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Voter mobilisation in the echo chamber: Broadband internet and the rise of populism in Europe

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Appendix for ‘Voter mobilization in the echo chamber’, Max Schaub & Davide Morisi

A First-stage regression results

Table A1: First-stage regression of the potentially endogenous predictor (internet use) on the instrument (broadband coverage) and other control variables

	<i>Italy</i>	<i>Germany</i>
Broadband coverage	0.214** (0.066)	0.411*** (0.123)
Age	-0.041*** (0.007)	0.020** (0.007)
Gender	-0.081*** (0.023)	0.081*** (0.023)
Higher edu (ref.)		
Medium edu	-0.080*** (0.020)	-0.040** (0.02)
Lower edu	-0.066** (0.021)	-0.097*** (0.023)
Employed	0.040* (0.023)	-0.022 (0.018)
Population density	-0.013 (0.077)	-0.053 (0.067)
Terrain steepness	0.086 (0.063)	-0.007 (0.069)
Unemployment	0.013 (0.221)	0.651 (0.431)
Ratio over 65 years	0.334 (0.237)	1.127 (0.768)
Ratio with univ degree	0.000 (0.001)	0.650** (0.265)
Constant	0.205** (0.094)	-0.038 (0.174)
Region fixed effects	Yes	Yes
N	1,158	1,913
F-statistic	8.59	7.78

OLS regression. Dependent variables: Respondents who chose ‘internet’ as main source of news on the upcoming election (Italy), and number of days the internet was used to obtain information on politics and political parties (Germany, scaled to 0-1). Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

B Full results for Tables 1 and 2

Table A2: Internet use and party vote in Italy

	(1)	(2)	(3)			
	M5S vs. others	M5S	<i>Base outcome = voted for PD</i>			
			PDL	Scelta Civica	Lega Nord	
Internet main source	0.158*** (0.040)	0.136*** (0.040)	0.105*** (0.026)	-0.053 (0.037)	-0.012 (0.023)	-0.004 (0.019)
Age		-0.015** (0.007)	-0.016** (0.007)	-0.007 (0.006)	0.000 (0.005)	0.001 (0.004)
Gender		0.001 (0.020)	0.000 (0.020)	0.010 (0.019)	0.015 (0.014)	-0.010 (0.011)
Higher edu (ref.)						
Medium edu		0.031 (0.023)	0.035 (0.024)	0.024 (0.022)	-0.034** (0.017)	0.010 (0.012)
Lower edu		-0.009 (0.030)	-0.020 (0.038)	0.013 (0.034)	-0.081*** (0.014)	0.016 (0.024)
Employed		0.049** (0.023)	0.045** (0.020)	-0.060** (0.022)	-0.010 (0.016)	-0.000 (0.013)
Population density		0.122 (0.092)	0.118 (0.081)	0.126* (0.072)	0.028 (0.054)	0.041 (0.068)
Terrain steepness		-0.109* (0.057)	-0.128* (0.071)	0.034 (0.060)	0.074* (0.044)	-0.001 (0.034)
Unemployment		-0.046 (0.239)	-0.007 (0.232)	0.144 (0.251)	-0.100 (0.182)	-0.114 (0.142)
Ratio over 65 years		0.285 (0.264)	0.322 (0.277)	-0.138 (0.262)	-0.232 (0.192)	0.010 (0.225)
Ratio with univ degree		-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)	-0.000 (0.001)	-0.000 (0.001)
Constant	0.074** (0.027)	0.122 (0.078)				
Region fixed effects	yes	yes			yes	
N	1,158	1,158			1,158	
R2/Pseudo R2	0.028	0.045			0.051	

Models 1 & 2: Linear probability model (OLS regression). Dependent variable: Vote for M5S as recalled in post-election Wave 5. Model 3: Marginal effects from multinomial logistic regression, categories 'other parties' and 'did not vote' omitted for readability purposes. Internet main source: Respondents who chose 'internet' as main source of news on the upcoming election. Standard errors (in parentheses) clustered at the municipality level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A3: Internet use and party vote in Germany—Full results for Table 2 above

	(1)	(2)	(3)				
	AfD vs. others	AfD	<i>Base outcome = voted for SPD</i>				
			CDU	Greens	FDP	Linke	
Internet political use	0.099*** (-0.022)	0.097*** (-0.023)	0.095*** (-0.021)	0.087** (-0.028)	0.026 (-0.023)	0.042** (-0.018)	0.01 (-0.018)
Age		0.010** (-0.005)	0.010** (-0.005)	0.011 (-0.008)	0.006 (-0.006)	0.001 (-0.006)	0 (-0.005)
Female		0.058*** (-0.014)	0.059*** (-0.015)	0.002 (-0.019)	0.063*** (-0.017)	0.017 (-0.012)	0.002 (-0.014)
Higher edu (ref.)							
Medium edu		0.055*** (-0.016)	0.054*** (-0.015)	0.005 (-0.025)	0.053** (-0.022)	0.028* (-0.017)	0.012 (-0.017)
Lower edu		0.114*** (-0.022)	0.116*** (-0.023)	0.067** (-0.027)	0.081*** (-0.023)	0.037* (-0.019)	0.013 (-0.02)
Employed		0.025 (-0.016)	0.024 (-0.017)	0.003 (-0.022)	0.026 (-0.018)	0.021 (-0.015)	0.016 (-0.016)
Population density		0.017 (-0.059)	0.039 (-0.067)	0.048 (-0.089)	0.001 (-0.066)	0.03 (-0.044)	0.028 (-0.051)
Terrain steepness		0.013 (-0.065)	0.012 (-0.061)	0.097 (-0.083)	0.032 (-0.076)	0.058 (-0.054)	0.036 (-0.065)
Unemployment		0.195 (-0.383)	0.131 (-0.343)	0.505 (-0.575)	0.106 (-0.533)	0.211 (-0.311)	0.187 (-0.29)
Share over 65 years		0.724 (-0.604)	0.616 (-0.657)	0.843 (-0.92)	0.106 (-0.75)	0.01 (-0.591)	0.723 (-0.603)
Share with univ degrees		0.28 (-0.266)	0.182 (-0.298)	0.308 (-0.339)	0.417 (-0.292)	0.183 (-0.248)	0.036 (-0.26)
Constant		0.049** (-0.023)	0.246** (-0.109)				
Region fixed effects	yes	yes			yes		
N	1,913	1,913			1,913		
R2/Pseudo R2	0.029	0.055			0.062		

