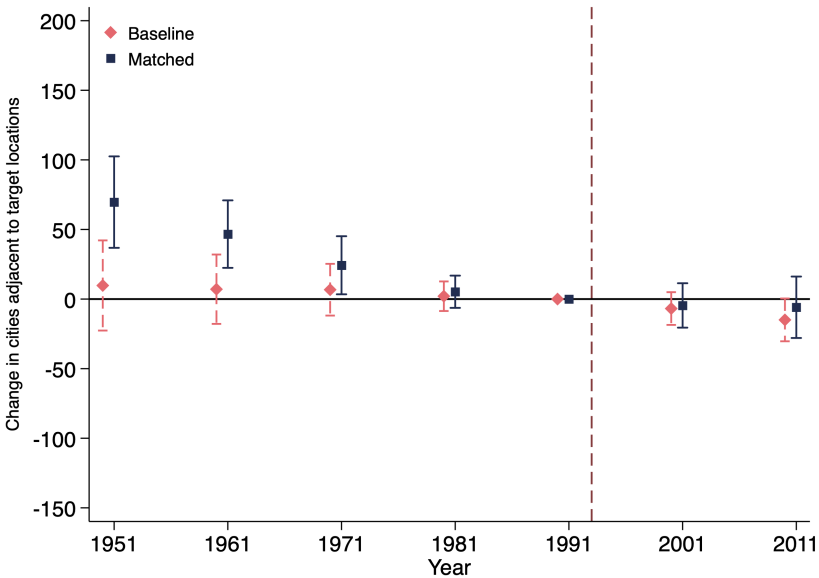


D. Employed men

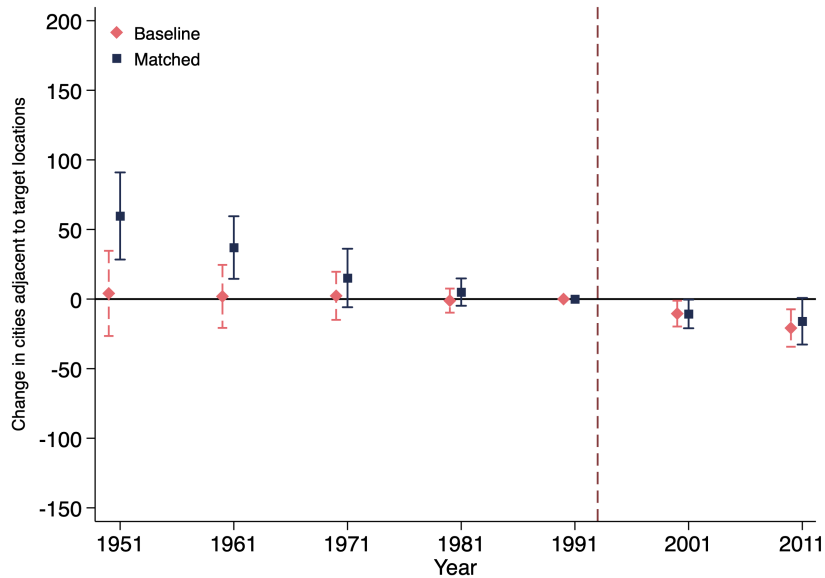
Notes: The control group is composed of target-distant municipalities matched to target-adjacent municipalities using population and area size in 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Matching Target-Adjacent and Target-Distant Municipalities (3/3)

◂ Back



E. Gender gap in labor force

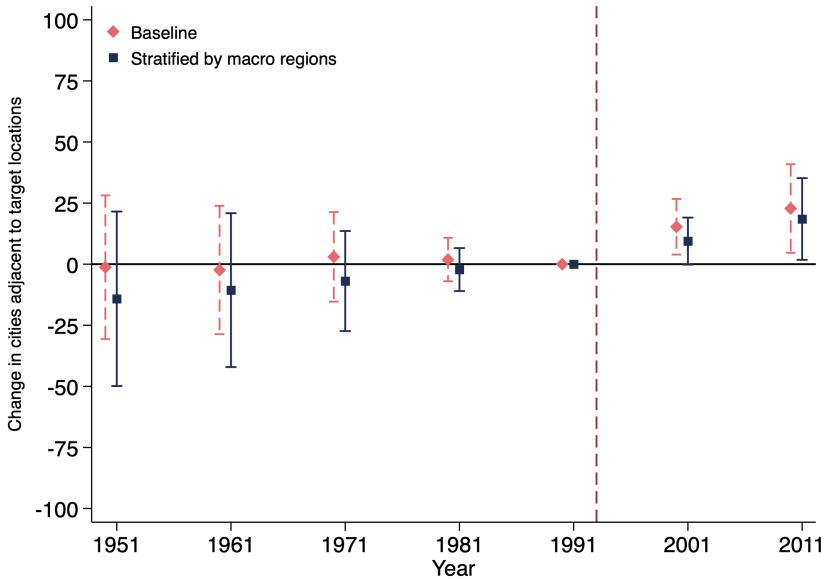


F. Gender gap in employment

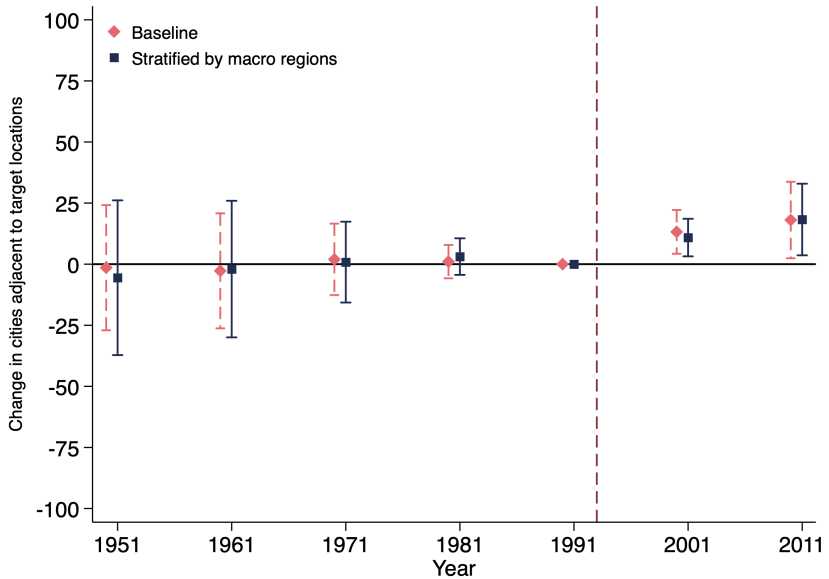
Notes: The control group is composed of target-distant municipalities matched to target-adjacent municipalities using population and area size in 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991, dummies for deciles of minimum altitude, and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Matching Stratified by Macro Regions

