Online Appendix for

Spread the Word: Mass Media, Language and Propaganda in Fascist Italy

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March 12, 2026

Contents

1 Descriptive Statistics 2
1.1 Radio Exposure 2
1.2 Municipalities Matching 7
1.3 Linguistic Metrics 8
1.4 Sample Representativeness 10

2 Radio Signal and Radio Subscription 13

3 Additional Regressions 16
3.1 Balance test 16
3.2 Robustness to clustering method 18
3.3 Heterogeneous Effects 20

4 Mass Persuasion and Political Behaviors - Additional Results 26
4.1 Non-Heterogeneous Robust Effects 26
4.2 Long-term Effects 31

5 Mass Persuasion and Social Norms - Additional Results 39
5.1 Static DiD Results 39
5.2 Dynamic DiD Results 43
5.3 Sensitivity Analysis 43

1 Descriptive Statistics

1.1 Radio Exposure

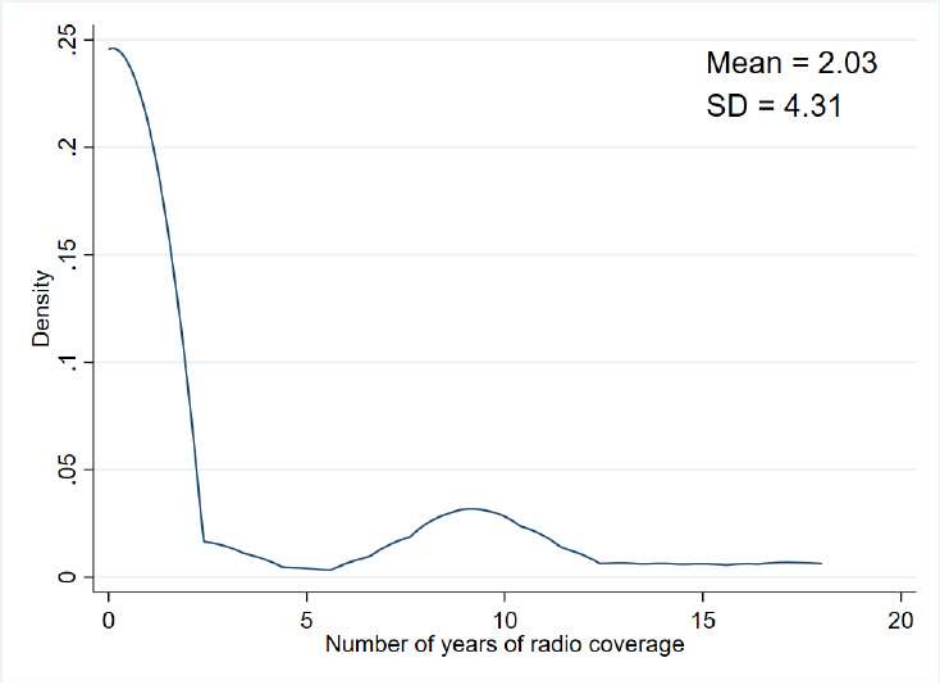


Figure 1: Duration of Radio Exposure

Notes: This figure shows the density of municipalities by number of years of radio exposure, using 66 $dB\mu V/m$ as threshold ([ETSI, 2021]).

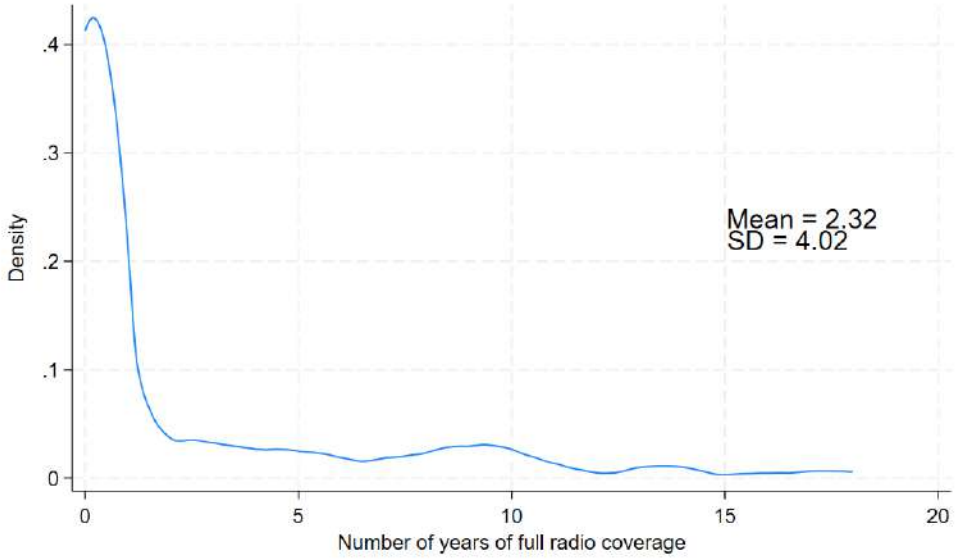


Figure 2: Intensity of Radio Exposure

Notes: This figure shows the density of municipalities by number of years of full radio coverage.

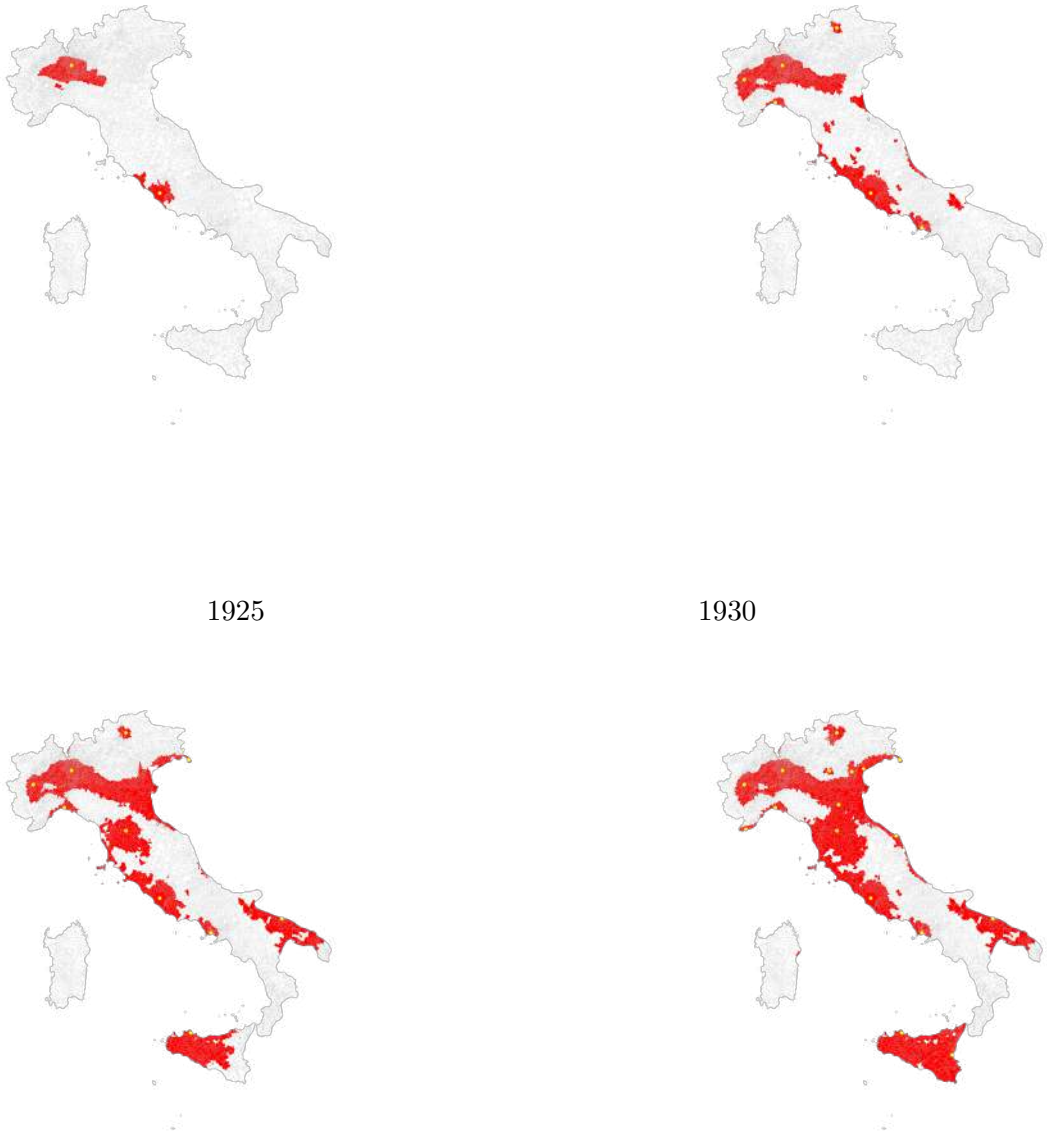
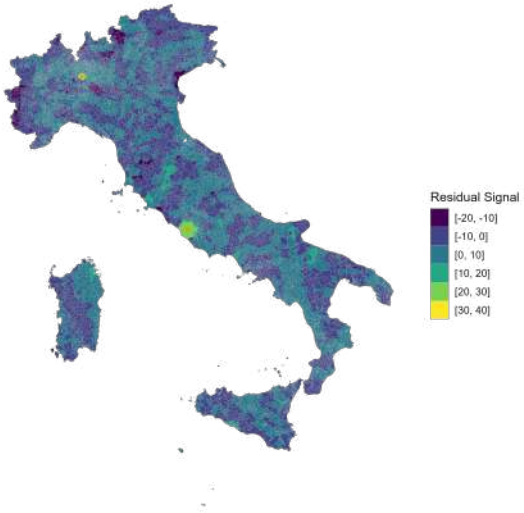
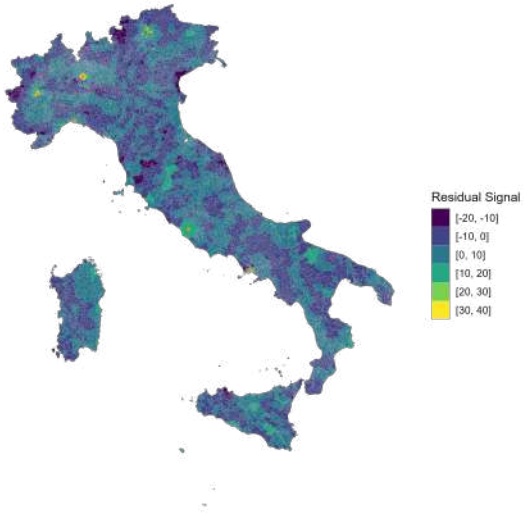


Figure 3: Radio Signal Strength Over Year

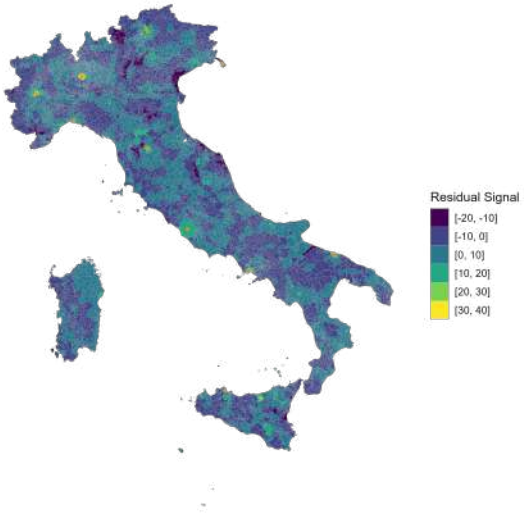
Notes: This figure shows the expansion of radio coverage, measured using 66 $dB\mu V/m$ in field strength as threshold (ETSI, 2021]). Municipalities in red have access to satisfying signal strength, while the yellow dots represent the radio stations and transmitter antennas.