Models 1 & 2: Linear probability model (OLS regression). Dependent variable: Intends to vote for the AfD in the 2017 general elections. Model 3: Marginal effects from multinomial logit regression. Category ‘other parties’ not included in the table to increase readability. Internet political use: Number of days the internet was used to obtain information on politics and political parties (scaled to 0-1). Standard errors (in parentheses) clustered at the zip-code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C Instrumental variable results

Table A4: Reduced form and two-stage-least-square estimates predicting the effects of internet use on vote for M5S and AfD using broadband availability as instrument

	<i>Italy</i>				<i>Germany</i>			
	(1) Reduced Form	(2) Form (ITT)	(3) TSLS (LATE)	(4) TSLS (LATE)	(5) Reduced Form	(6) Form (ITT)	(7) TSLS (LATE)	(8) TSLS (LATE)
Broadband coverage	0.131** (0.047)	0.161** (0.054)			0.226* (-0.121)	0.265** (-0.123)		
Internet use			1.026* (0.547)	0.750** (0.331)			0.486* (-0.26)	0.644** (-0.305)
Age		-0.021** (0.007)		0.010 (0.015)		0.009* (-0.005)		0.021** (-0.009)
Female		-0.010 (0.020)		0.051 (0.036)		0.071*** (-0.015)		0.017 (-0.044)
Higher edu (ref.)								
Medium edu		0.020 (0.023)		0.080** (0.038)		0.052** (-0.016)		0.078** (-0.024)
Lower edu		-0.018 (0.030)		0.031 (0.040)		0.106*** (-0.022)		0.168*** (-0.039)
Employed		0.053** (0.023)		0.023 (0.030)		0.023 (-0.016)		0.037** (-0.019)
Population density		0.120 (0.093)		0.130 (0.099)		0.04 (-0.059)		0.006 (-0.074)
Terrain steepness		-0.085 (0.056)		-0.150** (0.076)		0.01 (-0.065)		0.015 (-0.074)
Unemployment		-0.065 (0.240)		-0.075 (0.276)		0.292 (-0.38)		0.128 (-0.467)
Ratio over 65 years		0.405 (0.277)		0.154 (0.291)		0.64 (-0.593)		1.366* (-0.821)
Ratio with univ degree		-0.001 (0.001)		-0.001 (0.002)		0.224 (-0.263)		0.643* (-0.363)
Constant	-0.025 (0.041)	0.028 (0.088)	-0.040 (0.067)	-0.126 (0.157)	0.114 (-0.112)	0.039 (-0.161)	0.131 (-0.122)	0.064 (-0.176)
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,158	1,158	1,158	1,158	1,913	1,913	1,913	1,913
R ²	0.006	0.032			0.018	0.046		

IV estimates: Reduced form and two-stage least square estimates. Dependent variable: Vote for M5S as recalled in post-election Wave 5 versus all other options (Italy); intention to vote for the AfD in the 2017 general elections (Germany). Standard errors (in parentheses) clustered at the municipality level. For complete results, see Table A4 in the Appendix. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Two-stage-least-square results for all parties, Italy — Full results for Figure 4

	M5S	PD	R. Left	Scelta Civica	PDL	Legia Nord
Internet main source	0.750** (0.331)	0.406 (0.621)	-0.365 (0.469)	-0.293 (0.401)	-0.113 (0.493)	0.060 (0.161)
Age	0.010 (0.015)	0.068** (0.026)	-0.023 (0.019)	-0.010 (0.018)	-0.009 (0.020)	0.005 (0.007)
Gender	0.051 (0.036)	-0.004 (0.055)	-0.032 (0.042)	-0.008 (0.037)	0.006 (0.045)	-0.005 (0.017)
Higher edu (ref.)						
Medium edu	0.080** (0.038)	0.022 (0.059)	-0.059 (0.041)	-0.056 (0.036)	0.020 (0.046)	0.016 (0.019)
Lower edu	0.031 (0.040)	0.040 (0.069)	-0.055 (0.042)	-0.103** (0.032)	0.007 (0.051)	0.020 (0.025)
Employed	0.023 (0.030)	-0.007 (0.042)	0.025 (0.029)	0.002 (0.023)	-0.050* (0.027)	-0.002 (0.015)
Population density	0.130 (0.099)	-0.220* (0.132)	0.005 (0.064)	0.013 (0.064)	0.129 (0.085)	0.048 (0.095)
Terrain steepness	-0.150** (0.076)	-0.070 (0.097)	-0.011 (0.059)	0.096 (0.065)	0.035 (0.064)	-0.013 (0.038)
Unemployment	-0.075 (0.276)	0.061 (0.334)	-0.397** (0.178)	-0.089 (0.196)	0.160 (0.268)	-0.081 (0.083)
Ratio over 65 years	0.154 (0.291)	0.402 (0.400)	0.045 (0.227)	-0.176 (0.205)	-0.121 (0.261)	-0.014 (0.194)
Ratio with univ degree	-0.001 (0.002)	0.002 (0.002)	0.000 (0.001)	-0.000 (0.001)	-0.002 (0.001)	-0.000 (0.001)
Constant	-0.126 (0.157)	-0.143 (0.264)	0.267 (0.204)	0.213 (0.179)	0.213 (0.220)	0.053 (0.091)
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,158	1,158	1,158	1,158	1,158	1,158