◂ Back



A. Women's participation
Stratified by macro regions

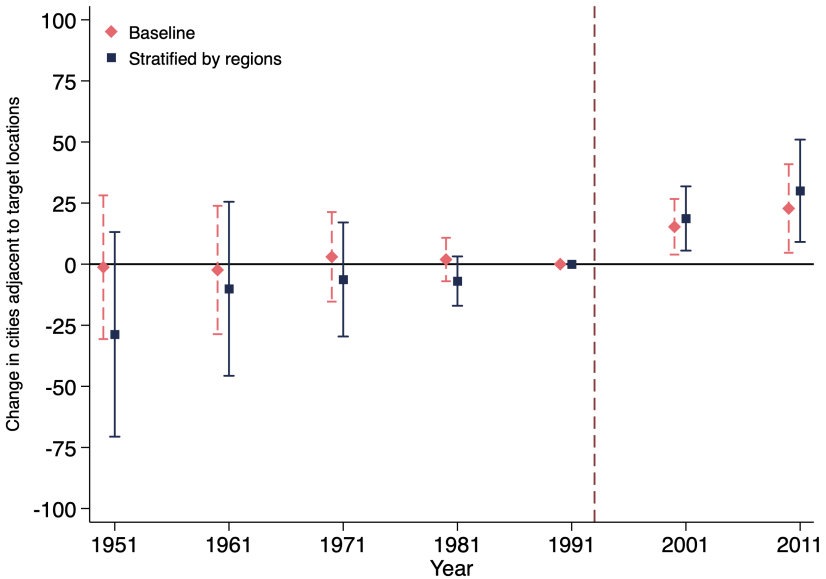


B. Women's employment
Stratified by macro regions

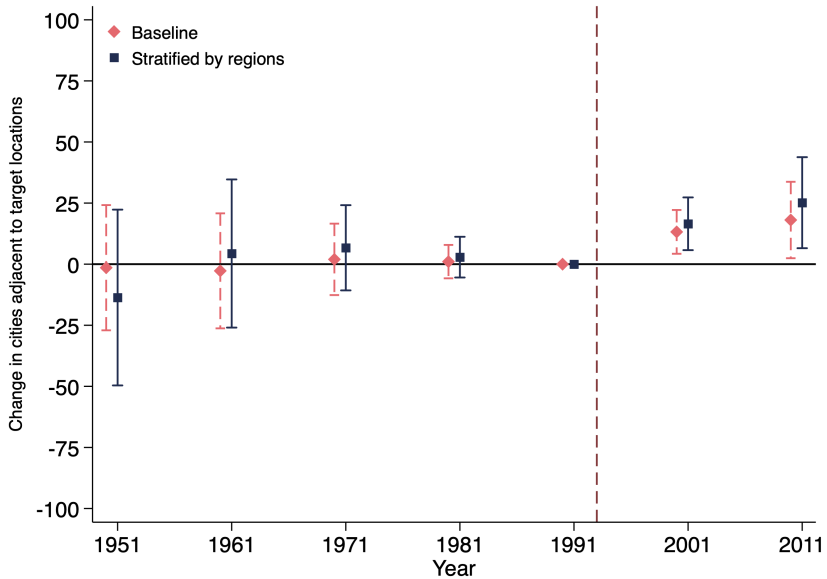
Notes: These graphs show the robustness of the initial matching algorithm between targeted and nontargeted locations. "Stratified by macro regions:" locations are first grouped by five macro regions and then matched on observables (same 8 vars used in baseline). Full list of variables and propensity scores on this ▸ slide. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Matching Stratified by Regions

◂ Back



A. Women's participation
Stratified by regions

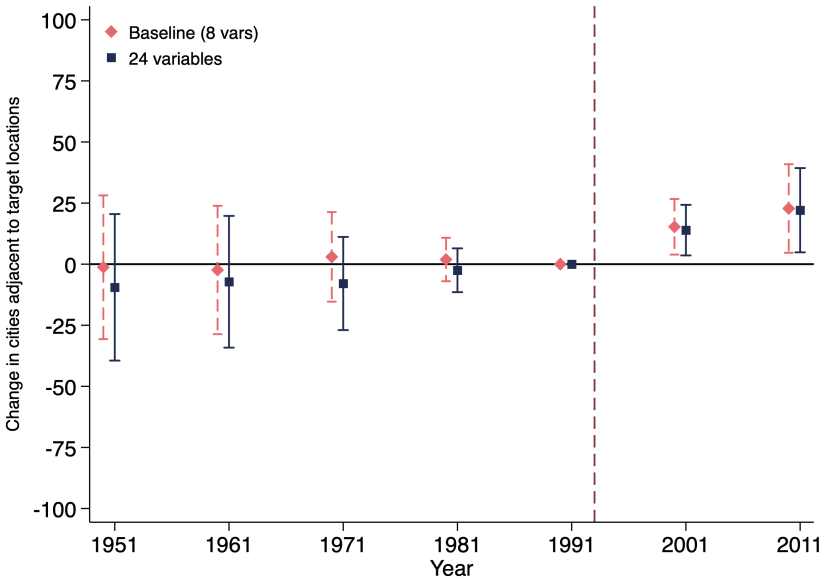


B. Women's employment
Stratified by regions

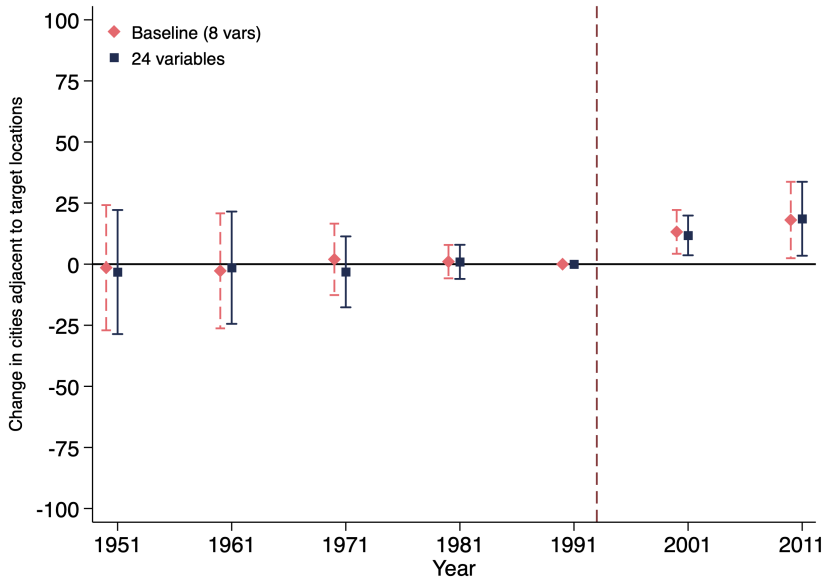
Notes: These graphs show the robustness of the initial matching algorithm between targeted and nontargeted locations. "Stratified by regions:" locations are first grouped by twenty regions and then matched on observables (same 8 vars used in baseline). Full list of variables and propensity scores on this ▸ slide. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Matching With 24 Variables

◂ Back



A. Women's participation
24 variables

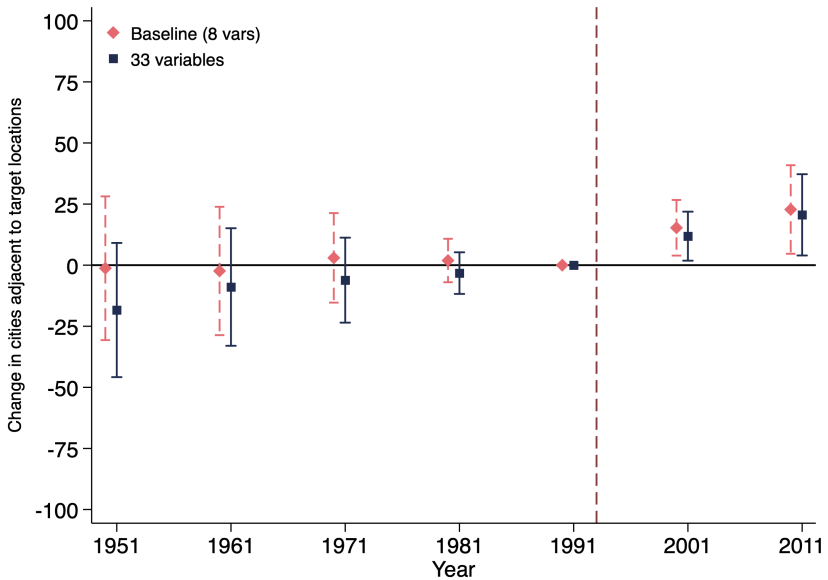


B. Women's employment
24 variables

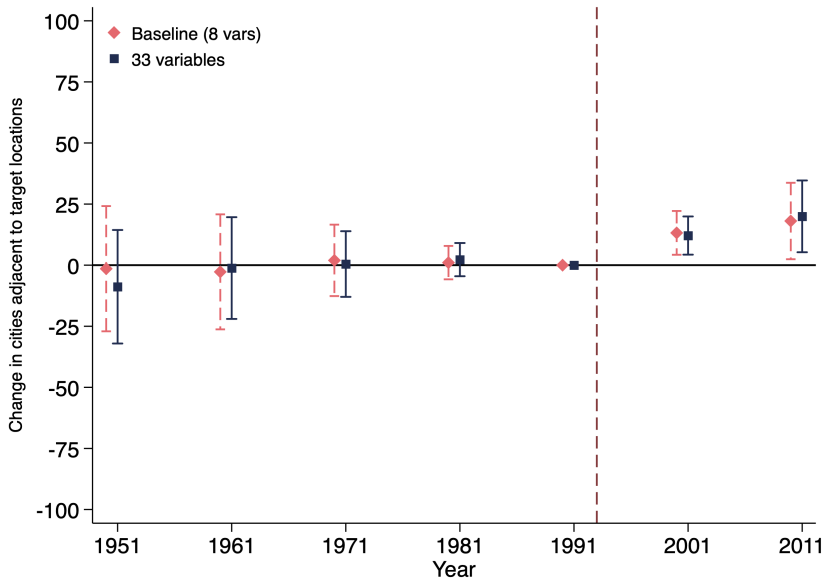
Notes: These graphs show the robustness of the initial matching algorithm between targeted and nontargeted locations. "24 variables:" 24 variables used for matching, instead of 8. Full list of variables and propensity scores on this ▸ slide. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Matching With 33 Variables