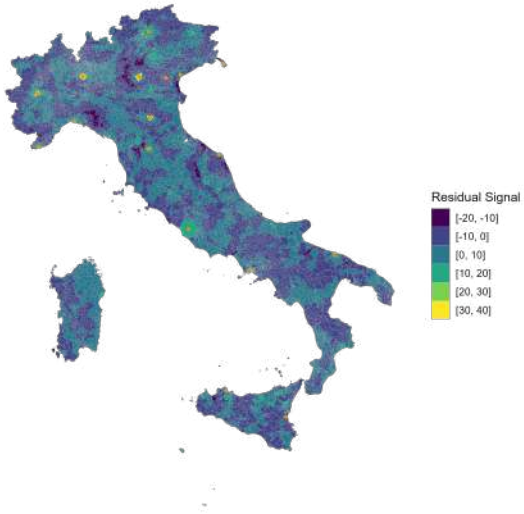
1925



1930



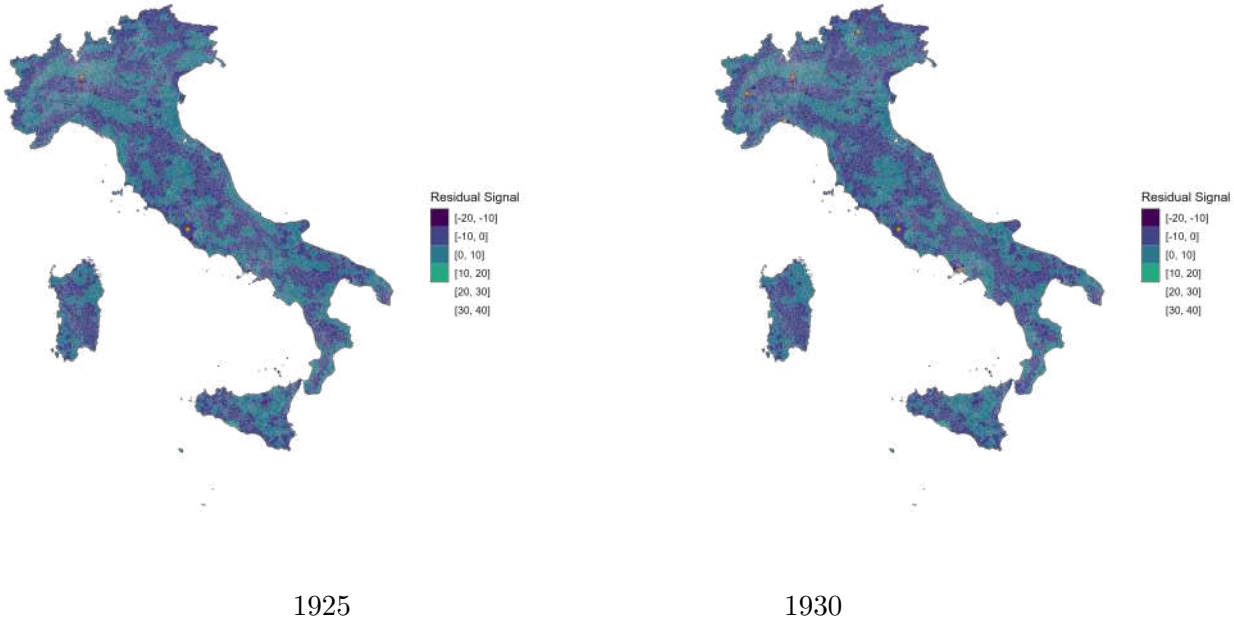
1935



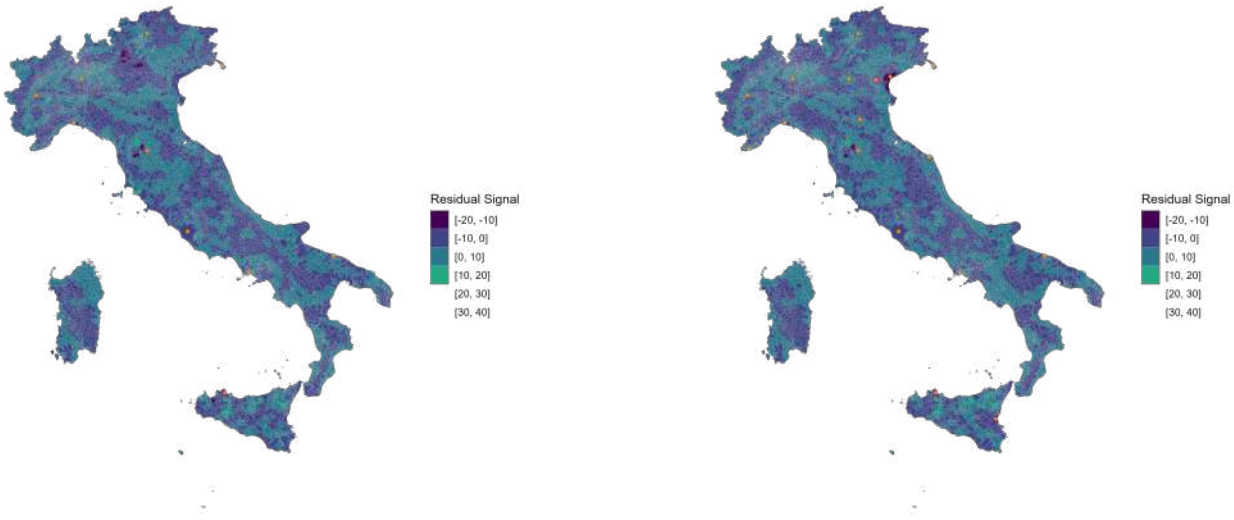
1940

Figure 4: Radio Signal Residual Over Year

Notes: This figure shows the residual radio signal after including the propagation controls. The yellow dots represent the radio stations and transmitter antennas.



1925 1930



1935 1940

Figure 5: Radio Signal Residual Over Year, Controlling for Free Signal
Notes: This figure shows the residual radio signal after including the propagation controls and the free radio signal. The yellow dots represent the radio stations and transmitter antennas.

1.2 Municipalities Matching

Table 1: Distance between AIS-ALI matches

	Mean	SD	First Quartile	Median	Third Quartile
Match type - No restriction	11.66	8.06	6.35	11.28	15.96
Match type - Linguistic region	12.41	10.35	6.35	11.53	16.18
Match type - Linguistic subregion	12.89	11.26	6.39	11.64	16.39

1.3 Linguistic Metrics

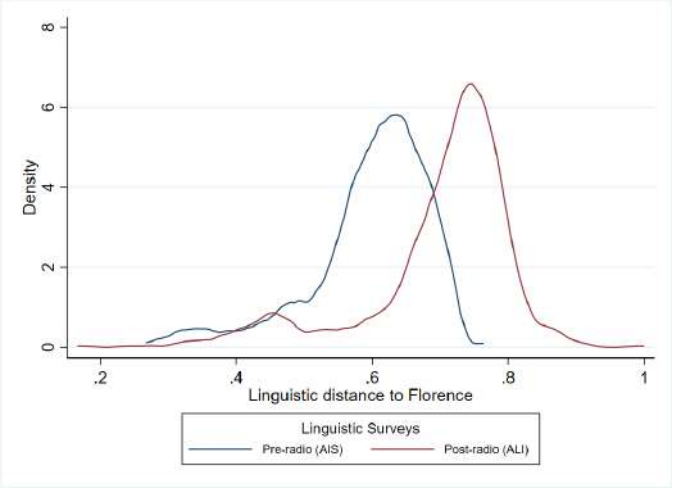


Figure 6: Densities of linguistic distance to Florence

Notes: This figure shows the respective densities of linguistic distance to Florence, measured at the municipality-leve, before and after radio expansion.

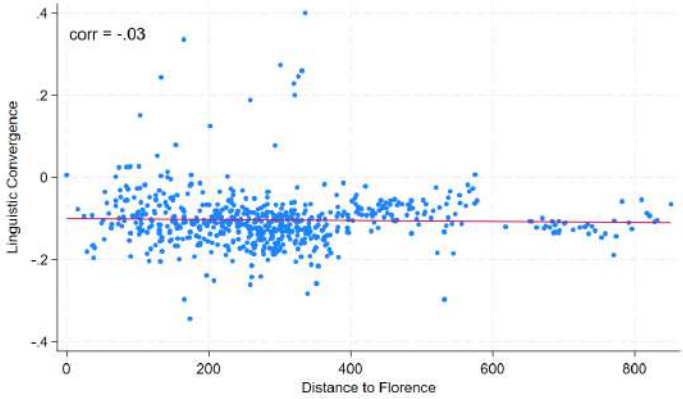


Figure 7: Correlation between Linguistic Convergence and Distance to Florence

Notes: This figure shows the scatter point of the correlation between the index of linguistic convergence and the distance in kilometers to Florence for each municipality.

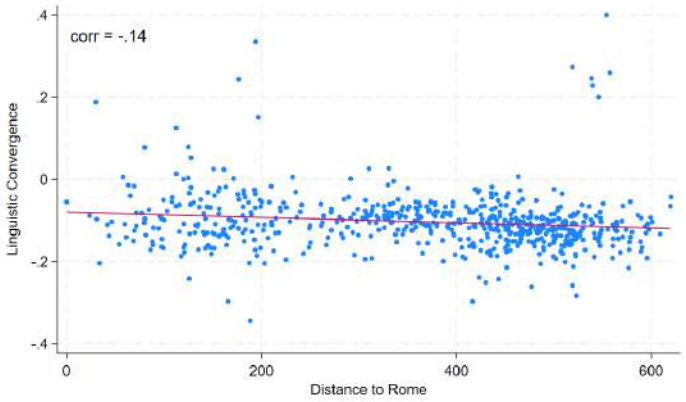
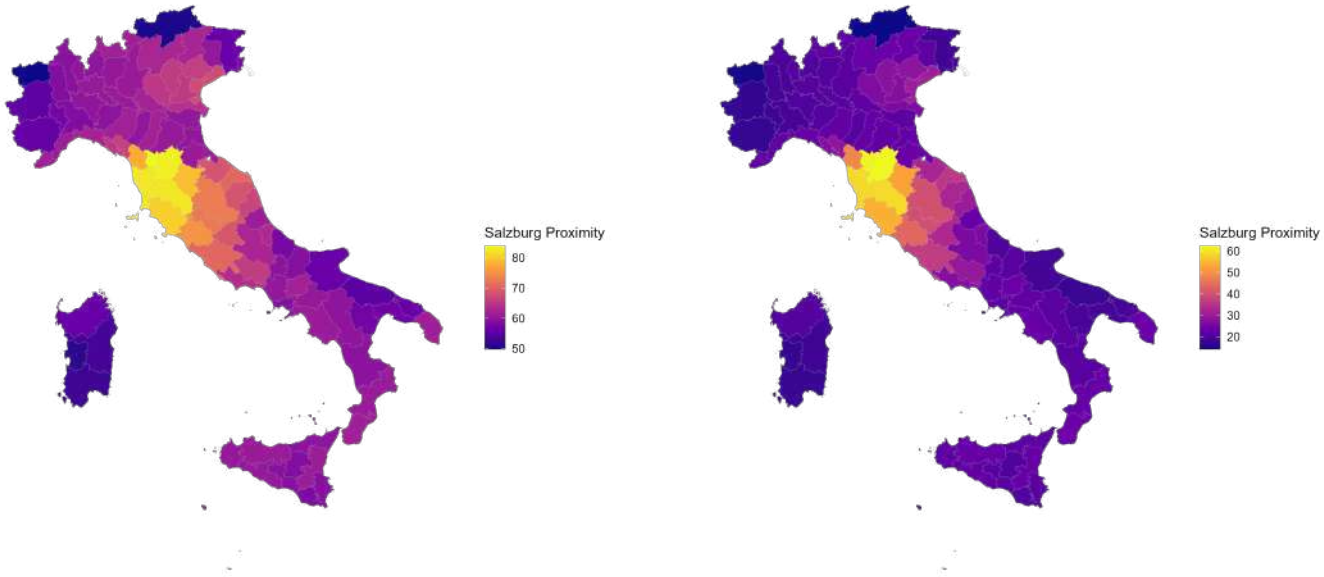


Figure 8: Correlation between Linguistic Convergence and Distance to Rome

Notes: This figure shows the scatter point of the correlation between the index of linguistic convergence and the distance in kilometers to Rome for each municipality.