Two-stage-least-square regressions. Dependent variable: Vote for M5S as recalled in post-election Wave 5. Internet main source: Respondents who chose 'internet' as main source of news on the upcoming election, instrumented by broadband coverage. Standard errors (in parentheses) clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Reduced form results for all parties, Italy—Full results for Figure 4

	M5S	PD	R. Left	Scelta Civica	PDL	Lega Nord
Broadband coverage	0.161** (0.054)	0.087 (0.135)	-0.078 (0.101)	-0.063 (0.088)	-0.024 (0.106)	0.013 (0.035)
Age	-0.021** (0.007)	0.051*** (0.010)	-0.009* (0.005)	0.002 (0.005)	-0.004 (0.006)	0.002 (0.004)
Gender	-0.010 (0.020)	-0.037 (0.026)	-0.002 (0.014)	0.016 (0.014)	0.015 (0.019)	-0.010 (0.012)
Higher edu (ref.)						
Medium edu	0.020 (0.023)	-0.011 (0.030)	-0.029** (0.015)	-0.033* (0.017)	0.029 (0.022)	0.011 (0.013)
Lower edu	-0.018 (0.030)	0.013 (0.056)	-0.031 (0.025)	-0.084*** (0.019)	0.014 (0.038)	0.016 (0.023)
Employed	0.053** (0.023)	0.009 (0.030)	0.010 (0.018)	-0.009 (0.018)	-0.055** (0.020)	0.001 (0.013)
Population density	0.120 (0.093)	-0.225* (0.121)	0.009 (0.060)	0.016 (0.056)	0.131 (0.082)	0.047 (0.094)
Terrain steepness	-0.085 (0.056)	-0.035 (0.089)	-0.042 (0.038)	0.070 (0.052)	0.026 (0.062)	-0.008 (0.035)
Unemployment	-0.065 (0.240)	0.066 (0.332)	-0.402** (0.164)	-0.092 (0.183)	0.159 (0.270)	-0.080 (0.082)
Ratio over 65 years	0.405 (0.277)	0.537 (0.375)	-0.077 (0.213)	-0.274 (0.178)	-0.159 (0.247)	0.006 (0.216)
Ratio with univ degree	-0.001 (0.001)	0.002 (0.002)	0.000 (0.001)	-0.000 (0.001)	-0.002 (0.001)	-0.000 (0.001)
Constant	0.028 (0.088)	-0.060 (0.154)	0.193* (0.114)	0.153 (0.106)	0.190 (0.133)	0.066 (0.065)
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,158	1,158	1,158	1,158	1,158	1,158

Reduced form regressions. Dependent variable: Vote for M5S as recalled in post-election Wave 5. Standard errors (in parentheses) clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Two-stage-least-square results for all parties, Germany—Full results for Figure 4

	AfD	CDU	SPD	FDP	Greens	Linke
Internet main source	0.644** (-0.305)	0.215 (-0.413)	0.182 (-0.341)	0.312 (-0.274)	0.478 (-0.326)	0.321 (-0.337)
Age	0.021** (-0.009)	0.004 (-0.012)	0.007 (-0.01)	0.006 (-0.008)	0.015 (-0.009)	0.007 (-0.008)
Female	0.017 (-0.044)	0.044 (-0.059)	0.001 (-0.051)	0.019 (-0.039)	0.002 (-0.05)	0.044 (-0.048)
Higher edu (ref.)						
Medium edu	0.078** (-0.024)	0.007 (-0.032)	0.016 (-0.03)	0.017 (-0.021)	0.073** (-0.027)	0.002 (-0.022)
Lower edu	0.168*** (-0.039)	0.037 (-0.05)	0.042 (-0.047)	0.01 (-0.033)	0.127** (-0.042)	0.019 (-0.039)
Employed	0.037** (-0.019)	0.006 (-0.023)	0.035 (-0.023)	0.027* (-0.016)	0.037* (-0.022)	0.008 (-0.017)
Population density	0.006 (-0.074)	0.046 (-0.089)	0.095 (-0.089)	0.039 (-0.05)	0.022 (-0.075)	0.037 (-0.048)
Terrain steepness	0.015 (-0.074)	0.103 (-0.086)	0.012 (-0.083)	0.062 (-0.056)	0.026 (-0.093)	0.033 (-0.044)
Unemployment	0.128 (-0.467)	0.794 (-0.592)	0.356 (-0.508)	0.409 (-0.348)	0.331 (-0.525)	0.289 (-0.48)
Share over 65 years	1.366* (-0.821)	0.661 (-1.002)	0.729 (-0.941)	0.304 (-0.682)	0.35 (-0.912)	1.217 (-0.775)
Share with univ degrees	0.643* (-0.363)	0.095 (-0.427)	0.01 (-0.425)	0.318 (-0.285)	0.801* (-0.423)	0.22 (-0.314)
Constant	0.064 (-0.176)	0.077 (-0.22)	0.408** (-0.185)	0.063 (-0.146)	0.218 (-0.198)	0.008 (-0.154)
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1913	1913	1913	1913	1913	1913