◂ Back



A. Women's participation
33 variables



B. Women's employment
33 variables

Notes: These graphs show the robustness of the initial matching algorithm between targeted and nontargeted locations. "33 variables:" 33 variables used for matching, instead of 8. Full list of variables and propensity scores on this ▸ slide. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

Propensity Scores

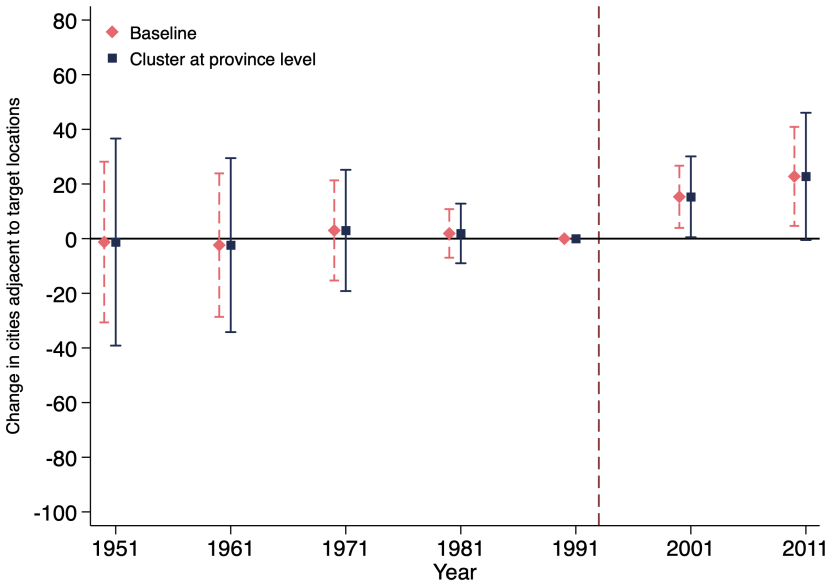
◂ Back

	Targeted after armistice (1)	Targeted after armistice (2)	Targeted after armistice (3)	Targeted after armistice (4)	Targeted after armistice (5)	Targeted after armistice (6)	Targeted after armistice (7)	Targeted after armistice (8)
Population (per 1000 residents)	0.01337	0.41490	0.10086	-0.05590	-0.19711	0.34122**	0.06332	-0.00050
	(0.04016)	(0.57610)	(0.12695)	(0.20323)	(0.14614)	(0.15183)	(0.05699)	(0.06090)
Population^2 (per 1000 residents)	-0.00073***	-0.00198	-0.00002	-0.00083	-0.00096***	-0.00112***	-0.00048**	-0.00040**
	(0.00015)	(0.00223)	(0.00072)	(0.00087)	(0.00034)	(0.00033)	(0.00019)	(0.00019)
Area (km^2)	0.01867***	0.02341	0.01635	0.01731***	0.03063***	0.02348***	0.01878***	0.02176***
	(0.00249)	(0.02418)	(0.01173)	(0.00638)	(0.00853)	(0.00748)	(0.00271)	(0.00282)
Area^2	-0.00007***	-0.00002	-0.00009	-0.00004	-0.00017**	-0.00014***	-0.00007***	-0.00008***
	(0.00001)	(0.00016)	(0.00006)	(0.00003)	(0.00007)	(0.00004)	(0.00001)	(0.00001)
Population density	-0.00021**	-0.00048	0.00038	0.00040	-0.00048**	-0.00046***	-0.00024***	-0.00013
	(0.00009)	(0.00128)	(0.00067)	(0.00071)	(0.00024)	(0.00017)	(0.00009)	(0.00009)
Number of buildings	0.00020*	-0.00072	-0.00024	0.00025	0.00089**	-0.00077*	0.00001	0.00018
	(0.00011)	(0.00176)	(0.00042)	(0.00059)	(0.00040)	(0.00046)	(0.00018)	(0.00019)
Share owner-occupied properties	-0.03673***	-0.10702**	-0.02510*	-0.07667***	-0.02279***	-0.03623***	-0.03472***	-0.03416***
	(0.00452)	(0.04290)	(0.01463)	(0.01514)	(0.00650)	(0.01115)	(0.00504)	(0.00532)
Share of population $<$ 3 years old	-0.14224**	0.08819	-0.29518	-0.13009	-0.31578***	0.14879	-0.09830	-0.11385
	(0.05818)	(0.29196)	(0.19384)	(0.14495)	(0.09216)	(0.12324)	(0.07244)	(0.07607)
Coastal city							-0.04223	-0.02966
							(0.15765)	(0.16010)
Rural city							0.00511	0.01615
							(0.11460)	(0.11798)
Share women							0.04242	0.04230
							(0.02604)	(0.02767)
Foreign residents							-0.00200*	-0.00207*
							(0.00113)	(0.00115)
Share over 65							0.00046	0.02216
							(0.01036)	(0.01399)
Births							-0.01200*	-0.00816
							(0.00615)	(0.00637)
Pupils in nursery school							-0.00324	-0.00429
							(0.00318)	(0.00326)
Residents in labor force							0.00007	0.00006
							(0.00010)	(0.00010)
Firms							0.00031	0.00011
							(0.00036)	(0.00036)
Employees							-0.00002	0.00003
							(0.00006)	(0.00007)
Share of agricultural firms							0.01697	0.00457
							(0.02247)	(0.02296)
Share of manufacturing firms							-0.02346***	-0.02398***
							(0.00787)	(0.00816)
Share of retail firms							0.00805	0.00822
							(0.00775)	(0.00805)
Share of agricultural workers							-0.02321	-0.02248
							(0.02132)	(0.02129)
Share of manufacturing workers							0.01154***	0.00725*
							(0.00407)	(0.00423)
Share of retail workers							0.00263	-0.00080
							(0.00756)	(0.00791)
Vote share for DC								-0.79047
								(0.52371)
Vote share for extreme left								1.41139
								(1.52504)
Vote share for extreme right								1.74578
								(1.50919)
Winner DC (dummy)								0.16362
								(0.29661)
Winner center-left (dummy)								0.19859
								(0.30175)
Winner Lega Nord (dummy)								-0.09863
								(0.30146)
Youth outside labor force								0.01079
								(0.01116)
m^2 per resident								-0.03108
								(0.01978)
Avg. size of buildings								0.03420***
								(0.00698)
Specification	Baseline	Stratified by macro regions	Stratified by macro regions	Stratified by macro regions	Stratified by macro regions	Stratified by macro regions	More controls	More controls
Municipalities	All	Center	Islands	Northeast	Northwest	South	All	All
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,926	236	550	299	1,095	746	2,902	2,843
Mean	0.23	0.80	0.03	0.70	0.13	0.14	0.23	0.23
Std. dev.	0.42	0.40	0.16	0.46	0.34	0.35	0.42	0.42

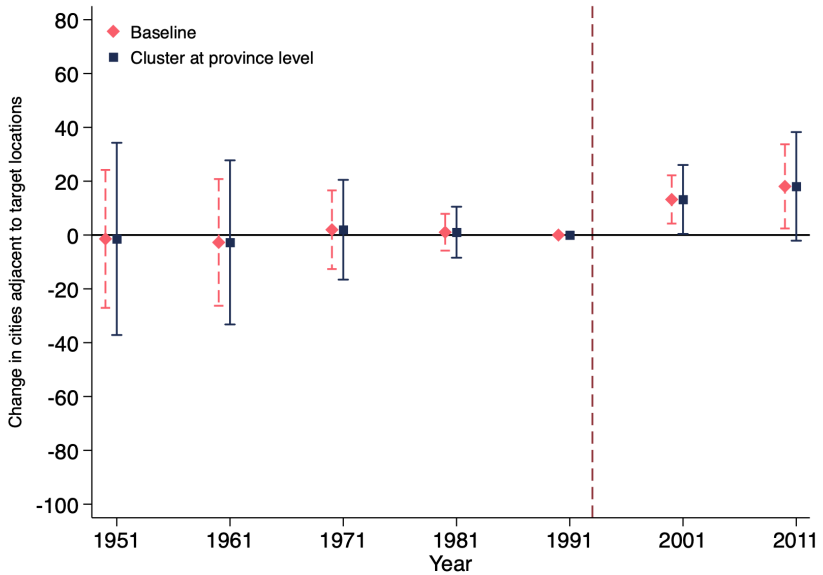
Notes: This table shows the coefficients used to match targeted and nontargeted municipalities. Specifically, we match targeted municipalities to other cities using propensity-score matching and a nearest-neighbor algorithm. We also impose a common support between treated and control locations. The caliper is 0.15 and matching is performed without replacement. We used the Stata command `psmatch2` with options "common ties noreplacement descending caliper(0.15)." One matching algorithm is not reported in this table due to lack of space. In addition to stratifying the observations by five macro regions (columns 2 to 6), we stratify them by twenty regions (coefficients not reported for sake of space). Standard errors in parentheses.

