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

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Abstract

Can the diffusion of broadband internet explain the recent success of populist parties in Europe? Populists cultivate an anti-elitist communication style, which, they claim, directly connects them with ordinary people. The internet therefore appears to be the perfect tool for populist leaders. In this study, we show that this notion holds up to rigorous empirical testing. Building on survey data from Italy and Germany, we find a positive correlation at the individual level between use of the internet as the main source of political information and voting for populist parties, but not for other, mainstream parties. We then demonstrate that this relationship is causal with an instrumental variable strategy, instrumenting internet use with broadband coverage at the municipality level. Our findings suggest that part of the rise of populism can be attributed to the effect of online tools and communication strategies made possible by the proliferation of broadband access.

Keywords: Populism; broadband internet; voting behaviour; Italy; Germany.

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Introduction

Recent years have been marked by the stunning success of populist parties, politicians and ideas. Populist parties, most of them leaning distinctively to the political right, have been a phenomenon in many Western European countries for several decades. Yet their electoral impact has never been as powerful as in the latest round of national elections across Europe, that also coincided with the Brexit referendum and the election of Donald Trump as U.S. president. In an attempt to explain this increasing success, scholars have pointed to factors such as economic insecurity and crisis, anti-immigration sentiments, a general cultural backlash, and the decline of traditional parties' representative function (for overviews, see Ivarsflaten, 2008; Kriesi, 2014; Mudde and Rovira Kaltwasser, 2018). Without challenging these explanations, we turn our attention to an additional, less explored factor (but see Moffitt, 2016): the increasing impact of online communication tools made possible by the proliferation of broadband internet. We explore the idea that the rise of populism can be explained by the diffusion of the online platforms and communication strategies that fast internet has made available. In a nutshell, we argue that one of the reasons why populist politicians and parties are increasingly successful is that broadband internet has provided them with new tools that perfectly suit their communication needs.

Populism can be understood as a communication style that is distinctively anti-elitist and claims to promote the will of the 'ordinary' people (Canovan, 1981; Mudde, 2004; Jagers and Walgrave, 2007). The anti-establishment rhetoric of populists finds a perfect ally in broadband internet as a medium that connects political leaders directly to their supporters. What is more, populists often struggle to get their message across on the mainstream media—especially when these rely on unverified content and are socially provocative. Online communication solves this

problem, giving populists unfiltered access to their audience (Kriesi, 2014; Moffitt, 2016). This advantage is somewhat unique to populists, as mainstream parties and politicians faced fewer restrictions in the first place. For established political players, broadband internet provides just another communication channel. For populists it has been a game changer, providing them with a communication channel that lets them maintain ideological consistency and circumvent gatekeepers.

We draw on a body of literature describing how the internet and social media have contributed to political extremism and a polarization of attitudes. This work has shown that broadband internet can increase partisan hostility (Lelkes et al., 2017), influence turnout (Campante et al., 2018; Falck et al., 2014; Larcinese and Miner, 2017), and increase electoral uncertainty (Sudulich et al., 2015), while social media has been shown to spur protest activity (Barberá et al., 2015; Enikolopov et al., 2017). Yet, we know surprisingly little about the causal impact of the internet on actual voting, least of all for populist parties.¹ One of the reasons for this relative lack of evidence is the long-standing problem of voter self-selection into media exposure (Lazarsfeld et al., 1944). Even if we do observe a correlation between voting behavior and media use, it is hard to be sure if what we observe is a causal relationship or a mere artifact of voters seeking to confirm already existing political positions (Stroud, 2011).

To overcome this problem, we follow Sudulich et al. (2015) and Lelkes et al. (2017) in combining micro-level outcome data with an instrumental variable strategy. Our focus is on two of the major populist parties in Europe, both of which have recently obtained stunning electoral success: the Five Star Movement (*Movimento Cinque Stelle*, M5S) in Italy and the Alternative for Germany (*Alternative für Deutschland*, AfD) in Germany. Drawing on survey data collected in the context

¹An exception is a study by Falck et al. (2014), who do not find an effect of internet access on party votes in Germany for the period 2005–2008, i.e. pre-dating the birth of Germany's populist party.

of the 2013 general election in Italy and five regional elections in Germany in 2016 and 2017, we trace voter choices and patterns of internet use at the individual level. We show that in both countries the use of the internet as the main source of political information strongly predicts voting for populist parties, but not for other, mainstream, parties.

To address causality, we adopt an instrumental-variable (IV) strategy. We exploit geographical variation in broadband coverage as instrument, which, we show, conditional on population density is orthogonal to pre-existing voter preferences. By instrumenting internet use with broadband coverage, we show that the correlation uncovered in the first step can be interpreted as causal. Our findings contribute to a growing yet limited number of studies that provide real-world evidence for the causal effect of media on political outcomes. To the best of our knowledge, our paper is the first to demonstrate a causal link between one of the most puzzling political phenomena of our time—the steady rise of populist parties—and the spread of broadband internet.