Two-stage-least-square regressions. Dependent variable: Intends to vote for the AfD in the 2017 general elections. Internet political use: Number of days the internet was used to obtain information on politics and political parties (scaled to 0-1), instrumented by broadband coverage. Standard errors (in parentheses) clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Reduced form results for all parties, Germany—Full results for Figure 4

	AfD	CDU	SPD	FDP	Greens	Linke
Broadband coverage	0.265** (-0.123)	0.088 (-0.171)	0.075 (-0.14)	0.128 (-0.105)	0.196 (-0.13)	0.132 (-0.14)
Age	0.009* (-0.005)	0.009 (-0.008)	0.003 (-0.007)	0 (-0.005)	0.006 (-0.007)	0.001 (-0.005)
Female	0.071*** (-0.015)	0.015 (-0.019)	0.026 (-0.019)	0.024* (-0.012)	0.067*** (-0.017)	0 (-0.014)
Higher edu (ref.)						
Medium edu	0.052** (-0.016)	0.002 (-0.025)	0.024 (-0.025)	0.030* (-0.017)	0.054** (-0.021)	0.011 (-0.017)
Lower edu	0.106*** (-0.022)	0.058** (-0.028)	0.060** (-0.03)	0.040** (-0.019)	0.081*** (-0.024)	0.012 (-0.019)
Employed	0.023 (-0.016)	0.001 (-0.022)	0.031 (-0.021)	0.02 (-0.014)	0.027 (-0.019)	0.015 (-0.015)
Population density	0.04 (-0.059)	0.057 (-0.087)	0.104 (-0.087)	0.056 (-0.048)	0.003 (-0.071)	0.02 (-0.041)
Terrain steepness	0.01 (-0.065)	0.105 (-0.084)	0.01 (-0.084)	0.06 (-0.054)	0.029 (-0.086)	0.03 (-0.038)
Unemployment	0.292 (-0.38)	0.654 (-0.536)	0.238 (-0.479)	0.206 (-0.294)	0.02 (-0.438)	0.08 (-0.397)
Share over 65 years	0.64 (-0.593)	0.904 (-0.902)	0.934 (-0.839)	0.048 (-0.58)	0.188 (-0.747)	0.856 (-0.625)
Share with univ degrees	0.224 (-0.263)	0.234 (-0.322)	0.109 (-0.356)	0.115 (-0.221)	0.49 (-0.356)	0.011 (-0.195)
Constant	0.039 (-0.161)	0.068 (-0.23)	0.415** (-0.192)	0.051 (-0.145)	0.236 (-0.188)	0.02 (-0.161)
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,913	1,913	1,913	1,913	1,913	1,913

Reduced form regressions. Dependent variable: Intends to vote for the AfD in the 2017 general elections. Standard errors (in parentheses) clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

D Roll-out of broadband coverage in Italy and Germany

As summarized by Campante et al. (2018), the development of broadband internet in Italy was largely based on the previous telecommunication network. More specifically, the decision to implement broadband technology in a given area depended mainly on the distance between two elements of the telecommunication network, a so-called ‘central office’ (CO), which is located close to the households, and the Urban Group Stage (UGS), a higher order telecommunication exchange. Crucially, the distance between these two elements of the telecommunication network “was completely irrelevant for voice communication purposes” (Campante et al., 2018, 5). In other words, the availability of broadband internet in Italy depends not only on a telecommunication network that was implemented before the internet became available, but also on geographical factors that have little to do with strategic or market decisions. Especially steep hillsides make construction difficult—which is why rugged areas tend to be supplied more poorly with all forms of telecommunication technology.

Strategic concerns *did* play a role in determining where internet service providers would roll out broadband connectivity *first*, however. Providers are most concerned with the degree of urbanization or population density, which largely determines the expected financial return of investing in broadband technology (Gruber et al., 2014). There also is evidence that places with relatively high education levels, a youthful population, and a strong economy—likely factors associated with higher demand for broadband internet—were given preference during the roll-out. Our empirical models reflect this ‘assignment process’ of broadband coverage by including control variables for these municipality-level characteristics.

In Germany, Broadband internet access is typically provided by means of DSL technology, which, similar to Italy, was rolled out largely following the pre-existing telephone network. The ‘backbone’ of the network is formed by optical fibre cables, which connect the around 8,000 main data frames (MDF, *DSL-Hauptverteiler*) in Germany (Czernich, 2012). Households are still typically connected to the MDF through the old copper telephone-wires. These cables permit for swift data transfer only when they are relatively short. Variation in household internet speed, therefore, results from the distance a household is located from the MDF. Especially in rural and suburban areas these distances vary widely, resulting in substantial variation in internet speed. Importantly, the length of the copper wires was irrelevant for their original purpose of connecting households to the telephone network. Distance only began to matter when companies started to use the wires for providing broadband internet, a purpose the original technology had not been developed for (Falck et al., 2014).

The availability of broadband internet has increased rapidly in recent years. Indeed, a large share of municipalities in both Italy and Germany now has full coverage, and in many places, coverage exceeds 80% or more, as shown in Figures 2 and 3. Our identification strategy therefore relies on exploiting the remaining gaps in coverage to demonstrate causality. Although one may worry that places that lacked full coverage should be very different from those with full coverage, we argue and show that these worries are largely unwarranted (see section on instrument strength and exclusion restriction).