Cluster at Province Level

◂ Back



A. Women's participation

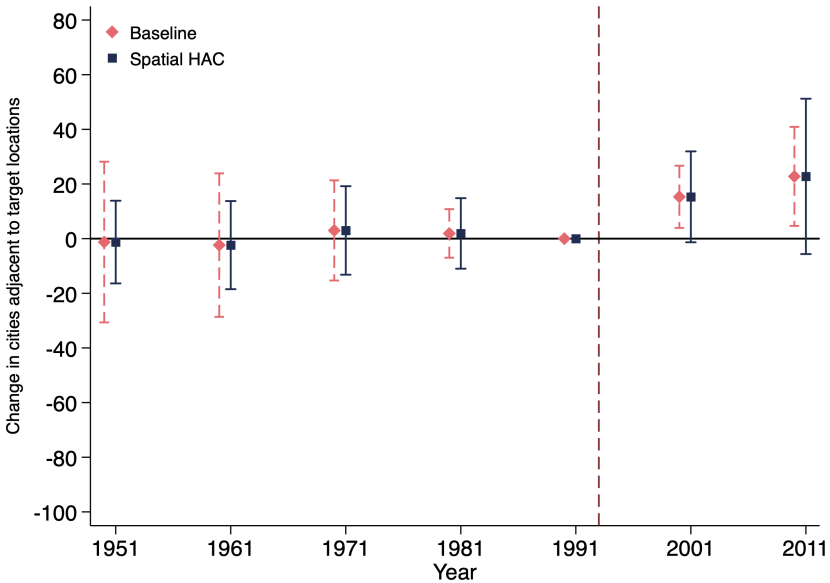


B. Women's employment

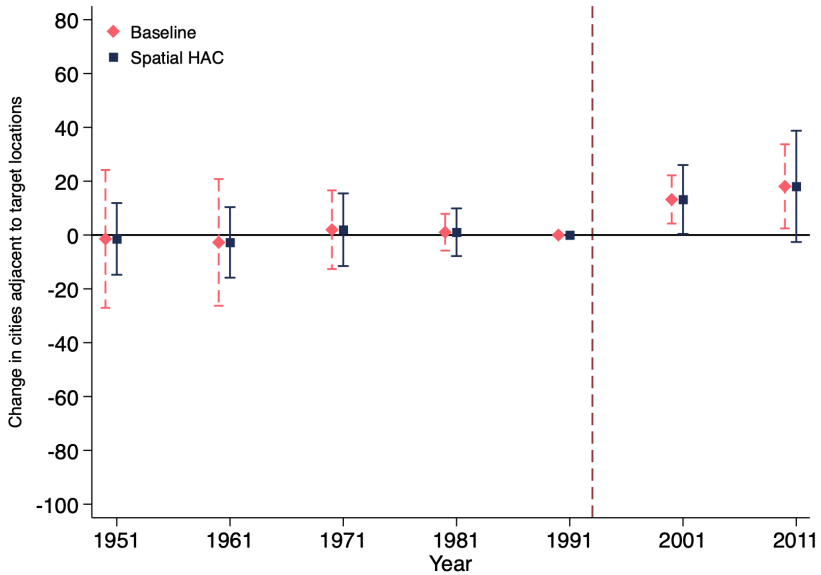
Notes: "Cluster at province level:" stand. errors clustered at the province level, rather than at the city level. The vertical bars measure 90 percent CIs.

Cluster for Spatial and Serial Correlation

◂ Back



A. Women's participation

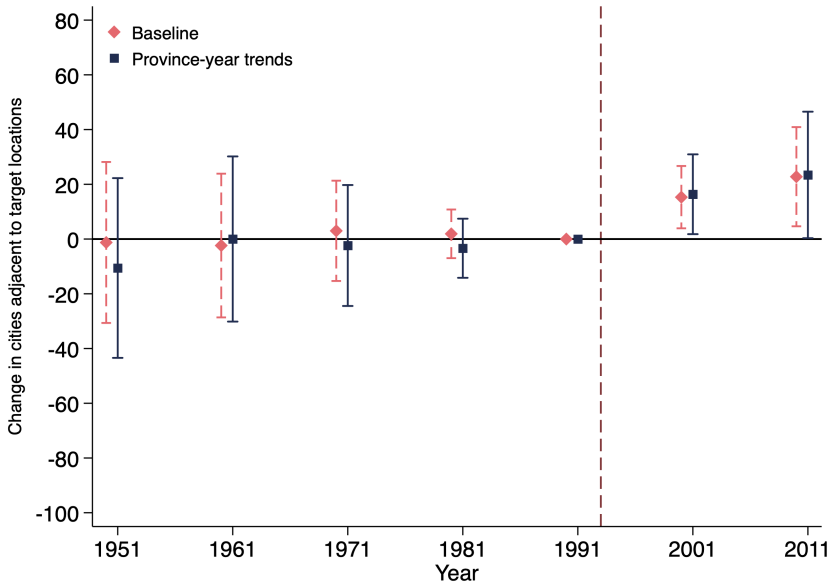


B. Women's employment

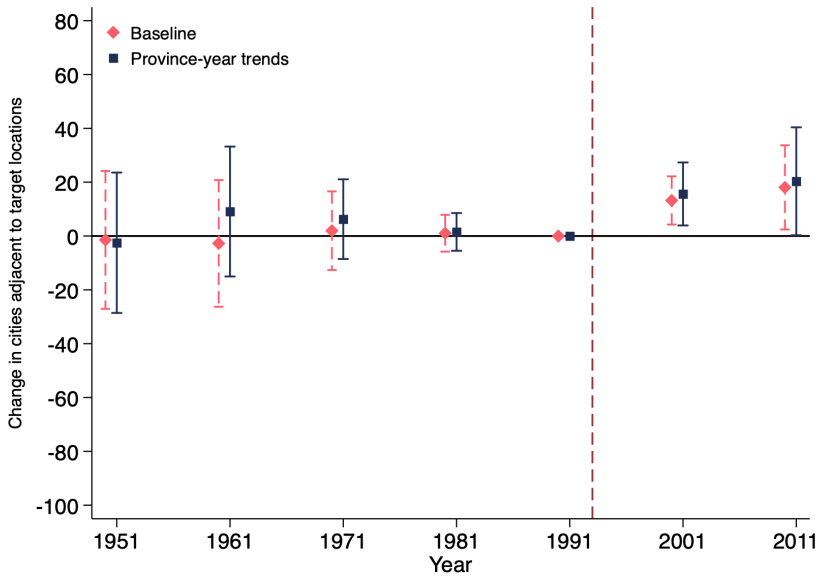
Notes: "Spatial HAC:" standard errors corrected for spatial correlation among municipalities that are within 1,000km of each other and for autocorrelation for up to 20 years. The vertical bars measure 90 percent CIs.