(a) RIW (b) GIW

Figure 9: Linguistic Proximity to Florence Dialect

Notes: Panel (a) displays the linguistic proximity to Florence dialect, at the province-level, computed as the Relative Identity Value (RIW) ([Goebl, 2007]). Panel (b) displays the linguistic proximity to Florence dialect, at the province-level, computed as the Weighted Identity Value (GIW) ([Goebl, 2007]).

1.4 Sample Representativeness

Table 2: Selection into the sample - All Municipalities

	Mean - All Italy	Mean - Sample	Difference	SE	p-value
Population (1921)	3698.709	18826.159	-15127.450	817.758	0.000
Population (1931)	3780.765	20471.837	-16691.071	921.739	0.000
Population (1936)	3850.978	21809.144	-17958.166	1034.287	0.000
Market Access (1921)	187.091	161.865	25.226	2.047	0.000
Market Access (1931)	196.002	169.291	26.711	2.206	0.000
Market Access (1936)	202.231	174.253	27.978	2.280	0.000
Latitude	43.415	43.437	-0.022	0.107	0.838
Longitude	11.539	11.052	0.487	0.116	0.000
Land Area	32.794	91.289	-58.495	2.015	0.000
Minimum Elevation	222.549	240.947	-18.398	9.836	0.061
Mean Elevation	461.359	544.782	-83.424	19.039	0.000
Terrain Ruggedness	1425143.596	1576325.470	-151181.874	56419.616	0.007
Maritime Access	0.181	0.256	-0.075	0.016	0.000
Distance to Rivers	14.024	13.975	0.049	0.721	0.946
Railroad Access	0.350	0.468	-0.118	0.020	0.000
Distance to Radio Station	75.837	110.620	-34.784	3.083	0.000
Mean Conductivity	0.006	0.007	-0.001	0.000	0.001
Variance Conductivity	7.889	14.127	-6.238	1.211	0.000
Relative Permittivity	7.748	9.038	-1.291	0.293	0.000
Distance to Rome	386.266	363.127	23.139	5.950	0.000
Observations	8098				

Table 3: Selection into the sample - Rural municipalities only

	Mean - All Italy	Mean - Sample	Difference	SE	p-value
Population (1921)	1380.066	1556.983	-176.917	45.746	0.000
Population (1931)	1380.555	1565.341	-184.786	48.990	0.000
Population (1936)	1395.796	1567.520	-171.724	56.423	0.002
Market Access (1921)	185.457	149.467	35.990	3.740	0.000
Market Access (1931)	194.391	156.614	37.777	4.005	0.000
Market Access (1936)	200.400	161.200	39.200	4.136	0.000
Latitude	43.788	43.781	0.007	0.187	0.971
Longitude	10.859	10.097	0.761	0.212	0.000
Land Area	19.489	52.135	-32.646	1.748	0.000
Minimum Elevation	284.984	440.542	-155.558	20.124	0.000
Mean Elevation	559.983	925.452	-365.468	38.899	0.000
Terrain Ruggedness	1694603.293	2406064.480	-711461.188	113135.966	0.000
Maritime Access	0.136	0.162	-0.026	0.026	0.314
Distance to Rivers	12.454	13.470	-1.016	1.136	0.371
Railroad Access	0.239	0.201	0.038	0.033	0.239
Distance to Radio Station	82.169	138.379	-56.211	6.338	0.000
Mean Conductivity	0.004	0.004	0.000	0.001	0.573
Variance Conductivity	4.157	8.423	-4.266	1.534	0.005
Relative Permittivity	6.584	6.698	-0.115	0.447	0.797
Distance to Rome	407.861	405.051	2.810	10.963	0.798
Observations	4184				

2 Radio Signal and Radio Subscription

The main equation of the paper can be interpreted as a reduced-form estimate of the effect of exposure to Fascist radio broadcasts on linguistic convergence at the municipality level. In many contexts, radio signal strength has been shown to be a strong empirical predictor of actual radio ownership or listenership ([Olken, 2009]; [Enikolopov et al., 2011]; [Adena et al., 2015]). In the Italian Fascist period, however, data on radio ownership or listenership at a similarly granular level are not available, preventing a direct test of this relationship. Nevertheless, annual data on the number of radio subscribers are available at the regional level for part of the period from the *Annuario Statistico Italiano*. Specifically, these records provide information for the 19 Italian regions over 13 years (1928 and 1931–1942).

To assess whether radio signal exposure captures not only the probability of access to broadcasts but also actual listenership, I estimate the following generalized difference-in-differences specification at the regional level:

$$ln(Sub)_{rt} = \alpha\, Exposure_{rt} + \gamma_r + \delta_t + \epsilon_{rt} \tag{1}$$

where Sub_{rt} denotes the radio subscription rate in region r at time t. The outcome is expressed in logarithms to capture proportional changes in subscriptions. I consider several standardized measures of radio exposure, $Exposure_{rt}$. Region fixed effects γ_r control for time-invariant regional characteristics, while year fixed effects δ_t absorb common time trends. Standard errors are clustered at the regional level.

The coefficients reported in Table 4 indicate a positive relationship between changes in radio exposure and actual listenership. Throughout all the specifications, the estimated coefficient for radio exposure is positive and statistically different from zero. Additionally, both the magnitude and precision of the estimates increase when the regressions are weighted by regional population. These results should nonetheless be interpreted with caution given the level of aggregation and the resulting small number of clusters (19 regions). Moreover, the relationship disappears when radio subscriptions are expressed in levels rather than logarithms, suggesting that the effects operate primarily through proportional changes in listenership rather than large absolute increases (Table 5).

Table 4: Radio Signal and Radio Subscription (I)

	Radio Subscription Rate (log)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Radio Coverage	0.283*	0.465**						
	(0.140)	(0.162)						
Radio Coverage - t_{-1}			0.225*	0.410***				
			(0.122)	(0.124)				
Mean Signal					0.476**	0.700***		
					(0.194)	(0.200)		
Median Signal							0.393*	0.605***
							(0.189)	(0.210)
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Region FE	✓	✓	✓	✓	✓	✓	✓	✓
Pop. Weight		✓		✓		✓		✓
Observations	247	247	247	247	247	247	247	247
R-squared	0.96	0.95	0.96	0.95	0.96	0.95	0.96	0.95

Notes: OLS regressions. The sample is comprised of 247 observations. The number of observations reported in the table reflects the total after excluding those whose values are fully captured by the fixed effects. Radio coverage variables are standardized and computed as the rate of individuals leaving in a municipality with an electric field strength above the threshold value of 66. Radio signal variables are standardized and computed as the population-weighted mean/median regional electric field strength. The set of weight used for the regression is equivalent to the region population. Standard errors are reported in parentheses and are clustered at the region level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Radio Signal and Radio Subscription (II)

	Radio Subscription Rate (level)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Radio Coverage	0.000	-0.002						
	(0.002)	(0.002)						
Radio Coverage - t_{-1}			0.001	-0.001				
			(0.002)	(0.002)				
Mean Signal					0.000	-0.003		
					(0.002)	(0.002)		
Median Signal							0.001	-0.003
							(0.002)	(0.002)
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Region FE	✓	✓	✓	✓	✓	✓	✓	✓
Pop. Weight		✓		✓		✓		✓
Observations	247	247	247	247	247	247	247	247
R-squared	0.89	0.91	0.89	0.90	0.89	0.91	0.89	0.91

Notes: OLS regressions. The sample is comprised of 247 observations. The number of observations reported in the table reflects the total after excluding those whose values are fully captured by the fixed effects. Radio coverage variables are standardized and computed as the rate of individuals leaving in a municipality with an electric field strength above the threshold value of 66. Radio signal variables are standardized and computed as the population-weighted mean/median regional electric field strength. The set of weight used for the regression is equivalent to the region population. Standard errors are reported in parentheses and are clustered at the region level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3 Additional Regressions

3.1 Balance test

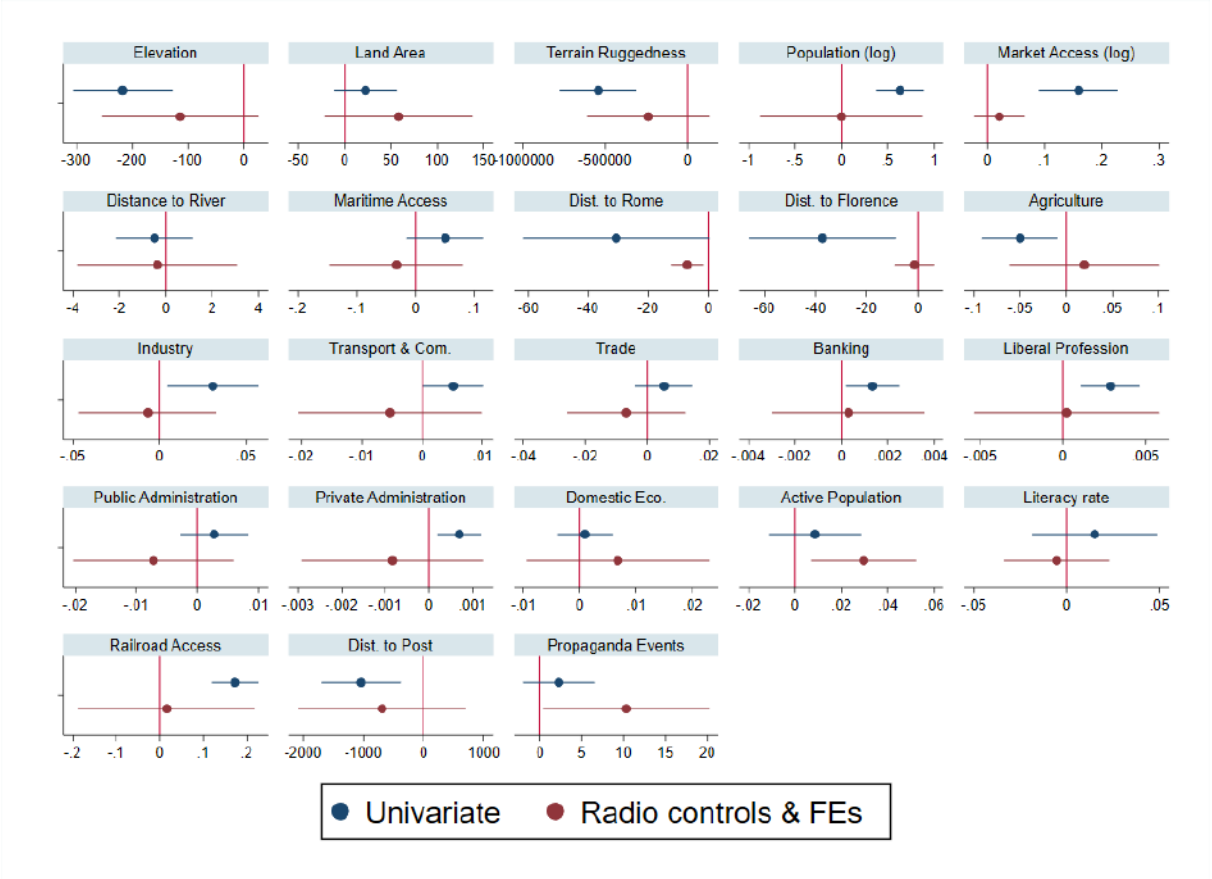


Figure 10: Balance tests

Notes: This figure shows a balance exercise using all the municipality characteristics. The first set of correlation coefficients reports the univariate effects of radio exposure on each municipality characteristic. The second set of coefficients reports the effects of radio exposure on each municipality characteristic, after implementing the identification strategy which accounts for radio propagation controls (latitude, longitude, their interaction, and second-order polynomials in municipality mean conductivity, municipality conductivity variance, relative permittivity and distance to the nearest radio transmitter) and a set of regional fixed-effects (province, linguistic region and ALI survey year of collection fixed-effects).