E Summary statistics

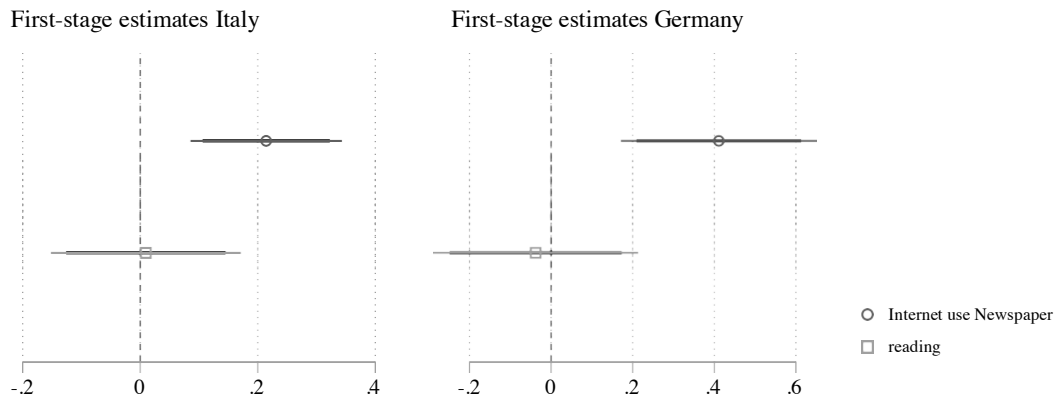
Table A9: Summary statistics

Variable	<i>Italy</i>					<i>Germany</i>				
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
Age	1,158	52.25	16.62	18	98	1,913	45.43	14.26	18	87
Sex										
Male	1,158	0.512	0.500	0	1	1,913	0.525	0.500	0	1
Female	1,158	0.488	0.500	0	1	1,913	0.475	0.500	0	1
Education cat.										
Higher edu	1,158	0.517	0.500	0	1	1,913	0.302	0.459	0	1
Medium edu	1,158	0.381	0.486	0	1	1,913	0.457	0.498	0	1
Lower edu	1,158	0.102	0.303	0	1	1,913	0.242	0.428	0	1
Employed	1,158	0.129	0.335	0	1	1,913	0.709	0.454	0	1
Internet use	1,158	0.378	0.485	0	1	1,913	0.435	0.365	0	1
Left-right scale	1,047	4.436	2.671	0	10	1,826	5.188	2.029	1	1
1 Left-right cat.										
Left	1,047	0.347	0.476	0	1	1,826	0.372	0.484	0	1
Center	1,047	0.443	0.497	0	1	1,826	0.391	0.488	0	1
Right	1,047	0.210	0.408	0	1	1,826	0.237	0.425	0	1
Social class										
Lower	1,129	0.205	0.404	0	1	1,906	0.343	0.475	0	1
Middle	1,129	0.464	0.499	0	1	1,906	0.490	0.500	0	1
Upper-middle	1,129	0.330	0.471	0	1	1,906	0.168	0.374	0	1
Voted previous	1,158	0.762	0.426	0	1	1,828	0.956	0.206	0	1
Voting (intentions)										
CDU	1,158	0.345	0.475	0	1	1,913	0.243	0.429	0	1
SPD	1,158	0.064	0.245	0	1	1,913	0.232	0.422	0	1
FDP	1,158	0.067	0.251	0	1	1,913	0.089	0.285	0	1
GREENS	1,158	0.109	0.312	0	1	1,913	0.169	0.375	0	1
LINKE	1,158	0.042	0.201	0	1	1,913	0.110	0.313	0	1
AFD	1,158	0.137	0.344	0	1	1,913	0.118	0.323	0	1
Broadband coverage	784	0.954	0.128			936	0.958	0.077		
Population density	785	0.050	0.079			937	0.195	0.218		
Terrain steepness	786	0.190	0.180			938	0.200	0.187		
Unemployment	787	0.103	0.087			939	0.088	0.054		
Share over 65	788	0.155	0.046			940	0.168	0.015		
Share univ. degrees	789	0.405	0.890			941	0.113	0.047		

Summary statistics for Italy and Germany. Minimum and maximum values for municipality-level covariates excluded in line with the data protection guidelines of the GESIS Secure Data Center Cologne. All of our control variables for Italy and most of the measures for Germany are from 2001. For the average level of education in Germany, we use a measure from 2008, the earliest available. Population data for Germany is from 2002.

F Falsification exercise

Figure A1: Regression of internet use and newspaper reading on broadband internet



Note: The figure shows the results of first stage regressions of a) internet use and b) newspaper reading on broadband coverage. Model specification as in Table A4, Models 2 & 6. Markers (dots) are point estimates, the thick/thin horizontal lines are 90/95 percent confidence intervals.

Table A10: Regression of newspaper use on broadband coverage

	<i>Italy</i>	<i>Germany</i>
Broadband coverage	0.01 (0.083)	-0.036 (0.128)
Age	0.027*** (0.006)	0.033*** (0.006)
Female	-0.055*** (0.020)	0.036** (0.017)
Higher edu (ref.)		
Medium edu	-0.060*** (0.021)	-0.018 (0.020)
Lower edu	-0.121*** (0.032)	-0.057** (0.024)
Employed	-0.024 (0.022)	0.031 (0.020)
Population density	-0.011 (0.104)	-0.016 (0.072)
Terrain steepness	0.002 (0.062)	0.025 (0.071)
Unemployment	-0.226 (0.193)	0.286 (0.416)
Ratio over 65 years	0.006 (0.278)	1.587** (0.719)
Ratio with univ degree	0.001 (0.001)	0.691** (0.287)
Constant	0.072 (0.096)	0.581*** (0.176)
Region fixed effects	Yes	Yes
N	1,158	1,913

OLS regression. Dependent variables: Respondents who chose 'newspaper' as main source of news on the upcoming election (Italy); mentioned newspaper as source of news (Germany). Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

G Replication of German results with post-electoral data

This section replicates the analysis for Germany using the GLES Post-Election Cross-Section. The dataset comprises a nationally representative random sample of 2,076 individuals collected after the 2017 general elections. Similar to the analysis for Italy using ITANES data, these data allow us to use recalled voting decisions (rather than voting intentions) as the dependent variable.