Province-Year Fixed Effects

◂ Back



A. Women's participation

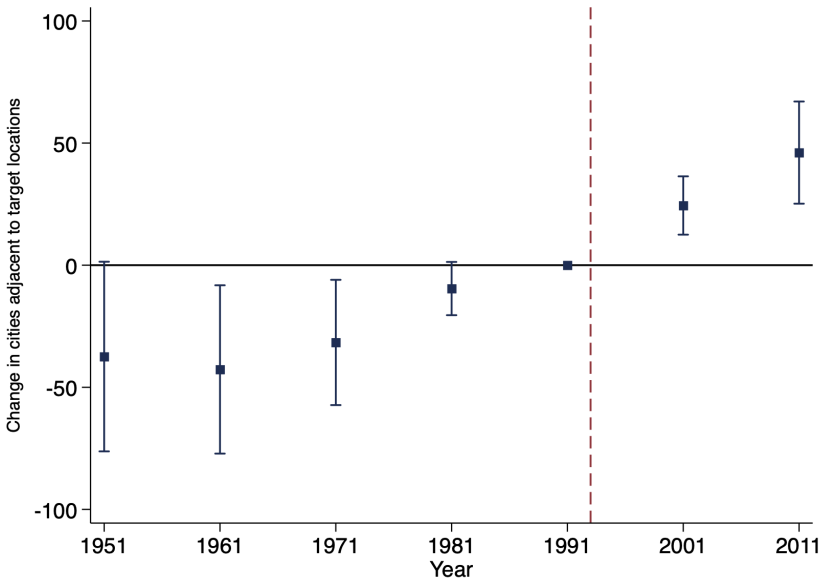


B. Women's employment

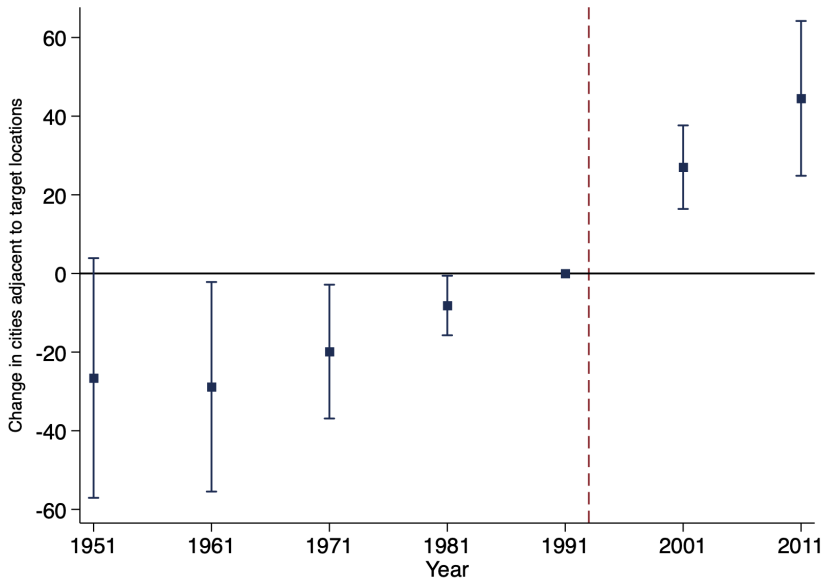
Notes: "Province-year FE:" region-year trends are replaced with province-year trends. The vertical bars measure 90 percent CIs.

No Population Trends

◂ Back



A. Women's participation

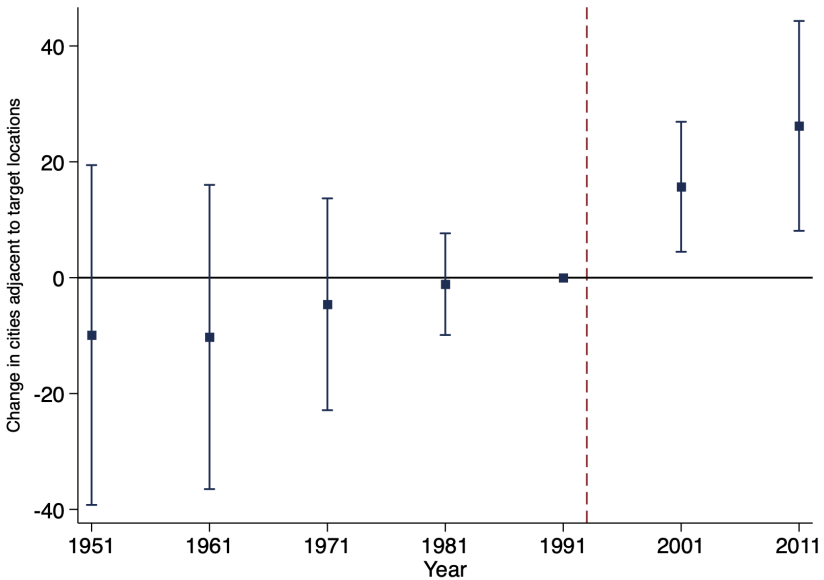


B. Women's employment

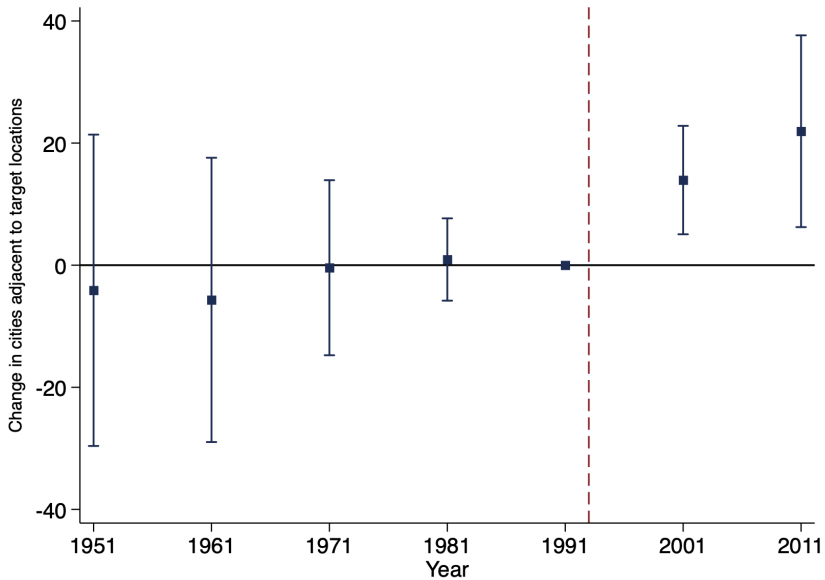
Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of minimum altitude and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

No Altitude Trends

◂ Back



A. Women's participation

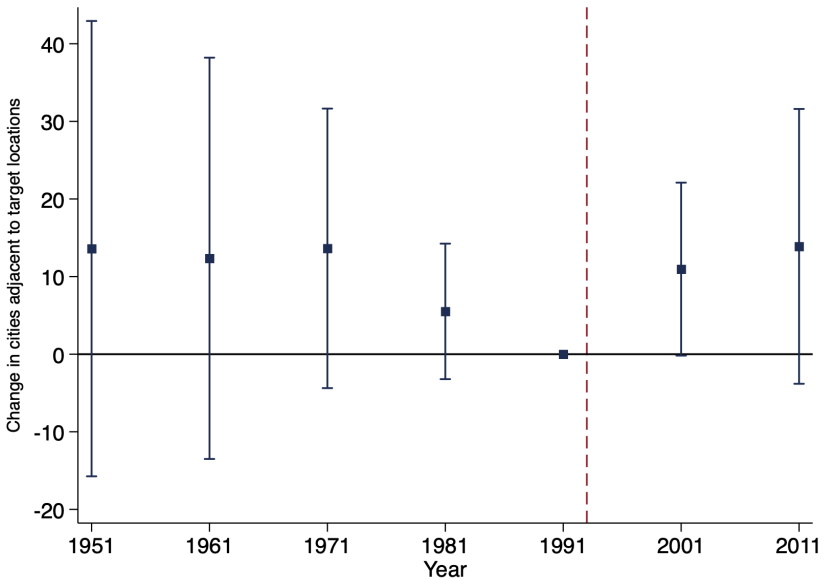


B. Women's employment

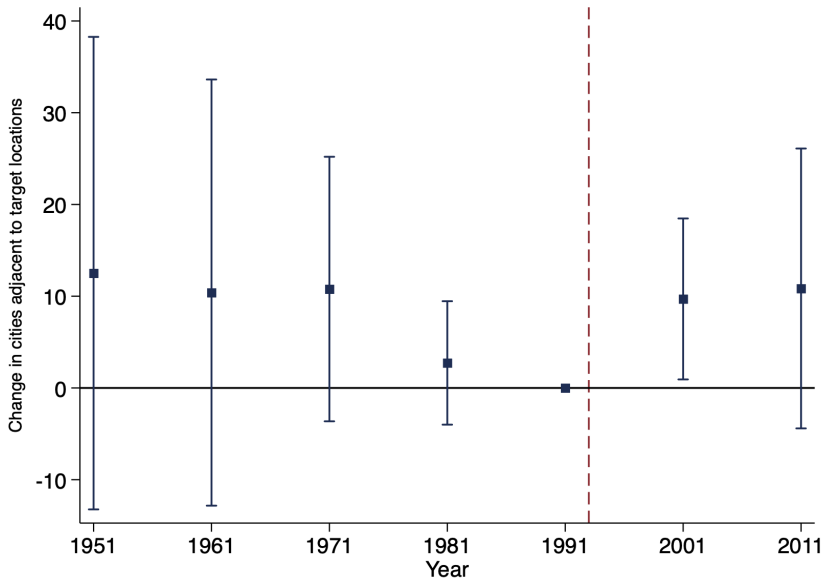
Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991 and a dummy for rural municipalities. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