Table 6: Radio Exposure and Linguistic Convergence, robustness to clustering

	Province Clustering	Region Clustering
	(1)	(2)
Radio Exposure	0.633***	0.633***
	(0.206)	(0.193)
Province FE	✓	✓
ALI Year FE	✓	✓
Ling. Reg. FE	✓	✓
Radio Controls	✓	✓
Additional Controls	✓	✓
Dist. Weight	✓	✓
Observations	612	612
R-squared	0.59	0.59

Notes: OLS regressions. The sample is comprised of 624 observations. The number of observations reported in the table reflects the total after excluding those whose values are fully captured by the fixed effects. Baseline measure of radio exposure is computed as the standardized electric field strength at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of additional controls is comprised of the log-transformed population and market access, and th second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river, distance to Rome, and a dummy for railroad access and maritime access. Regressions are weighted by the matching distance between AIS and ALI municipalities. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.2 Robustness to clustering method

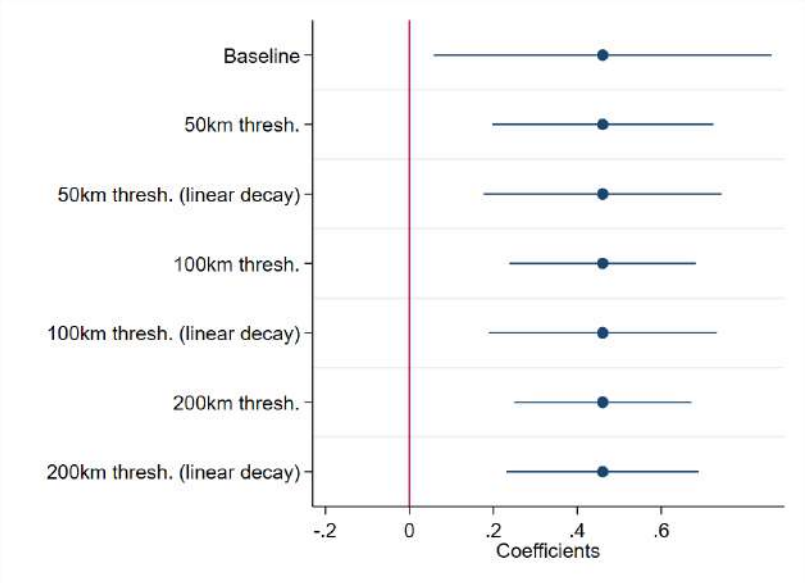


Figure 11: Robustness to spatial cluster correlation

Notes: This figure shows the coefficients and standard errors when accounting for spatial correlation. Results remain similar when considering different distance thresholds and allowing for weights in the matrix to linearly decrease as the distance increases.

Table 7: Radio Exposure and Linguistic Convergence, semiparametric regression with a spatial thin-plate spline

	SP	SP2
	(1)	(2)
Radio Exposure	0.841*	0.842*
	(0.404)	(0.404)
S(lon,lat)	0.465	0.464
Province FE	✓	✓
ALI Year FE	✓	✓
Ling. Reg. FE	✓	✓
Radio Controls	✓	✓
Additional Controls	✓	✓
Dist. Weight	✓	✓
Observations	612	612
Adjusted R-squared	0.09	0.09

Notes: Semi-parametric regressions. The sample is comprised of 624 observations. The number of observations reported in the table reflects the total after excluding those whose values are fully captured by the fixed effects. Baseline measure of radio exposure is computed as the standardized electric field strength at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of additional controls is comprised of the log-transformed population and market access, and th second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river, distance to Rome, and a dummy for railroad access and maritime access. Regressions are weighted by the matching distance between AIS and ALI municipalities. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.3 Heterogeneous Effects

Table 8: Heterogeneous effects of Radio Exposure based on Connectivity

	Linguistic Convergence				
	(1)	(2)	(3)	(4)	(5)
Radio Exposure	0.584***	0.641***	0.741***	0.639***	0.655***
	(0.195)	(0.197)	(0.193)	(0.204)	(0.214)
– × (log) Market Access	0.078				
	(0.052)				
– × Dist. to Post Office		-0.000*			
		(0.000)			
– × Dist to River			-0.011***		
			(0.004)		
– × Coastal Access				-0.200	
				(0.121)	
– × Railroad Access					-0.043
					(0.086)
Province FE	✓	✓	✓	✓	✓
ALI Year FE	✓	✓	✓	✓	✓
Ling. Reg. FE	✓	✓	✓	✓	✓
Radio Controls	✓	✓	✓	✓	✓
Baseline Controls	✓	✓	✓	✓	✓
Dist. Weight	✓	✓	✓	✓	✓
Observations	612	612	612	612	612
R-squared	0.60	0.60	0.60	0.60	0.60

Notes: OLS regressions. The sample is comprised of 624 observations. The number of observations reported in the table reflects the total after excluding those whose values are fully captured by the fixed effects. Radio exposure is computed as the standardized electric field strength at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of additional controls is comprised of the log-transformed population and market access, and the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river, distance to Rome, distance to post office, cumulative number of propaganda events, a dummy for railroad access and maritime access, and the occupational, active population and literacy rates. Regressions are weighted by the matching distance between AIS and ALI municipalities. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Heterogeneous effects of Radio Exposure based on Connectivity (median-dummy)

	Linguistic Convergence			
	(1)	(2)	(3)	(4)
Radio Exposure	0.676***	0.636***	0.748***	0.608**
	(0.221)	(0.208)	(0.191)	(0.236)
– × (log) Market Access (dummy)	-0.067			
	(0.144)			
– × Dist. to Post Office (dummy)		-0.100		
		(0.100)		
– × Dist to River (dummy)			-0.226***	
			(0.065)	
– × Coastal Access (dummy)				0.034
				(0.125)
Province FE	✓	✓	✓	✓
ALI Year FE	✓	✓	✓	✓
Ling. Reg. FE	✓	✓	✓	✓
Radio Controls	✓	✓	✓	✓
Baseline Controls	✓	✓	✓	✓
Dist. Weight	✓	✓	✓	✓
Observations	612	612	612	612
R-squared	0.60	0.60	0.60	0.60

Notes: OLS regressions. The sample is comprised of 624 observations. The number of observations reported in the table reflects the total after excluding those whose values are fully captured by the fixed effects. Radio exposure is computed as the standardized electric field strength at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of additional controls is comprised of the log-transformed population and market access, and the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river, distance to Rome, distance to post office, cumulative number of propaganda events, a dummy for railroad access and maritime access, and the occupational, active population and literacy rates. Regressions are weighted by the matching distance between AIS and ALI municipalities. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: Radio Exposure and Linguistic Convergence, robustness to population

	Baseline	Interactions		
	(1)	(2)	(3)	(4)
Radio Exposure	0.623***	0.627***	0.591***	0.581***
	(0.204)	(0.224)	(0.211)	(0.217)
Radio Exposure x Pop. (log)		-0.001		
		(0.031)		
Radio Exposure x Pop. > 10,000			0.039	
			(0.070)	
Radio Exposure x Pop. > 2,500				0.066
				(0.073)
Province FE	✓	✓	✓	✓
ALI Year FE	✓	✓	✓	✓
Ling. Reg. FE	✓	✓	✓	✓
Radio Controls	✓	✓	✓	✓
Additional Controls	✓	✓	✓	✓
Dist. Weight	✓	✓	✓	✓
Observations	612	612	612	612
R-squared	0.60	0.60	0.60	0.60

Notes: OLS regressions. The sample is comprised of 624 observations. The number of observations reported in the table reflects the total after excluding those whose values are fully captured by the fixed effects. Radio exposure is computed as the standardized electric field strength at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of additional controls is comprised of the log-transformed population and market access, and the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river, distance to Rome, distance to post office, cumulative number of propaganda events, a dummy for railroad access and maritime access, and the occupational, active population and literacy rates. Regressions are weighted by the matching distance between AIS and ALI municipalities. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: Heterogeneous effects of Radio Exposure based on Initial Adhesion to Socialism

	Linguistic Convergence						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Radio Exposure	0.623***	0.617***	0.628***	0.593***	0.643***	0.660***	0.638***
	(0.204)	(0.209)	(0.212)	(0.212)	(0.220)	(0.215)	(0.216)
– × Socialism Adhesion Non-Missing			-0.064	-0.083	-0.059	-0.041	-0.052
			(0.095)	(0.097)	(0.103)	(0.099)	(0.096)
– × 1919 Socialism Vote Share			0.074				
			(0.047)				
– × 1924 Socialism Vote Share				0.079*			
				(0.041)			
– × 1920 Socialism Vote Dummy					0.042		
					(0.114)		
– × Agrarian Strike						-0.058	
						(0.076)	
– × Red Scare Index							0.033
							(0.058)
Baseline set of FE	✓	✓	✓	✓	✓	✓	✓
Baseline Controls	✓	✓	✓	✓	✓	✓	✓
Adhesion to Socialism Controls		✓	✓	✓	✓	✓	✓
Dist. Weight	✓	✓	✓	✓	✓	✓	✓
Observations	612	612	612	612	612	612	612
R-squared	0.60	0.60	0.60	0.60	0.60	0.60	0.60

Notes: OLS regressions. The sample is comprised of 624 observations. The number of observations reported in the table reflects the total after excluding those whose values are fully captured by the fixed effects. Radio exposure is computed as the standardized electric field strength at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of additional controls is comprised of the log-transformed population and market access, and the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river, distance to Rome, distance to post office, cumulative number of propaganda events, a dummy for railroad access and maritime access, and the occupational, active population and literacy rates. Regressions are weighted by the matching distance between AIS and ALI municipalities. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: Heterogeneous effects of Radio Exposure based on WWI Soldiers Casualities

	Linguistic Convergence		
	(1)	(2)	(3)
Radio Exposure	0.623***	0.615***	0.686***
	(0.204)	(0.204)	(0.214)
– × Fascism Adhesion Non-Missing			-0.146
			(0.146)
– × Soldiers Casualties			3.237
			(3.021)
Province FE	✓	✓	✓
ALI Year FE	✓	✓	✓
Ling. Reg. FE	✓	✓	✓
Radio Controls	✓	✓	✓
Baseline Controls	✓	✓	✓
Adhesion to Fascism Controls		✓	✓
Dist. Weight	✓	✓	✓
Observations	612	612	612
R-squared	0.60	0.60	0.60

Notes: OLS regressions. The sample is comprised of 624 observations. The number of observations reported in the table reflects the total after excluding those whose values are fully captured by the fixed effects. Baseline measure of radio exposure is computed as the standardized electric field strength at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of additional controls is comprised of the log-transformed population and market access, and th second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river, distance to Rome, and a dummy for railroad access and maritime access. Regressions are weighted by the matching distance between AIS and ALI municipalities. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4 Mass Persuasion and Political Behaviors - Additional Results

4.1 Non-Heterogeneous Robust Effects

Table 13: Radio Exposure and share of total surveilled individuals

	Share of total surveilled individuals				
	(1)	(2)	(3)	(4)	(5)
Radio Exposure	-0.010*	-0.011**	-0.038***	-0.029***	
	(0.005)	(0.005)	(0.010)	(0.010)	
Radio Exposure - bin q2					-0.006
					(0.008)
Radio Exposure - bin q3					-0.027**
					(0.014)
Radio Exposure - bin q4					-0.104***
					(0.026)
Municipality FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Controls		✓	✓	✓	✓
Radio Controls			✓	✓	✓
Conductivity × FE				✓	✓
Observations	153,862	153,862	153,862	153,862	153,862
R-squared	0.80	0.80	0.80	0.80	0.80

Notes: OLS regressions. The sample panel is perfectly balanced is comprised of 19 periods and 8098 municipalities. Radio exposure is computed as dummy variable equal to one if electric field strength is superior to 66 $66 dB\mu V/m$ at the municipality level. The set of baseline controls includes log-transformed market-access and the number of propaganda events. Radio controls include free signal, a dummy for the presence of radio station and second-order polynomials in distance to the closest radio transmitter. Conductivity controls are average conductivity, conductivity variance and mean permittivity and interacted with a time dummy. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 14: Radio Exposure and share of newly surveilled individuals