Table A11 replicates the analysis presented in Table 2 in the main text. We can see that the predictive effect of internet use on populist voting applies to this dataset, too. Using the internet as the first source of news goes along with a 4.6% higher likelihood to vote for the AfD (Model 1), an effect that is precisely measured and holds up in the multinomial framework (Model 2). In the latter model, we also see positive effects of internet use on votes for the FDP, and negative effects on votes for the CDU—again in line with our main analysis.

However, a caveat with the post-electoral cross-section data is that these data were collected using a multi-stage sampling procedure. As a result, only relatively few municipalities (n=149) were selected for interviews, most of them in urban areas, severely limiting the variation in broadband coverage and the applicability of our instrumental variable strategy.

This is shown in Table A12. Here we see that for the 149 sampling municipalities, internet coverage does not actually predict internet use (Model 1). This lack of a significant first-stage means that we can neither obtain precise reduced form (Model 2), nor two-stage-least square estimates (Model 3). Given these limitations, for our main analysis we opted for the data collected in the context of the regional elections.

Table A11: Internet use and party vote in Germany—Replication of results from Table 2 above using post-electoral (GLES) data

	(1)	(2)				
	AfD vs. others	AfD	<i>Base outcome = voted for SPD</i>			
			CDU	Greens	FDP	Linke
Internet use	0.046** (0.022)	0.045** (0.019)	-0.086** (0.033)	0.013 (0.017)	0.050** (0.022)	-0.012 (0.018)
Age	-0.000 (0.000)	-0.000 (0.000)	0.003*** (0.001)	-0.000 (0.000)	0.001*** (0.000)	-0.000 (0.000)
Female	-0.060*** (0.011)	-0.064*** (0.013)	0.024 (0.018)	0.018 (0.017)	0.009 (0.013)	-0.0176 (0.012)
Education	-0.015*** (0.004)	-0.016*** (0.005)	0.002 (0.007)	0.025*** (0.004)	0.007* (0.004)	0.011*** (0.004)
Population density	-0.000** (0.000)	-0.000** (0.000)	0.000 (0.000)	0.000** (0.000)	0.000 (0.000)	0.000 (0.000)
Terrain steepness	-0.005** (0.002)	-0.005* (0.003)	0.011*** (0.002)	-0.004 (0.004)	-0.001 (0.003)	0.001 (0.003)
Empty housing	-0.000 (0.000)	0.004 (0.004)	0.007 (0.007)	-0.011 (0.007)	-0.014*** (0.000)	0.003 (0.004)
Share over 65 years	-0.001 (0.002)	-0.000 (0.002)	-0.001 (0.004)	0.001 (0.002)	0.002 (0.002)	-0.004* (0.002)
Household size	-0.051 (0.040)	-0.059 (0.042)	0.104* (0.060)	0.051 (0.050)	-0.043 (0.046)	0.025 (0.053)
Region fixed-effects	yes			yes		
N	2,076			2,065		
Pseudo R2	0.08			0.08		

Model 1: Linear probability model (OLS regression). Model 2: Marginal effects from multinomial logit regression. Category ‘other parties’ not included in the table to increase readability. Dependent variable: Voted for AfD in 2017 general elections as recalled in post-electoral survey. Internet use: Internet as first source of news. Standard errors (in parentheses) clustered at the zip-code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: Instrumental variable (first-stage, reduced form and two-stage-least-square) estimates predicting the effects of internet use on recalled vote for the AfD—Replication of results from Table A1 and Table A4 using post-electoral (GLES) data

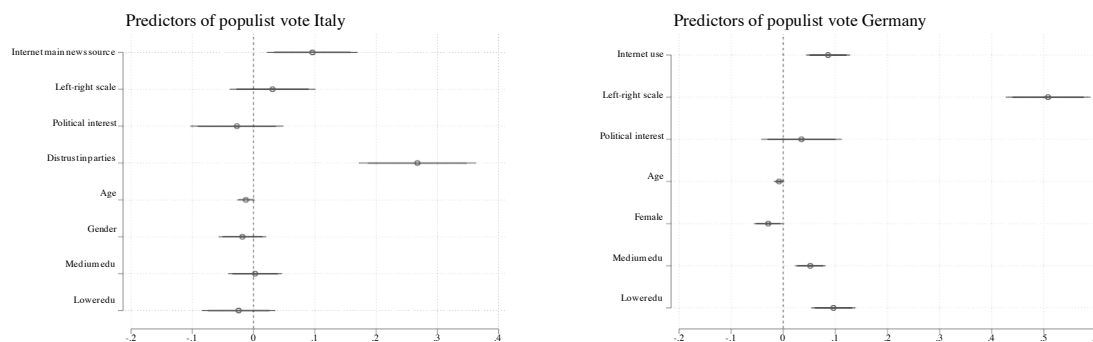
	(1) First-stage (DV: Internet use)	(2) Reduced Form (ITT)	(3) TSLS (LATE)
Broadband coverage	-0.130 (0.139)	0.002 (0.099)	—
Internet use	—	—	0.140 (0.768)
Age	-0.006*** (0.000)	-0.001 (0.000)	0.000 (0.005)
Female	-0.062*** (0.013)	-0.059*** (0.012)	-0.054 (0.049)
Education	0.014** (0.006)	-0.015*** (0.004)	-0.016 (0.012)
Population density	-0.000 (0.000)	-0.000** (0.000)	-0.000** (0.000)
Terrain steepness	0.000 (0.000)	-0.005*** (0.002)	-0.005** (0.002)
Empty housing	0.011* (0.006)	0.009 (0.006)	0.005 (0.009)
Share over 65 years	0.004 (0.003)	-0.001 (0.006)	-0.002 (0.003)
Household size	-0.065 (0.059)	-0.052 (0.040)	-0.045 (0.063)
Region fixed-effects	yes	yes	yes
N	2,076	2,110	2,076