No Rural Trends

◂ Back



A. Women's participation

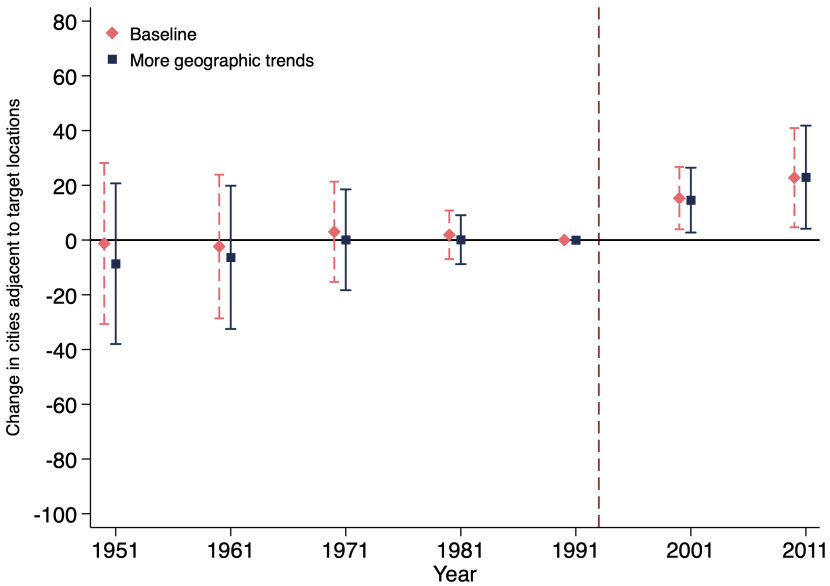


B. Women's employment

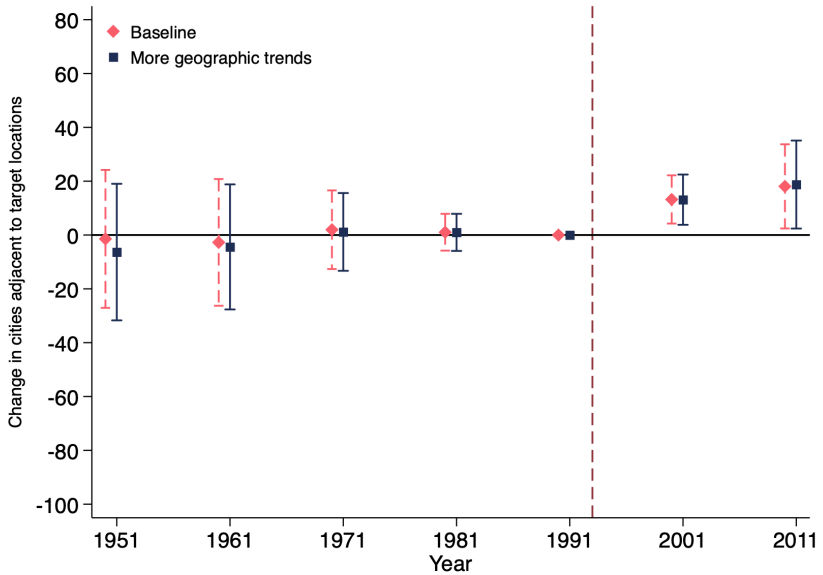
Notes: These graphs show the post-LPT change in cities adjacent to municipalities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. The omitted year is 1991. The regressions also include city fixed effects, region-year trends, as well as year dummies interacted with dummies for deciles of population in 1991 and dummies for deciles of minimum altitude. Standard errors are clustered at the city level. The vertical bars measure 90 percent CIs.

More Geographic Nonlinear Trends (1/2)

◂ Back



A. Women's participation

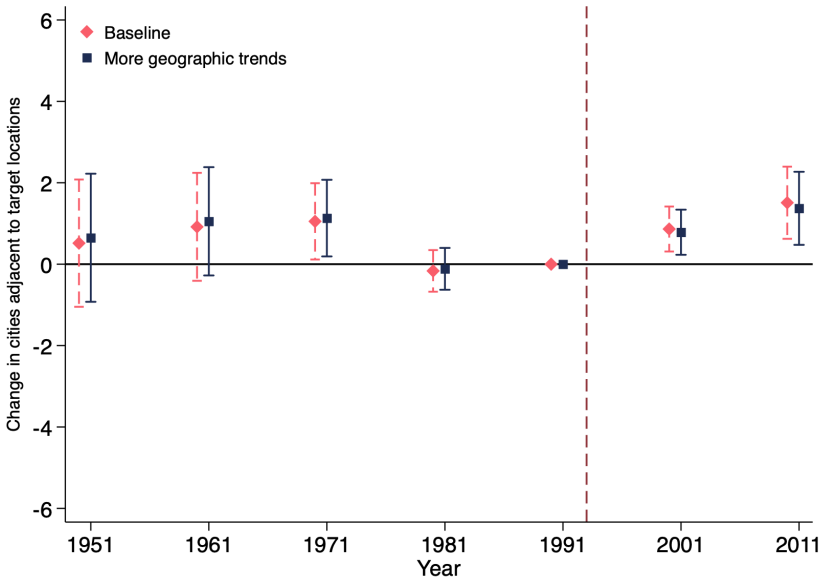


B. Women's employment

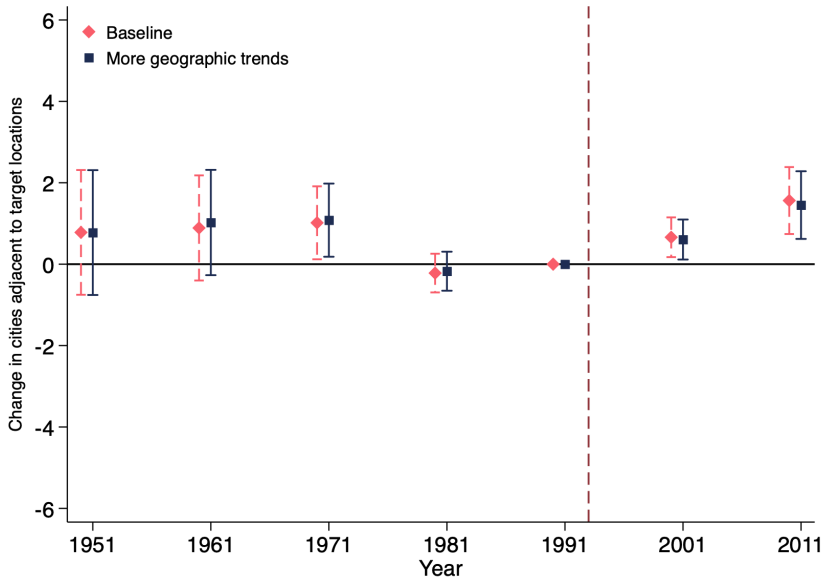
Notes: "More geographic trends:" regressions include geographical variables (a dummy for mountain municipalities and a dummy for coastal cities) interacted with year fixed effects. The vertical bars measure 90 percent CIs.

More Geographic Nonlinear Trends (2/2)

◂ Back



A. Women's participation
(share of mean 15-64 women)

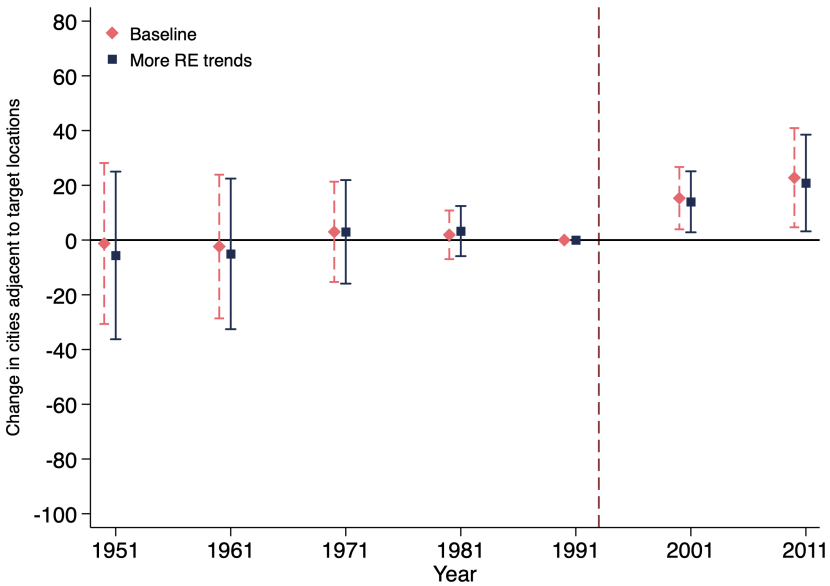


B. Women's employment
(share of mean 15-64 women)

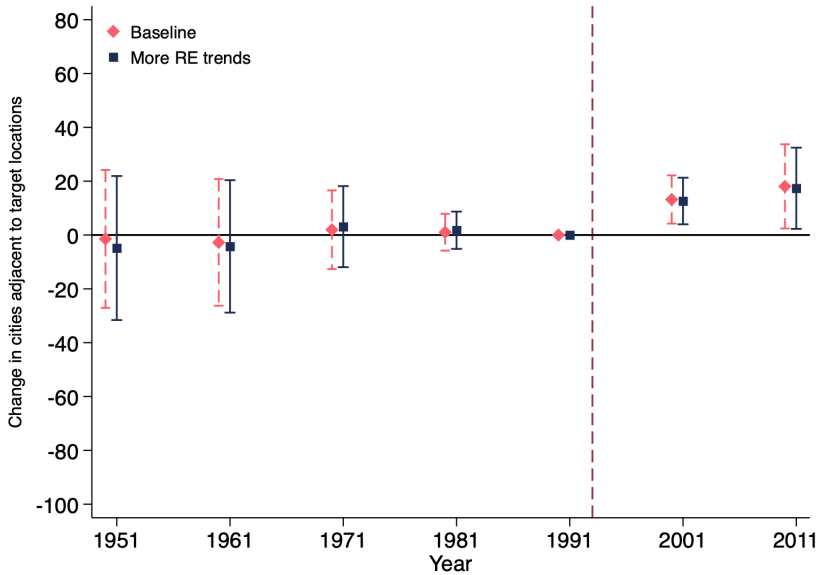
Notes: "More geographic trends:" regressions include geographical variables (a dummy for mountain municipalities and a dummy for coastal cities) interacted with year fixed effects. The vertical bars measure 90 percent CIs.