	Share of newly surveilled individuals				
	(1)	(2)	(3)	(4)	(5)
Radio Exposure	-0.014***	-0.014***	-0.017**	-0.020***	
	(0.005)	(0.005)	(0.007)	(0.008)	
Radio Exposure - bin q2					0.030**
					(0.013)
Radio Exposure - bin q3					0.021
					(0.019)
Radio Exposure - bin q4					-0.028
					(0.028)
Municipality FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Controls		✓	✓	✓	✓
Radio Controls			✓	✓	✓
Conductivity × FE				✓	✓
Observations	153,862	153,862	153,862	153,862	153,862
R-squared	0.23	0.23	0.23	0.23	0.23

Notes: OLS regressions. The sample panel is perfectly balanced is comprised of 19 periods and 8098 municipalities. Radio exposure is computed as dummy variable equal to one if electric field strength is superior to 66 $66 dB\mu V/m$ at the municipality level. The set of baseline controls includes log-transformed market-access and the number of propaganda events. Radio controls include free signal, a dummy for the presence of radio station and second-order polynomials in distance to the closest radio transmitter. Conductivity controls are average conductivity, conductivity variance and mean permittivity and interacted with a time dummy. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 15: Radio Exposure and total surveilled individuals

	Total surveilled individuals				
	(1)	(2)	(3)	(4)	(5)
Radio Exposure	-0.016	-0.022	-0.055***	-0.035***	
	(0.016)	(0.015)	(0.015)	(0.013)	
Radio Exposure - bin q2					-0.008
					(0.032)
Radio Exposure - bin q3					-0.142***
					(0.049)
Radio Exposure - bin q4					-0.215***
					(0.060)
Municipality FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Controls		✓	✓	✓	✓
Radio Controls			✓	✓	✓
Conductivity × FE				✓	✓
Observations	95,950	95,950	95,950	95,950	95,950
Pseudo R-squared	0.94	0.94	0.94	0.94	0.94

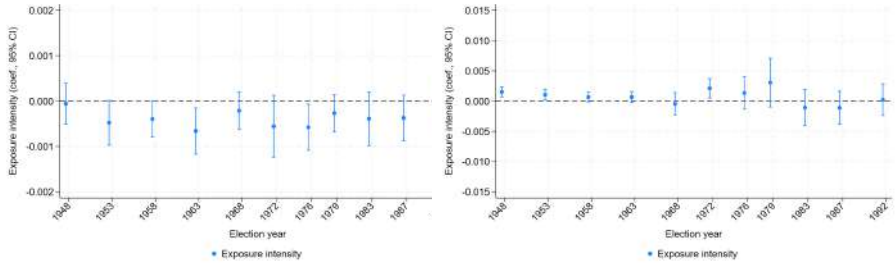
Notes: PPML regressions. The sample panel is perfectly balanced is comprised of 19 periods and 8098 municipalities. Radio exposure is computed as dummy variable equal to one if electric field strength is superior to $66 dB\mu V/m$ at the municipality level. Population is included as exposure variable. The set of baseline controls includes log-transformed market-access and the number of propaganda events. Radio controls include free signal, a dummy for the presence of radio station and second-order polynomials in distance to the closest radio transmitter. Conductivity controls are average conductivity, conductivity variance and mean permittivity and interacted with a time dummy. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 16: Radio Exposure and Newly surveilled individuals

	Newly surveilled individuals				
	(1)	(2)	(3)	(4)	(5)
Radio Exposure	0.037*	0.033	-0.009	-0.011	
	(0.022)	(0.022)	(0.030)	(0.031)	
Radio Exposure - bin q2					-0.049
					(0.060)
Radio Exposure - bin q3					-0.186**
					(0.076)
Radio Exposure - bin q4					-0.239**
					(0.114)
Municipality FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Controls		✓	✓	✓	✓
Radio Controls			✓	✓	✓
Conductivity × FE				✓	✓
Observations	89,946	89,946	89,946	89,946	89,946
Pseudo R-squared	0.71	0.71	0.71	0.71	0.71

Notes: PPML regressions. The sample panel is perfectly balanced is comprised of 19 periods and 8098 municipalities. Radio exposure is computed as dummy variable equal to one if electric field strength is superior to $66 dB\mu\, V/m$ at the municipality level. Population is included as exposure variable. The set of baseline controls includes log-transformed market-access and the number of propaganda events. Radio controls include free signal, a dummy for the presence of radio station and second-order polynomials in distance to the closest radio transmitter. Conductivity controls are average conductivity, conductivity variance and mean permittivity and interacted with a time dummy. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

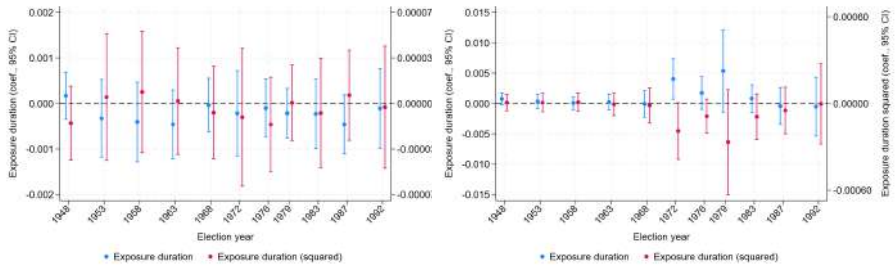
4.2 Long-term Effects



(a) MSI vote (b) Turnout

Figure 12: Long-term Effects of Radio Exposure on Voting Behaviors - Exposure Intensity and Linearity

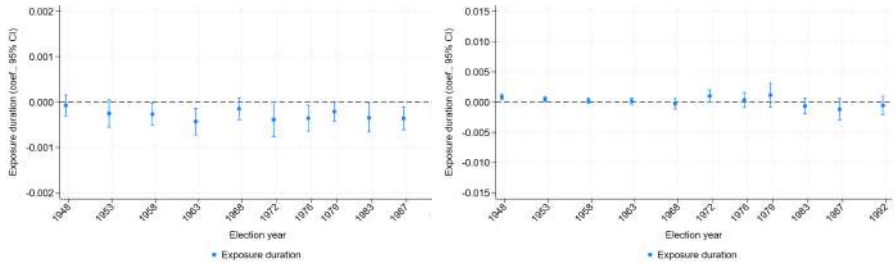
Notes: The figures show the effects of radio exposure intensity for eleven electoral rounds on the vote share of the neo-fascist party (Panel (a)) and voter turnout (Panel (b)). Data are taken from [Carillo, 2022]'s replication package.



(a) MSI vote (b) Turnout

Figure 13: Long-term Effects of Radio Exposure on Voting Behaviors - Exposure Duration

Notes: The figures show the effects of radio exposure duration for eleven electoral rounds on the vote share of the neo-fascist party (Panel (a)) and voter turnout (Panel (b)). Data are taken from [Carillo, 2022]'s replication package.



(a) MSI vote (b) Turnout

Figure 14: Long-term Effects of Radio Exposure on Voting Behaviors - Exposure Duration and Linearity

Notes: The figures show the effects of radio exposure duration for eleven electoral rounds on the vote share of the neo-fascist party (Panel (a)) and voter turnout (Panel (b)). Data are taken from [Carillo, 2022]'s replication package.

Table 17: Radio Exposure and Political Preferences, 2001

	Stronger Leader	Immigrants Identity	Immigrants Employment	MSI vote
	(1)	(2)	(3)	(4)
Intensity	0.006	-0.010	-0.008	-0.000
	(0.025)	(0.022)	(0.022)	(0.007)
Intensity^2	-0.000	0.001	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.000)
Radio Controls	✓	✓	✓	✓
Median Dist.	✓	✓	✓	✓
Geo. Controls	✓	✓	✓	✓
Pop. Controls	✓	✓	✓	✓
Indiv. Controls.	✓	✓	✓	✓
Observations	28,325	29,124	29,298	26,071
R-squared	0.08	0.15	0.15	0.15

Notes: OLS regressions. urvey answers taken from ITANES 2001. "Stronger Leader" is based on the answer to the question: "Today Italy needs a stronger leader.". "Immigrants Threat to Identity" is based on the answer to the question: "Immigrants are a threat to our culture.". "Immigrants Threat to Employment" is based on the answer to the question: "Immigrants are a threat to employment." Coded 0 if "Disagree completely", 1 if " Agree a little", 2 if "Agree fairly", and 3 if "Agree completely". Intensity is computed as the number of years of full radio coverage at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of geographic controls is comprised of the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river and distance to Rome. The set of population controls includes the log-transformed population of the municipality in 1991 and the population growth rate between 1951 and 1991. The set of individual controls includes the gender, the afer, the employment status, the number of children, the years of education and mariage. The individual controls additionnaly include the region where the individuals lived at 14 years old, the one of its father and of its father at 14 years old, the sector of employment and if one of its parents ever voted for MSI. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 18: Radio Exposure and Political Preferences, 2001

	Stronger Leader	Immigrants Identity	Immigrants Employment	MSI vote
	(1)	(2)	(3)	(4)
Duration	0.015	-0.003	-0.009	-0.004
	(0.024)	(0.020)	(0.021)	(0.006)
Duration^2	-0.001	0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.000)
Radio Controls	✓	✓	✓	✓
Median Dist.				
Geo. Controls	✓	✓	✓	✓
Pop. Controls	✓	✓	✓	✓
Indiv. Controls.	✓	✓	✓	✓
Observations	28,325	29,124	29,298	26,071
R-squared	0.08	0.15	0.15	0.15

Notes: OLS regressions. urvey answers taken from ITANES 2001. "Stronger Leader" is based on the answer to the question: "Today Italy needs a stronger leader.". "Immigrants Threat to Identity" is based on the answer to the question: "Immigrants are a threat to our culture.". "Immigrants Threat to Employment" is based on the answer to the question: "Immigrants are a threat to employment." Coded 0 if "Disagree completely", 1 if " Agree a little", 2 if "Agree fairly", and 3 if "Agree completely". Duration is computed as the number of years of radio exposure at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of geographic controls is comprised of the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river and distance to Rome. The set of population controls includes the log-transformed population of the municipality in 1991 and the population growth rate between 1951 and 1991. The set of individual controls includes the gender, the afer, the employment status, the number of children, the years of education and mariage. The individual controls additionnaly include the region where the individuals lived at 14 years old, the one of its father and of its father at 14 years old, the sector of employment and if one of its parents ever voted for MSI. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 19: Radio Exposure and Political Preferences, 2008

	Stronger Leader	Immigrants Identity	Immigrants Employment
	(1)	(2)	(3)
Intensity	0.005	-0.013	-0.005
	(0.016)	(0.018)	(0.018)
Intensity^2	-0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)
Radio Controls	✓	✓	✓
Median Dist.	✓	✓	✓
Geo. Controls	✓	✓	✓
Pop. Controls	✓	✓	✓
Indiv. Controls.	✓	✓	✓
Observations	26,867	26,947	27,085
R-squared	0.07	0.09	0.11

Notes: OLS regressions. Survey answers taken from ITANES 2008. "Stronger Leader" is based on the answer to the question: "Italy needs a strong leader nowadays.". "Immigrants Threat to Identity" is based on the answer to the question: "Immigrants are a threat to our culture and identity.". "Immigrants Threat to Employment" is based on the answer to the question: "Immigrants are a threat to employment.". Coded 0 if "not at all", 1 if "a little" 2 if "fairly much", and 3 if "very much". Intensity is computed as the number of years of full radio coverage at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of geographic controls is comprised of the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river and distance to Rome. The set of population controls includes the log-transformed population of the municipality in 1991 and the population growth rate between 1951 and 1991. The set of individual controls includes the gender, the afer, the employment status, the number of children, the years of education and mariage. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 20: Radio Exposure and Political Preferences, 2008