Dependent variables: Internet as first source of news (Column 1); Vote for AfD in 2017 general elections as recalled in post-electoral survey (Columns 2 and 3); Standard errors (in parentheses) clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

H Relative predictive effect of internet use

Figure A2 puts the effect of internet use a predictor for populist voting into context. The figure plots coefficients from a regression of voting for the M5S (Italy) and voting intentions for the AfD (Germany) on several factors frequently used in the literature to explain political behavior, such as left-right ideological orientation, political interest and education. We can see that in Italy, distrust in parties has the strongest predictive effect, whereas in Germany a right-wing political orientation clearly stands out as the most important predictor. This said, in both countries, internet use remains a significant predictor of populist voting.

Figure A2: Predictors of populist voting

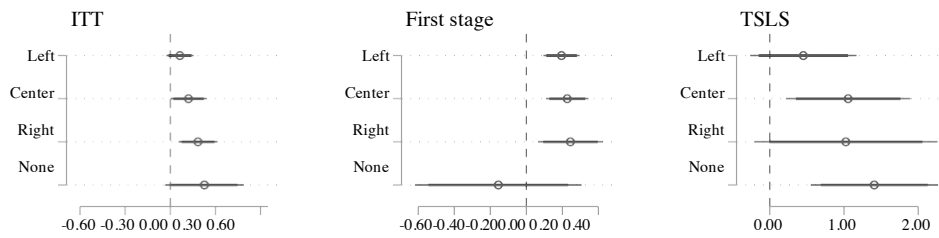


Note: The figure shows the results of OLS regressions of populist voting in Italy and Germany on various predictors discussed in the literature (also controlling for municipality-level covariates and region fixed effects). Markers (dots) are point estimates, the thick/thin horizontal lines are 90/95 percent confidence intervals.

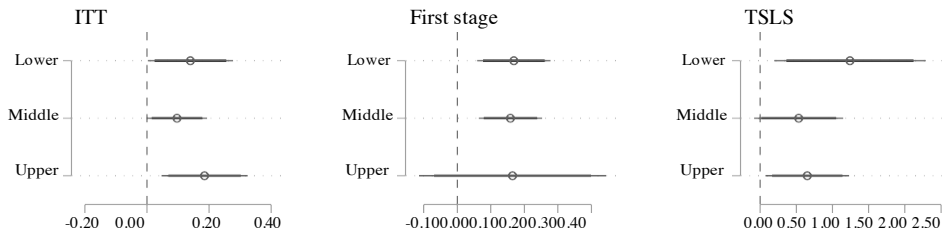
I Heterogeneity in terms of reduced form/ ITT, first-stage/ compliance, and TSLS/ LATE

Italy

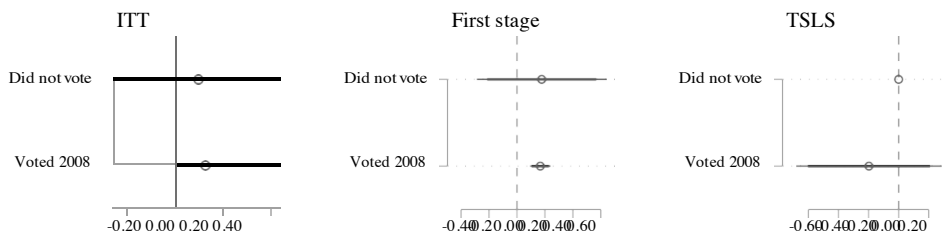
Left-right scale



Social class



Turnout 2008



Age

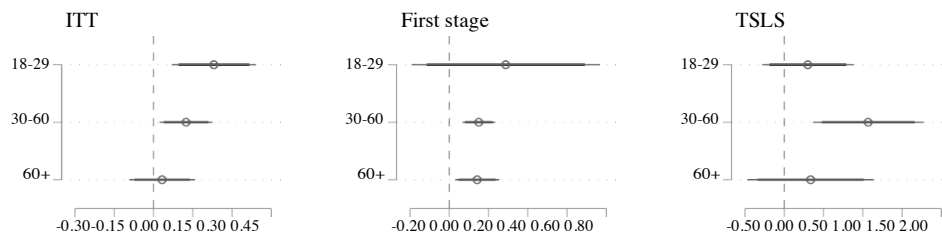
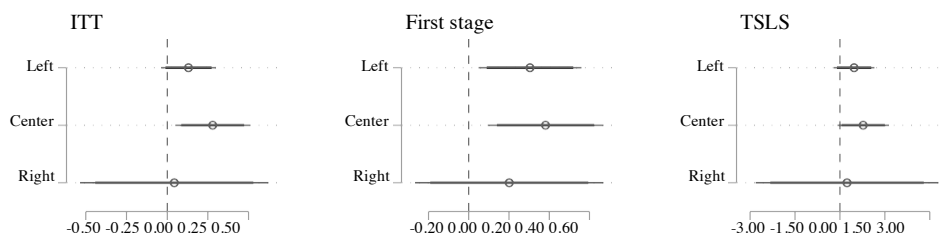