More Real Estate Nonlinear Trends (1/2)

◂ Back



A. Women's participation

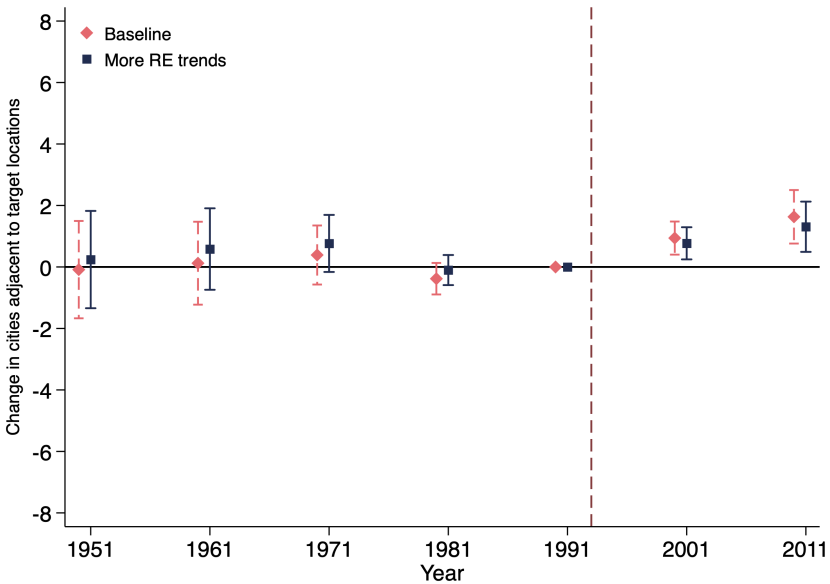


B. Women's employment

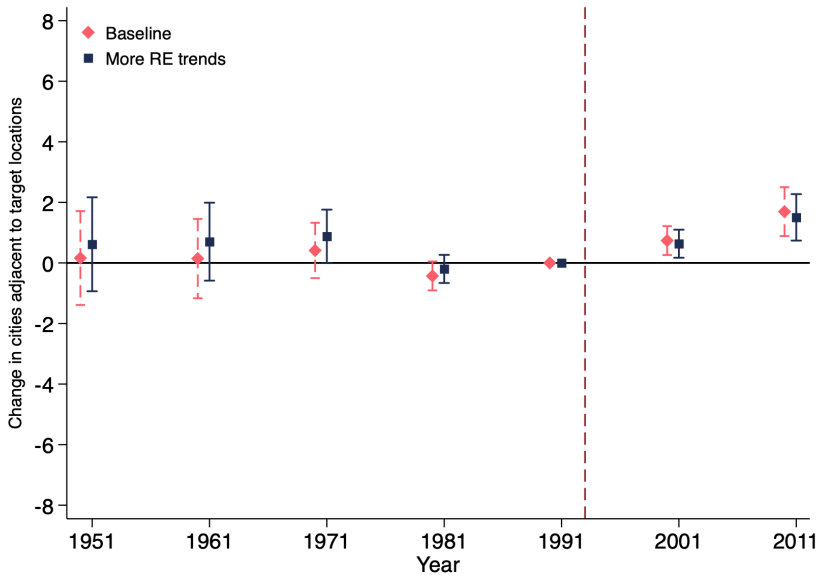
Notes: "More RE trends:" regressions include variables describing the real-estate market (average size of residential buildings and share of high-quality buildings) interacted with year fixed effects. The vertical bars measure 90 percent CIs.

More Real Estate Nonlinear Trends (2/2)

◂ Back



A. Women's participation
(share of mean 15-64 women)

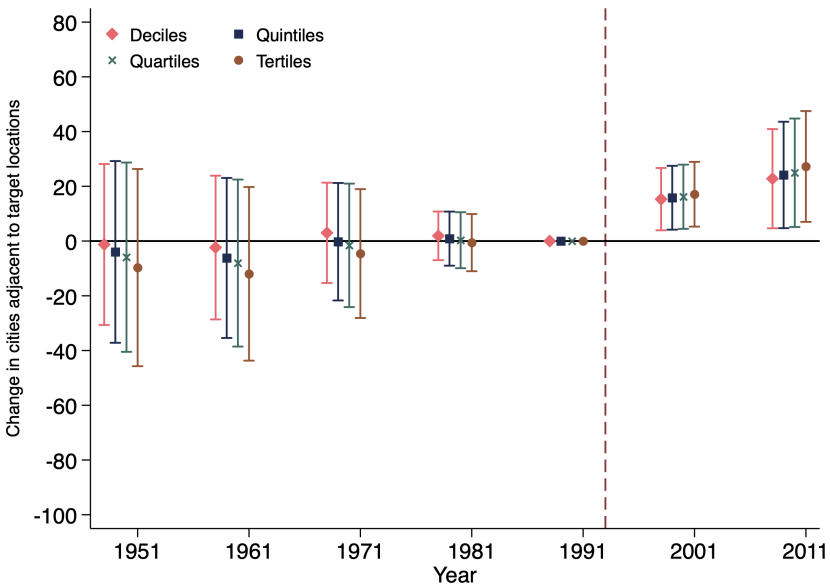


B. Women's employment
(share of mean 15-64 women)

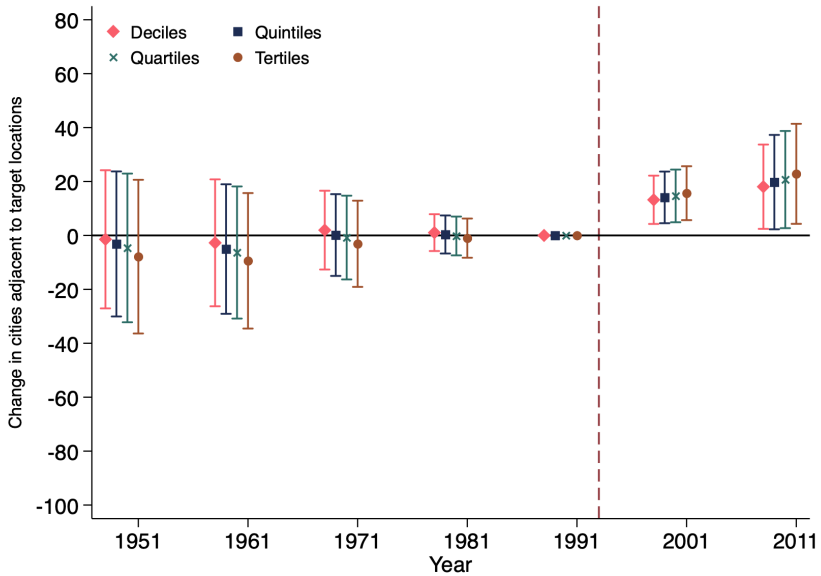
Notes: "More RE trends:" regressions include variables describing the real-estate market (average size of residential buildings and share of high-quality buildings) interacted with year fixed effects. The vertical bars measure 90 percent CIs.