	Stronger Leader	Immigrants Identity	Immigrants Employment
	(1)	(2)	(3)
Duration	-0.017	-0.014	-0.028*
	(0.014)	(0.016)	(0.016)
Duration^2	0.001	0.001	0.002**
	(0.001)	(0.001)	(0.001)
Radio Controls	✓	✓	✓
Median Dist.			
Geo. Controls	✓	✓	✓
Pop. Controls	✓	✓	✓
Indiv. Controls.	✓	✓	✓
Observations	26,867	26,947	27,085
R-squared	0.06	0.09	0.11

Notes: OLS regressions. Survey answers taken from ITANES 2008. "Stronger Leader" is based on the answer to the question: "Italy needs a strong leader nowadays.". "Immigrants Threat to Identity" is based on the answer to the question: "Immigrants are a threat to our culture and identity.". "Immigrants Threat to Employment" is based on the answer to the question: "Immigrants are a threat to employment.". Coded 0 if "not at all", 1 if "a little" 2 if "fairly much", and 3 if "very much". Duration is computed as the number of years of radio exposure at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of geographic controls is comprised of the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river and distance to Rome. The set of population controls includes the log-transformed population of the municipality in 1991 and the population growth rate between 1951 and 1991. The set of individual controls includes the gender, the afer, the employment status, the number of children, the years of education and mariage. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 21: Radio Exposure and Political Preferences, 2004

	Muslim	Homo.	Comm.	Fascist	President	Pope	North div.	Racist
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intensity	-0.006	-0.004	-0.015	-0.013	-0.002	-0.001	0.003	0.009
	(0.015)	(0.011)	(0.015)	(0.014)	(0.015)	(0.015)	(0.014)	(0.014)
Intensity^2	-0.000	0.000	0.001	0.001	0.000	0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Radio Controls	✓	✓	✓	✓	✓	✓	✓	✓
Median Dist.	✓	✓	✓	✓	✓	✓	✓	✓
Geo. Controls	✓	✓	✓	✓	✓	✓	✓	✓
Pop. Controls	✓	✓	✓	✓	✓	✓	✓	✓
Indiv. Controls.	✓	✓	✓	✓	✓	✓	✓	✓
Observations	15,432	15,694	15,592	15,561	15,795	15,929	16,004	15,804
R-squared	0.10	0.17	0.09	0.06	0.09	0.12	0.14	0.06

Notes: OLS regressions. Survey answers taken from ITANES 2004. Preferences are based on the answers to the question "Tell me if you think they should be allowed or forbidden to publicly manifest. How do you think, for example, regarding the fascists/communists?/who manifests against the President of the Republic/homosexuals?/who manifests against the Pope?/Muslims?/who wants the secession of the North from the rest of Italy?/racists?" Coded 1 if "Permit" and 0 if "Prohibited". Intensity is computed as the number of years of full radio coverage at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of geographic controls is comprised of the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river and distance to Rome. The set of population controls includes the log-transformed population of the municipality in 1991 and the population growth rate between 1951 and 1991. The set of individual controls includes the gender, the afer, the employment status, the number of children, the years of education and mariage. The individual controls additionnaly include the region where the individuals lived at 14 years old, the one of its father and of its father at 14 years old, and the sector of employment. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 22: Radio Exposure and Political Preferences, 2004

	Muslim	Homo.	Comm.	Fascist	President	Pope	North div.	Racist
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Duration	0.010	0.005	-0.002	-0.003	0.004	0.014	0.002	0.012
	(0.014)	(0.010)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.012)
Duration^2	-0.001	-0.000	0.000	0.000	-0.000	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Radio Controls	✓	✓	✓	✓	✓	✓	✓	✓
Median Dist.								
Geo. Controls	✓	✓	✓	✓	✓	✓	✓	✓
Pop. Controls	✓	✓	✓	✓	✓	✓	✓	✓
Indiv. Controls.	✓	✓	✓	✓	✓	✓	✓	✓
Observations	15,432	15,694	15,592	15,561	15,795	15,929	16,004	15,804
R-squared	0.10	0.16	0.08	0.05	0.08	0.12	0.13	0.06

Notes: OLS regressions. Survey answers taken from ITANES 2004. Preferences are based on the answers to the question "Tell me if you think they should be allowed or forbidden to publicly manifest. How do you think, for example, regarding the fascists/communists?/who manifests against the President of the Republic/homosexuals?/who manifests against the Pope?/Muslims?/who wants the secession of the North from the rest of Italy?/racists?" Coded 1 if "Permit" and 0 if "Prohibited". Duration is computed as the number of years of radio exposure at the municipality level. The set of radio controls includes latitude, longitude, their interaction, and second-order polynomials in distance to the closest radio transmitter, average conductivity, conductivity variance and mean permittivity. The set of geographic controls is comprised of the second-order polynomials in mean elevation, land area, terrain ruggedness, distance to the closest river and distance to Rome. The set of population controls includes the log-transformed population of the municipality in 1991 and the population growth rate between 1951 and 1991. The set of individual controls includes the gender, the afer, the employment status, the number of children, the years of education and mariage. The individual controls additionnaly include the region where the individuals lived at 14 years old, the one of its father and of its father at 14 years old, and the sector of employment. Standard errors are reported in parentheses and are clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5 Mass Persuasion and Social Norms - Additional Results

5.1 Static DiD Results

Table 23: Radio Exposure and fertility Rate

	fertility				
	(1)	(2)	(3)	(4)	(5)
Radio Exp. (Continuous)	0.058**	0.093	0.094	0.419***	0.393***
	(0.023)	(0.073)	(0.073)	(0.073)	(0.094)
Province FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	
Year × 5 Geo. Areas FE					✓
Signal Free		✓	✓	✓	✓
Population (log)			✓	✓	✓
Prov. Characteristics x Year				✓	✓
Observations	1,805	1,805	1,805	1,786	1,767
R-squared	0.95	0.95	0.95	0.96	0.98

Notes: OLS regressions. The sample is comprised of 95 provinces and 20 time periods, for a total of 1,9000 observations. The dependent variables is the standardized birth rate, defined as the the annual number of live births per 1,000 population. Radio exposure is computed as the standardized municipality population-weighted radio signal strength at the province level. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 24: Radio Exposure and fertility Rate

	fertility				
	(1)	(2)	(3)	(4)	(5)
Radio Exp. (Dummy - Province Share)	0.074	0.126*	0.125*	0.217***	0.151***
	(0.059)	(0.072)	(0.073)	(0.038)	(0.040)
Province FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	
Year × 5 Geo. Areas FE					✓
Signal Free		✓	✓	✓	✓
Population (log)			✓	✓	✓
Prov. Characteristics x Year				✓	✓
Observations	1,805	1,805	1,805	1,786	1,767
R-squared	0.95	0.95	0.95	0.96	0.98

Notes: OLS regressions. The sample is comprised of 95 provinces and 20 time periods, for a total of 1,9000 observations. The dependent variables is the standardized birth rate, defined as the the annual number of live births per 1,000 population. Radio exposure is computed as the standardized municipality population-weighted radio signal strength at the province level. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 25: Radio Exposure and fertility Rate

	fertility				
	(1)	(2)	(3)	(4)	(5)
Radio Exp. (Dummy - Population threshold)	0.061	0.081*	0.081*	0.120***	0.085***
	(0.042)	(0.044)	(0.044)	(0.023)	(0.023)
Province FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	
Year × 5 Geo. Areas FE					✓
Signal Free		✓	✓	✓	✓
Population (log)			✓	✓	✓
Prov. Characteristics x Year				✓	✓
Observations	1,805	1,805	1,805	1,786	1,767
R-squared	0.95	0.95	0.95	0.96	0.98

Notes: OLS regressions. The sample is comprised of 95 provinces and 20 time periods, for a total of 1,9000 observations. The dependent variables is the standardized birth rate, defined as the the annual number of live births per 1,000 population. Radio exposure is computed as the standardized municipality population-weighted radio signal strength at the province level. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 26: Radio Exposure and fertility Rate

	fertility				
	(1)	(2)	(3)	(4)	(5)
Radio Exp. (Dummy ¿ 66 V/m)	0.067	0.066	0.066	0.112***	0.050**
	(0.042)	(0.043)	(0.043)	(0.022)	(0.024)
Province FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	
Year × 5 Geo. Areas FE					✓
Signal Free		✓	✓	✓	✓
Population (log)			✓	✓	✓
Prov. Characteristics x Year				✓	✓
Observations	1,805	1,805	1,805	1,786	1,767
R-squared	0.95	0.95	0.95	0.96	0.98

Notes: OLS regressions. The sample is comprised of 95 provinces and 20 time periods, for a total of 1,9000 observations. The dependent variables is the standardized birth rate, defined as the the annual number of live births per 1,000 population. Radio exposure is computed as the standardized municipality population-weighted radio signal strength at the province level. Standard errors are reported in parentheses and are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5.2 Dynamic DiD Results

5.3 Sensitivity Analysis

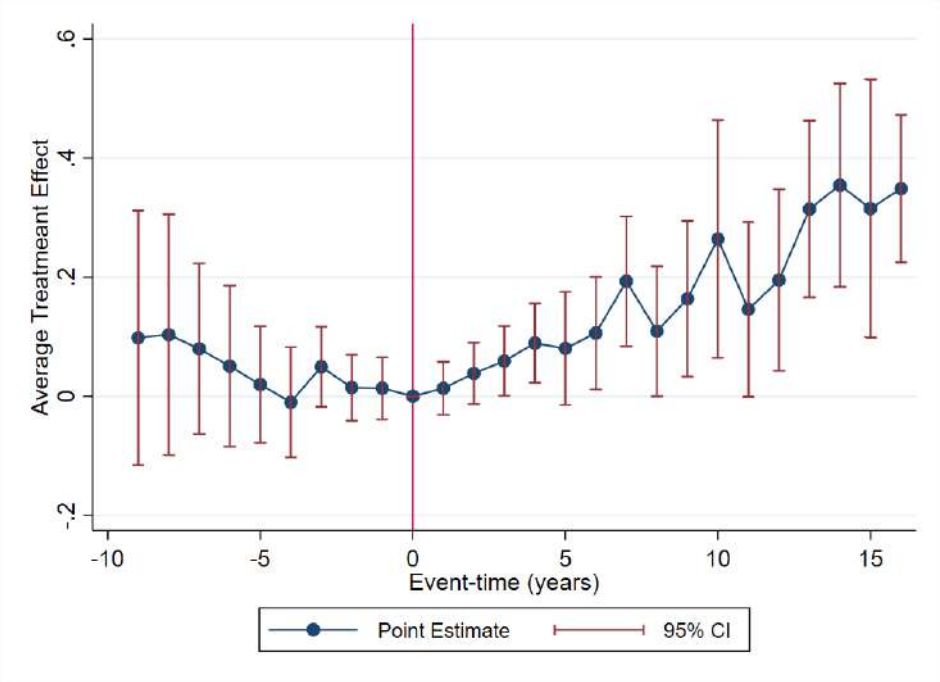


Figure 15: Dynamic effect of radio coverage on fertility rate (robustness to controls inclusion)

Notes: The figures show point estimates and 95% confidence intervals of the β_ℓ parameters representing the dynamic effect of radio coverage on fertility rate. The period prior to radio exposure is normalized to zero. The dummy treatment is defined following threshold of $66 dB\mu V/m$ field strength in province radio signal, which is considered as the minimum sensitivity limit for AM broadcasting. Standard errors are corrected for clustering at the province level. Estimated using the method proposed by [De Chaisemartin and d'Haultfoeuille, 2024].