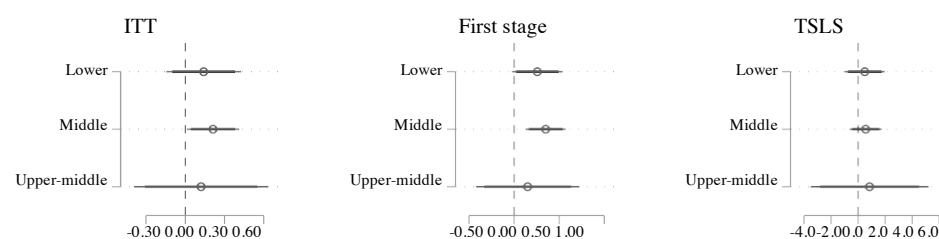
Figure A3: Heterogeneous treatment effects

Germany

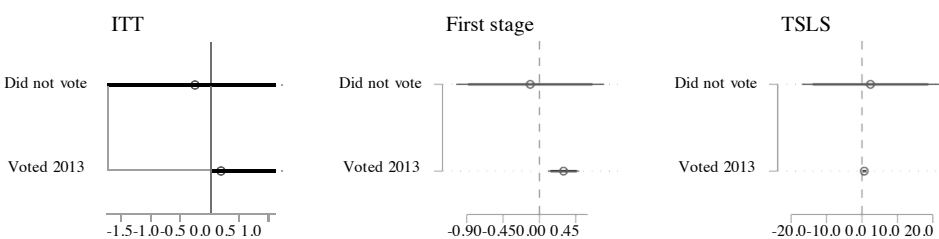
Left-right scale



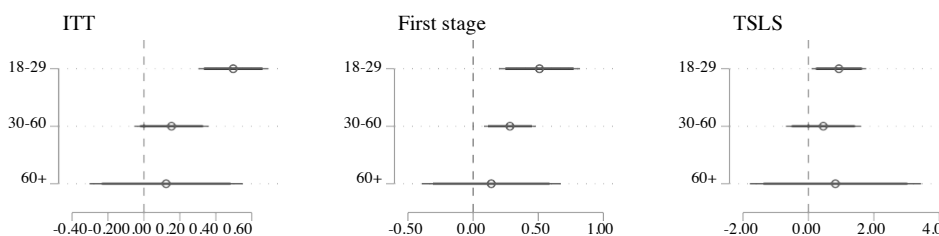
Social class



Turnout 2013



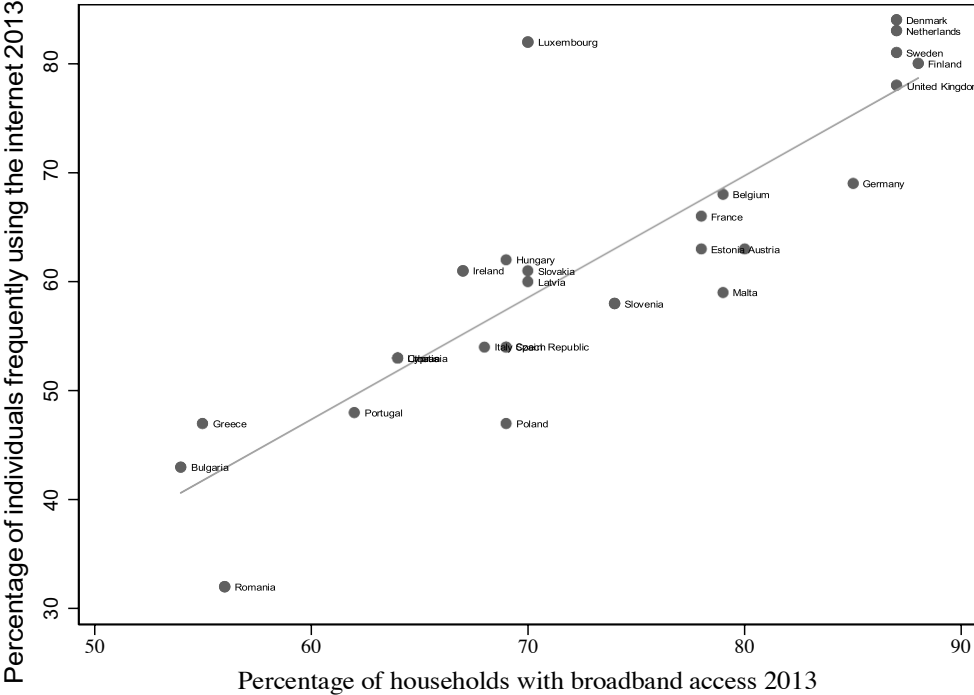
Age



Note: Heterogeneous treatment effects along several dimensions of theoretical interest. Depicted are marginal effects from reduced form regressions (ITT), where the dependent variable (populist voting) is regressed on the instrument (broadband coverage) interacted with the indicated indicator; first-stage regressions, where the potentially endogenous variable internet use is regressed on the instrument interacted with the indicated indicator; and two-stage-least-square (TSLS) estimates of heterogeneity in local average treatment effects (LATE), where the populist voting is regressed on the interaction between the instrumented endogenous variable internet use. Social class based on type of employment (Italy) and self-reported classification (Germany). Markers (dots) are point estimates, the thick/thin horizontal lines are 90/95 percent confidence intervals.

J Correlation between broadband coverage and internet use

Figure A4: Internet use and broadband coverage in EU countries



Note: The figure shows the relationship between internet use and broadband access at the country level in Europe in 2013. The availability of broadband is measured by the percentage of households that are connectable to an exchange that has been converted to support DSL-technology, to a cable network upgraded for internet traffic, or to other broadband technologies. It includes fixed and mobile connections. Frequent use: every day or almost every day on average within the last 3 months before the survey. Use includes all locations and methods of access and any purpose (private or work/business related). Source: Eurostat (2013) tables ‘Households with broadband access’ and ‘Individuals frequently using the internet’.

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