Different Population Trends (1/2)

◂ Back



A. Women's participation

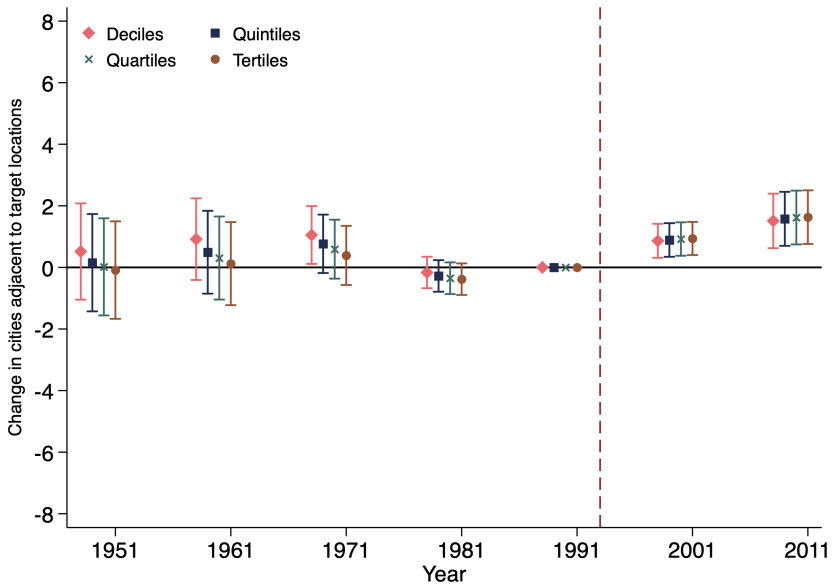


B. Women's employment

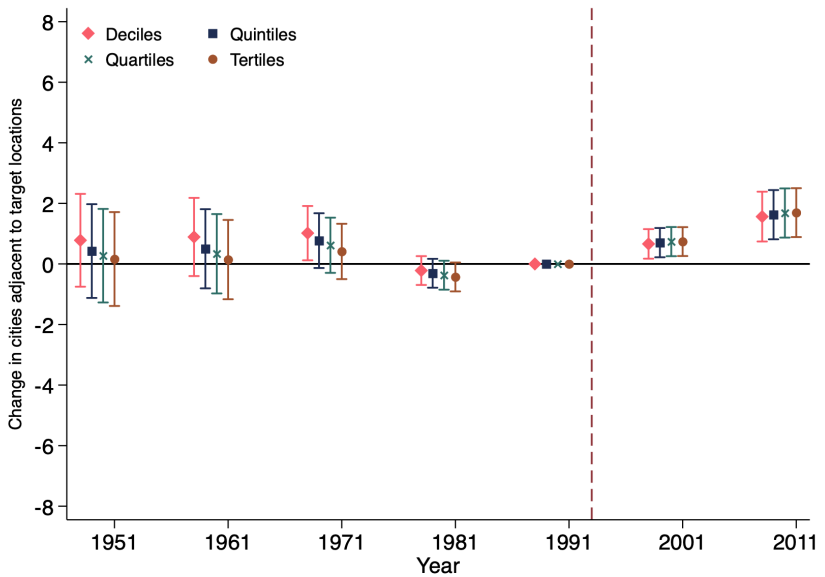
Notes: "More population trends" replaces deciles of the 1991 population (interacted with year dummies) with either tertiles, quartiles, or quintiles. The vertical bars measure 90 percent CIs.

Different Population Trends (2/2)

◂ Back



A. Women's participation
(share of mean 15-64 women)



B. Women's employment
(share of mean 15-64 women)

Notes: "More population trends" replaces deciles of the 1991 population (interacted with year dummies) with either tertiles, quartiles, or quintiles. The vertical bars measure 90 percent CIs.

Multiple Hypothesis Testing (1/3)

◂ Back

	Region-year fixed effects			Province-year fixed effects				
	Near targets x Post	P-value (W-Y)	P-value (B-H)	Near targets x Post	P-value (W-Y)	P-value (B-H)	Mean outcome	Std. Dev.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Dependent variables from municipal balance sheets before and after LPT								
Rev. from local taxes	12.321***	0.035	0.024	14.122***	<0.001	<0.001	158.54	108.92
	(4.481)			(4.745)				
Rev. from gov. transfers	-19.357***	0.005	0.003	-16.759***	<0.001	<0.001	528.31	218.83
	(5.655)			(5.966)				
Revenues per capita	-64.355**	0.115	0.132	-26.235	0.915	0.999	1677.24	1197.95
	(31.944)			(35.098)				
Spending per capita	-60.612*	0.155	0.132	-24.035	0.975	0.999	1674.14	1203.15
	(32.496)			(35.998)				
Deficit per capita	1.994	0.650	0.665	4.160	0.975	0.999	-4.24	148.30
	(4.601)			(6.155)				

Notes: This table computes p-values adjusted for multiple hypothesis testing using two different methodologies: Westfall-Young and Bonferroni-Holm. "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. Panel A uses dependent variables from municipal balance sheets that are available every year between 1990 and 2010. These regressions also include all controls described in the slide on the preferred specification. Standard errors clustered at the city level in parentheses.

Multiple Hypothesis Testing (2/3)

◂ Back

	Region-year fixed effects			Province-year fixed effects				
	Near targets x Post	P-value (W-Y)	P-value (B-H)	Near targets x Post	P-value (W-Y)	P-value (B-H)	Mean outcome	Std. Dev.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel B: Dependent variables from censuses before and after LPT							
Pupils in nursery schools	2.475***	<0.001	<0.001	2.774***	0.005	0.002	10.43	21.23
	(0.746)			(0.775)				
IHST pupils in nursery schools	0.135***	<0.001	<0.001	0.149***	<0.001	<0.001	2.28	1.05
	(0.029)			(0.033)				
Share below 3 in nursery schools	1.122**	0.040	0.076	1.376**	0.025	0.031	10.25	11.48
	(0.479)			(0.568)				
Share of population in nursery schools	0.039***	<0.001	<0.001	0.039***	0.005	<0.001	0.30	0.26
	(0.008)			(0.010)				
Share below 3	0.057**	0.055	0.091	0.067**	0.025	0.031	2.84	1.03
	(0.026)			(0.030)				
Share between 4 and 5	-0.023	0.270	0.414	-0.061***	0.020	0.030	2.14	0.78
	(0.021)			(0.024)				
Share between 4 and 9	-0.064	0.265	0.414	-0.168***	0.010	0.009	7.81	2.50
	(0.051)			(0.055)				
Foreign residents	49.582***	<0.001	<0.001	50.568***	<0.001	<0.001	18.64	40.89
	(10.176)			(9.868)				

Notes: This table computes p-values adjusted for multiple hypothesis testing using two different methodologies: Westfall-Young and Bonferroni-Holm. "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. Panel B uses dependent variables from the census that are available in 1991, 2001, and 2011 (pupils in nursery schools) or in 1981, 1991, 2001, and 2011. These regressions also include all controls described in the slide on the preferred specification. Standard errors clustered at the city level in parentheses.

Multiple Hypothesis Testing (3/3)

◂ Back

	Region-year fixed effects			Province-year fixed effects				
	Near targets x Post	P-value (W-Y)	P-value (B-H)	Near targets x Post	P-value (W-Y)	P-value (B-H)	Mean outcome	Std. Dev.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C: Dependent variables are available only after LPT								
Has fiscal infraction	-0.006	0.610	0.587	-0.011	0.76	0.999	0.51	0.5
	(0.012)			(0.013)				
Spending for local services (%)	1.195***	<0.001	0.002	0.835**	0.065	0.112	54.8	16.25
	(0.337)			(0.365)				
Rev. for admin. tasks per employee	257.568**	0.100	0.068	292.717**	0.090	0.126	2244.73	3756.45
	(121.449)			(136.087)				
Has program for local develop.	0.074***	<0.001	<0.001	0.050***	0.035	0.037	0.61	0.49
	(0.016)			(0.018)				
Has nursery schools	0.054***	<0.001	0.001	0.042***	0.040	0.045	0.63	0.48
	(0.014)			(0.016)				
Spending for nursery schools (%)	0.178***	0.020	0.019	0.045	0.076	0.999	1.01	2.03
	(0.065)			(0.065)				
Public nursery schools	0.052***	<0.001	0.003	0.005	0.076	0.999	0.26	0.61
	(0.015)			(0.016)				
Pupils in private nursery schools	0.015	0.965	0.970	0.159	0.670	0.701	11.88	21.18
	(0.403)			(0.414)				

Notes: This table computes p-values adjusted for multiple hypothesis testing using two different methodologies: Westfall-Young and Bonferroni-Holm. "Near targets" is 1 for municipalities adjacent to cities targeted by Allied tactical air attacks during WWII. The control group is composed of municipalities adjacent to cities matched to target locations. Panel C uses dependent variables from balance sheets that are available only between 1998 and 2010 (the number of pupils in private nursery schools is available from the census only in 2011). In this case, the treatment variable is just "Near targets," not its interaction with "Post." These regressions also include all controls described in the slide on the preferred specification (in the case of dep. var. only available in the post period). Standard errors clustered at the city level in parentheses.