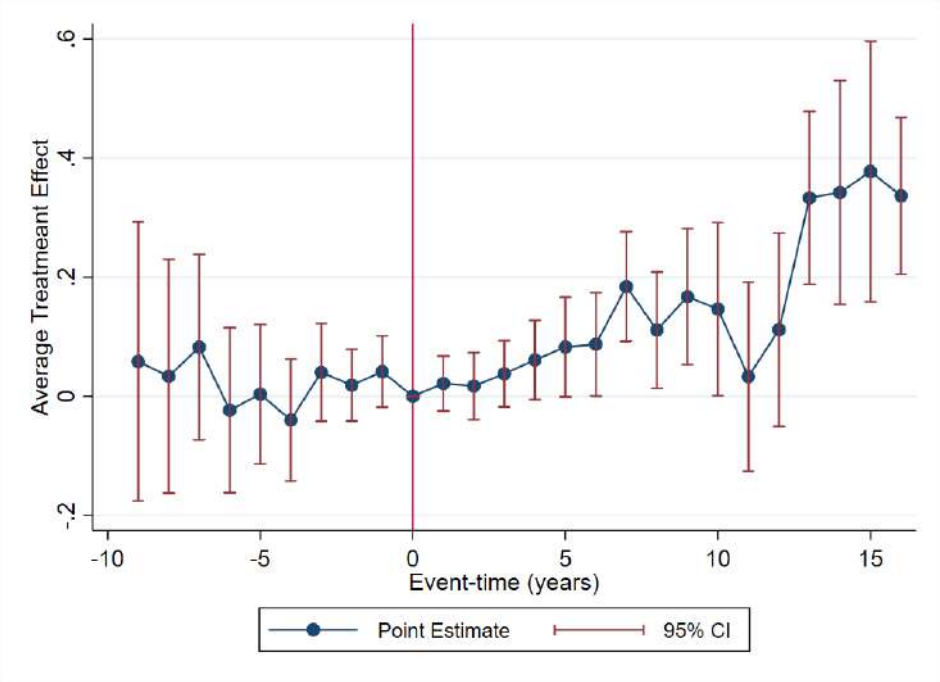


Figure 16: Dynamic effect of radio coverage on fertility rate (robustness to minimum sensitivity for radio coverage)

Notes: The figures show point estimates and 95% confidence intervals of the β_ℓ parameters representing the dynamic effect of radio coverage on fertility rate. The period prior to radio exposure is normalized to zero. The dummy treatment is defined following threshold of $66 dB\mu V/m$ field strength in province radio signal, which is considered as the minimum sensitivity limit for AM broadcasting. Standard errors are corrected for clustering at the province level. Estimated using the method proposed by [De Chaisemartin and d'Haultfoeuille, 2024].

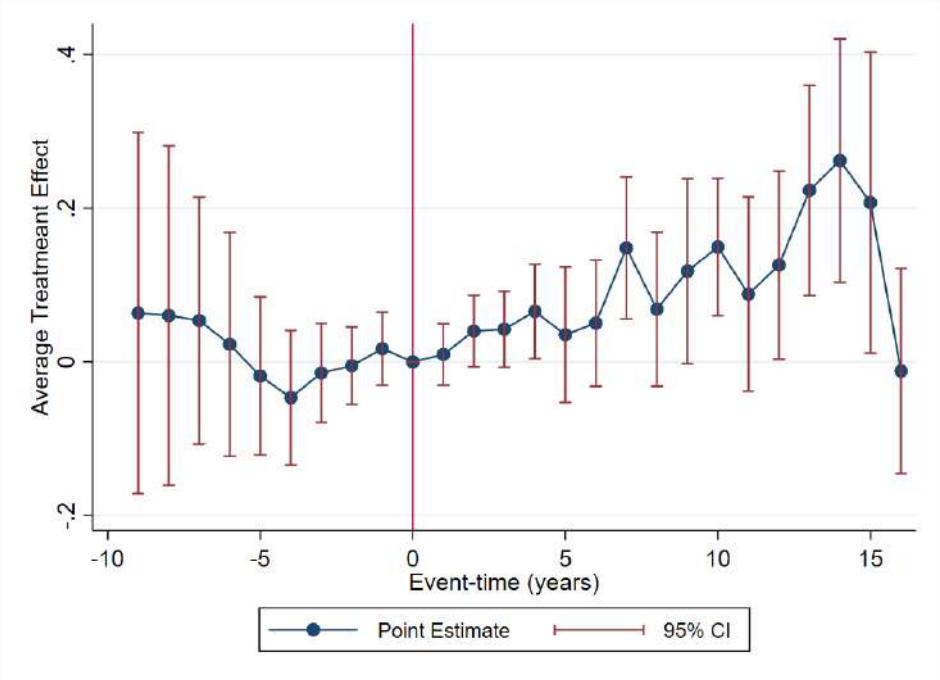


Figure 17: Dynamic effect of radio coverage on fertility rate (robustness to alternative binary treatment)

Notes: The figures show point estimates and 95% confidence intervals of the β_ℓ parameters representing the dynamic effect of radio coverage on fertility rate. The period prior to radio exposure is normalized to zero. The dummy treatment is defined following threshold of $66 dB\mu V/m$ field strength in province radio signal, which is considered as the minimum sensitivity limit for AM broadcasting. Standard errors are corrected for clustering at the province level. Estimated using the method proposed by [De Chaisemartin and d'Haultfoeuille, 2024].

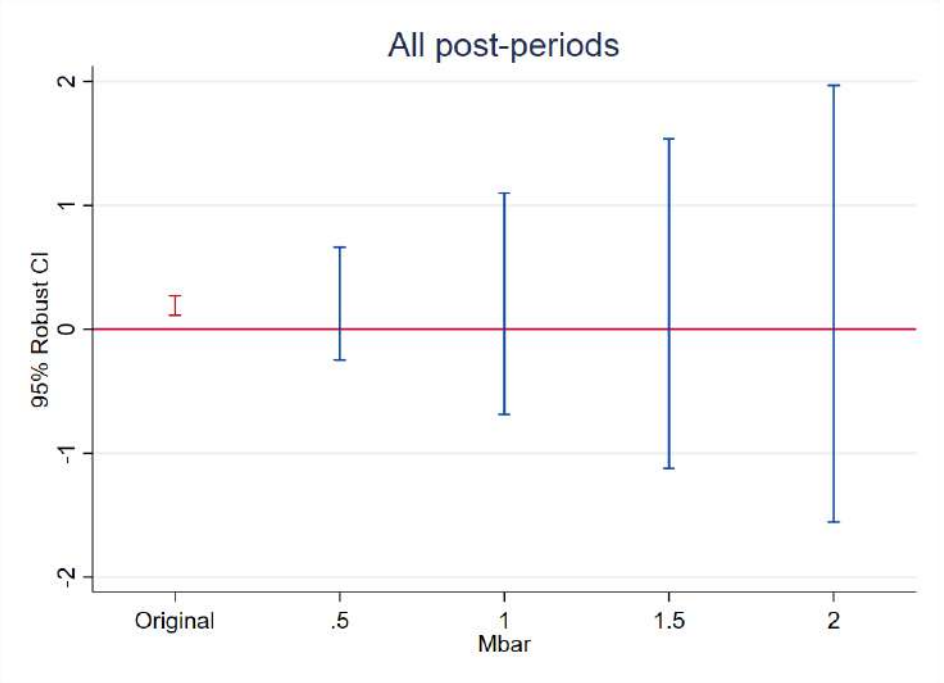


Figure 18: Bounding violations of parallel trends (I)

Notes: This reports 95% confidence intervals (CIs) derived using the framework proposed by [?]. These CIs impose the restriction that the maximum post-treatment violation of parallel trends between consecutive periods is bounded $\bar{M}$ times the maximum pre-treatment violation, applied to four aggregated post-treatment periods.

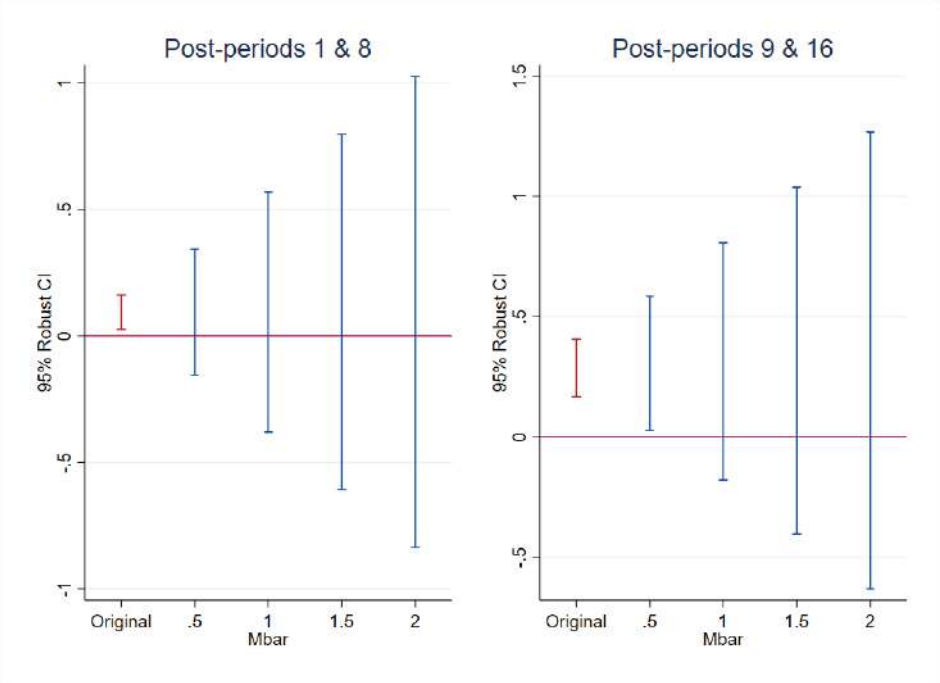


Figure 19: Bounding violations of parallel trends (II)

Notes: This reports 95% confidence intervals (CIs) derived using the framework proposed by [**?**]. These CIs impose the restriction that the maximum post-treatment violation of parallel trends between consecutive periods is bounded $\bar{M}$ times the maximum pre-treatment violation, applied to four aggregated post-treatment periods.

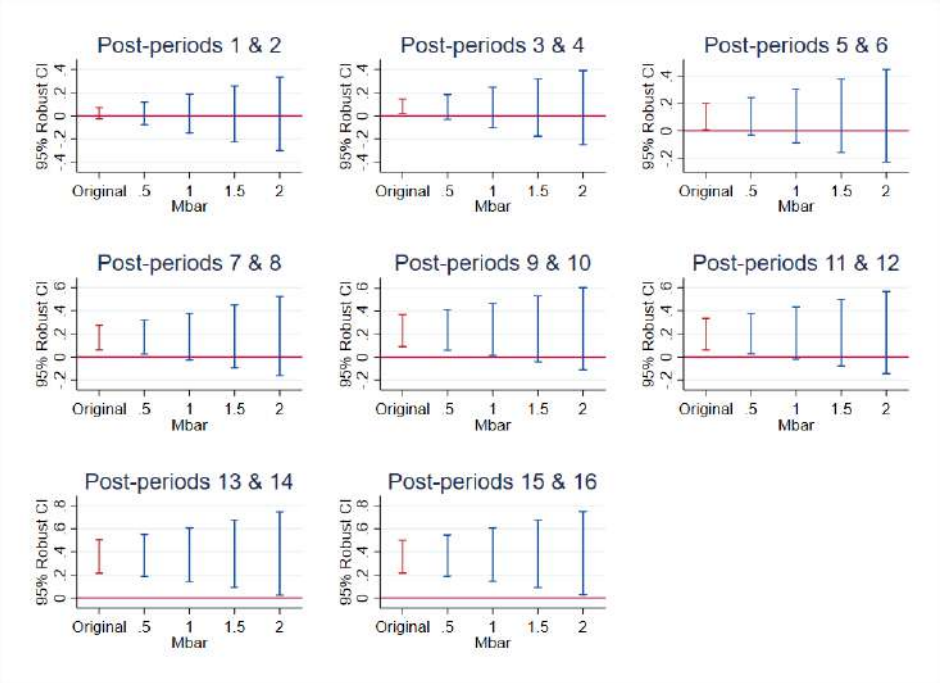


Figure 20: Bounding violations of parallel trends (III)

Notes: This reports 95% confidence intervals (CIs) derived using the framework proposed by [**?**]. These CIs impose the restriction that the maximum post-treatment violation of parallel trends between consecutive periods is bounded $\bar{M}$ times the maximum pre-treatment violation, applied to four aggregated post-treatment periods.

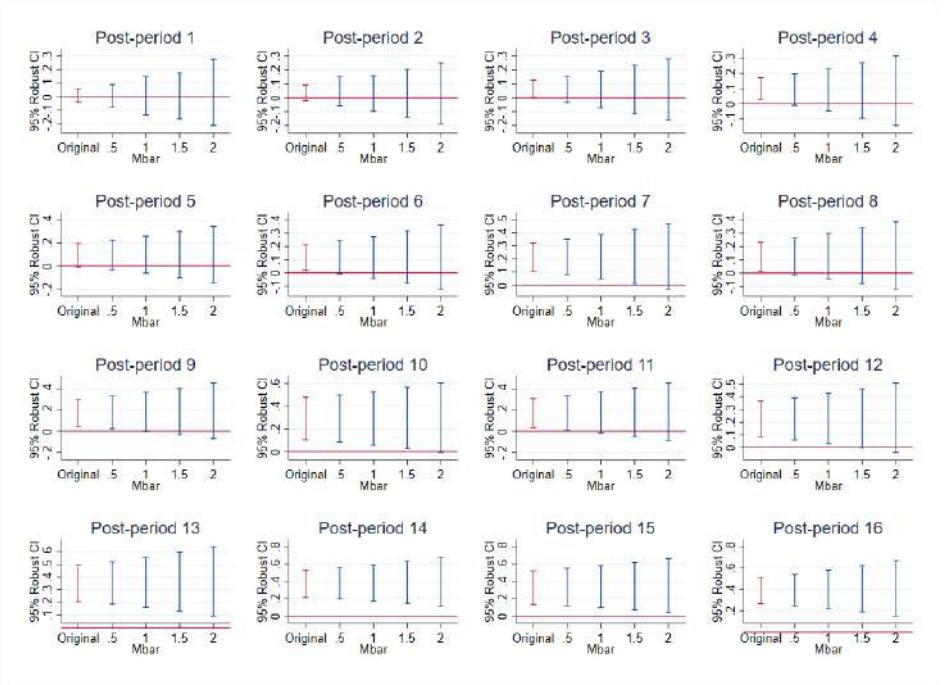


Figure 21: Bounding violations of parallel trends (IV)

Notes: This reports 95% confidence intervals (CIs) derived using the framework proposed by [**?**]. These CIs impose the restriction that the maximum post-treatment violation of parallel trends between consecutive periods is bounded $\bar{M}$ times the maximum pre-treatment violation, applied to four aggregated post-treatment periods.

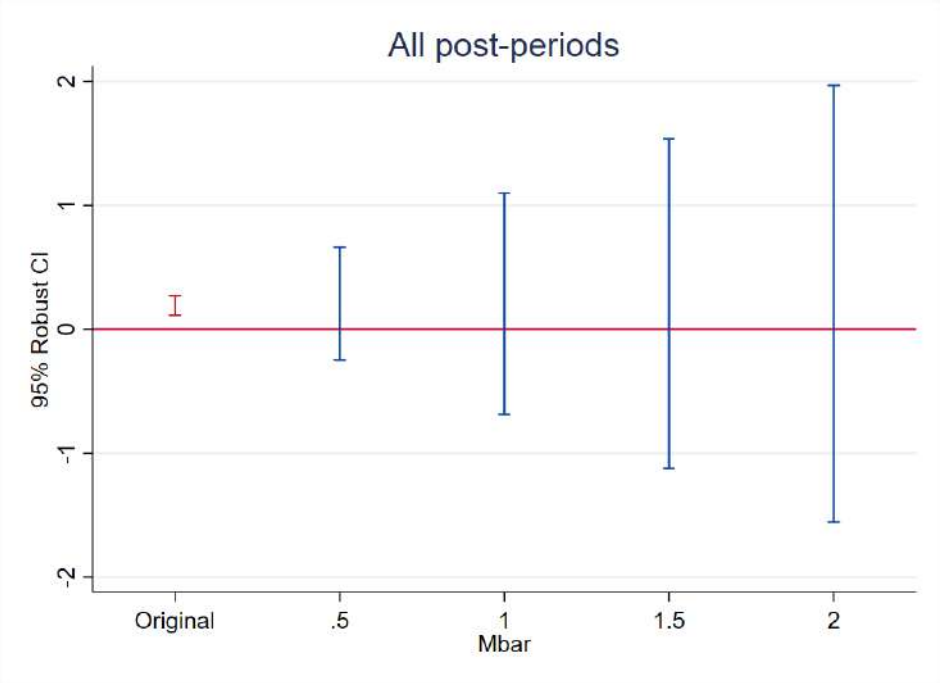


Figure 22: Smooth violations of parallel trends (I)

Notes: This reports 95% confidence intervals (CIs) derived using the framework proposed by [**?**]. These CIs impose the restriction that the maximum post-treatment violation of parallel can smoothly deviate by $\bar{M}$, applied to four aggregated post-treatment periods.

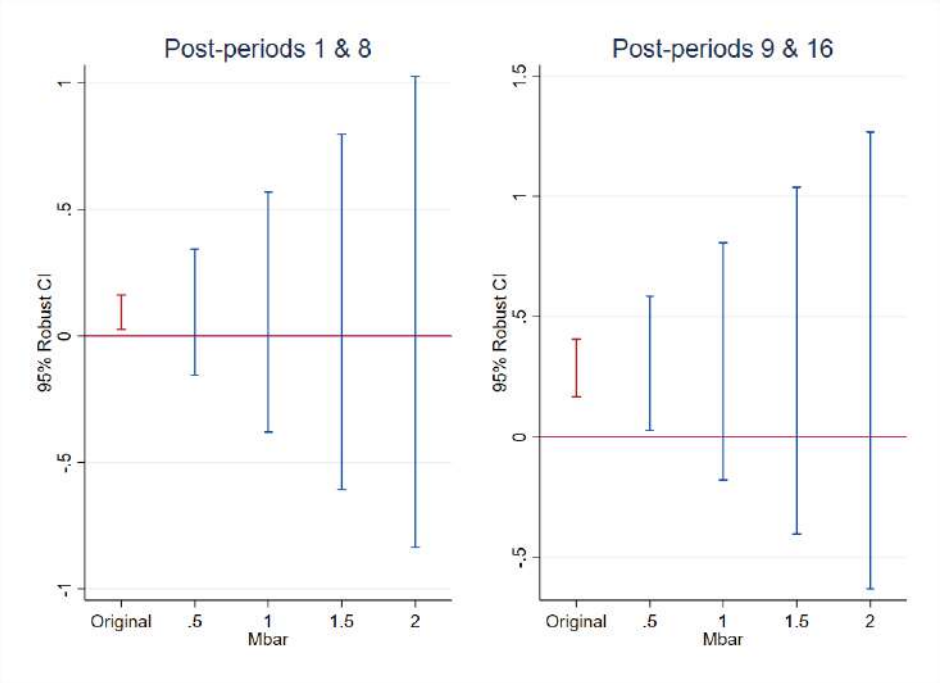


Figure 23: Smooth violations of parallel trends (II)

Notes: This reports 95% confidence intervals (CIs) derived using the framework proposed by [**?**]. These CIs impose the restriction that the maximum post-treatment violation of parallel can smoothly deviate by $\bar{M}$, applied to four aggregated post-treatment periods.

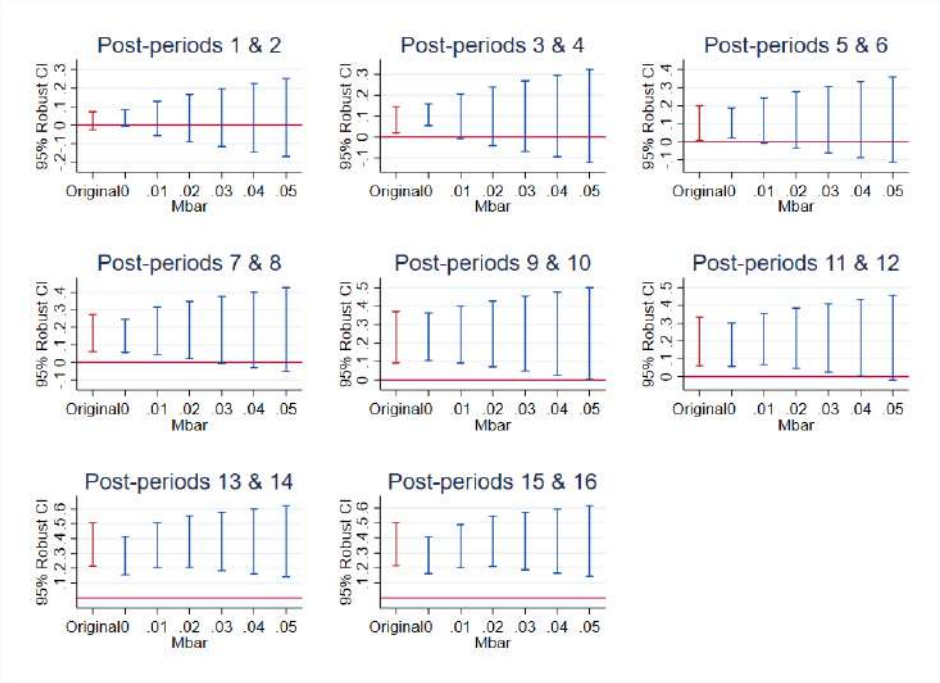


Figure 24: Smooth violations of parallel trends (III)

Notes: This reports 95% confidence intervals (CIs) derived using the framework proposed by [**?**]. These CIs impose the restriction that the maximum post-treatment violation of parallel can smoothly deviate by $\bar{M}$, applied to four aggregated post-treatment periods.

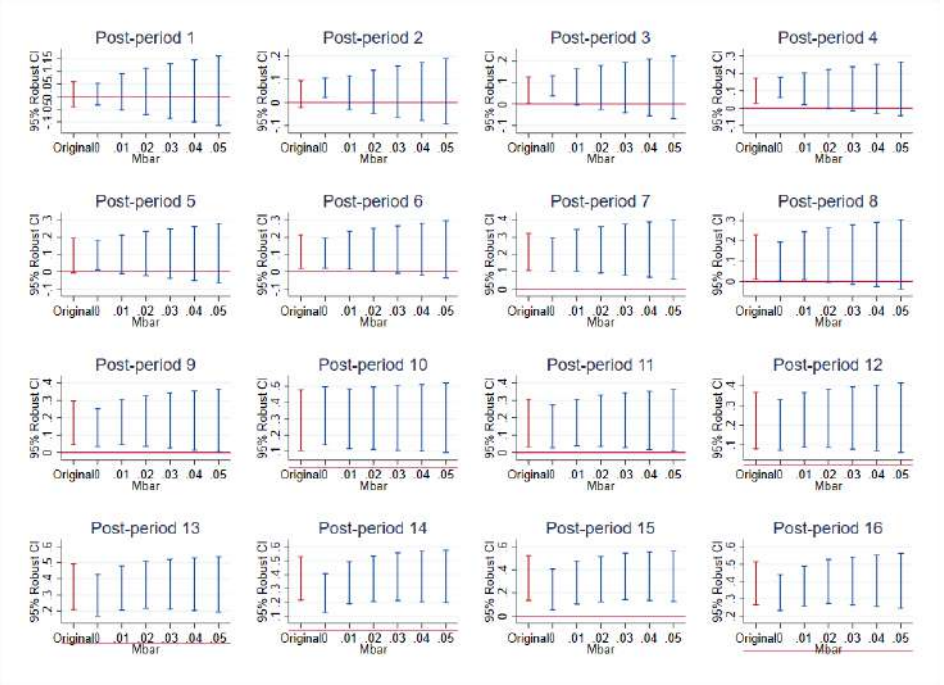


Figure 25: Smooth violations of parallel trends (IV)

Notes: This reports 95% confidence intervals (CIs) derived using the framework proposed by [**?**]. These CIs impose the restriction that the maximum post-treatment violation of parallel can smoothly deviate by $\bar{M}$, applied to four aggregated post-treatment periods.

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