Populism and the spread of broadband internet

Populist parties have been on a slow but steady rise in Europe. Inglehart and Norris (2016) estimate that their share of seats in national and European parliament elections rose from 10 percent in the 1960s to 25 percent in 2015. This increase in importance appears to have accelerated in recent years, which saw populist parties consolidating substantial vote shares in France, the Netherlands, and Austria, while reaching record highs in Germany, Italy, and Sweden. Most importantly, Brexit—the British voters’ decision to exit the European Union—was promoted by Britain’s right-wing populist party UKIP and driven by nativist and anti-elitist

motives (Hobolt, 2016; Iakhnis et al., 2018). In the U.S. the last decade saw the development of the Tea party, which shares many of the characteristics of European (right-wing) populist parties (Skocpol and Williamson, 2016). And in 2016, U.S. voters stunned the world by electing Donald Trump as president, whose frequent use of anti-elitist messages and appeals to America's traditional values resemble the typical communication style of other populist leaders (Inglehart and Norris, 2016; Hawkins and Kaltwasser, 2018).

The rise of populist parties and politicians has been attributed to the relative demise in status of working class men, who feel left behind and turn to populist politicians and parties for support (Hochschild, 2016; Gidron and Hall, 2017). Perceived loss of status and feelings of social and economic deprivation have led mostly White working-class voters to support radical right parties and movements in the United States, the UK and other European countries (Gest et al., 2018; Rooduijn and Burgoon, 2018). Sharpened economic competition and the economic crisis of 2008-2009 have not only exacerbated individual feelings of relative deprivation (Colantone and Stanig, 2018; Autor et al., 2016), but have also contributed to constraining the margin of maneuver of traditional parties, thus reducing their traditional representative function, to the advantage of new populist actors (Mair, 2011; Kriesi, 2014; Guiso et al., 2017). Other scholars contend that a cultural backlash against postmaterialist values can explain support for populism better than do the influence of economic factors (Inglehart and Norris, 2016). This culturalist perspective focuses on right-wing populist parties' frequent appeals to traditional values and anti-immigration stance. Although evidence on the causal effect of actual levels of immigration on support for populism is mixed (Mudde and Rovira Kaltwasser, 2018), numerous studies have demonstrated clear correlations between anti-immigration attitudes and identity factors on the one hand, and support for populist parties on the other (Ivarsflaten, 2008; Oesch, 2008; Rydgren, 2005).

As a concept, populism remains contested. Among the possible definitions, the so-called ‘ideational approach’ has recently gained prominence among scholars. According to this approach, populism can be defined as a set of ideas that share an anti-elitist dimension, where ‘the pure people’ are pitted against ‘the corrupted elites’ (Mudde and Rovira Kaltwasser, 2018). A parsimonious definition of populism, therefore, sees it as a communication style of political actors that refers to ‘the people’ and pretends to speak in their name (Canovan, 1981; Mudde, 2004; Jagers and Walgrave, 2007). Indeed, scholars have argued that such a communication style is a defining feature of contemporary populism, arguing that “the populist ideology manifests itself in the political communication strategies of populist leaders” (Kriesi, 2014, 364). Thus, populism can also be conceived as a ‘discursive frame’ (Aslanidis, 2016) or a ‘communication phenomenon’ (de Vreese et al., 2018), in which the media used to communicate is as important as the content of the messages.

It is therefore natural to ask how the increased availability of broadband internet and the new communication channels this expansion has promoted have altered the chances of populists. Since the early advent of the internet, scholars have investigated the impact of this new technology on several aspects of politics (Sunstein, 2007; Chadwick and Howard, 2009), including populism (Bimber, 1998). Only recently, however, have scholars started to provide causally identified estimates for the impact of broadband internet and social media on political behavior. For example, studies have shown that broadband internet can increase partisan hostility (Lelkes et al., 2017), boost grassroots protest movements (Campante et al., 2018), influence turnout (Falck et al., 2014; Larcinese and Miner, 2017), and increase electoral uncertainty (Sudulich et al., 2015). The diffusion of social media has also been shown to increase protest activity in Russia (Enikolopov et al., 2017) and in Turkey (Barberá et al., 2015). Yet, apart from a recent

exception (Falck et al., 2014), causal evidence of the diffusion of broadband internet on actual voting is virtually non-existent.

We argue that broadband internet is of particular use for populists, giving them a relative advantage over other parties. We believe that this is due to three qualities that are common for populists, but not for mainstream parties: i) populists often need to circumvent gatekeepers in the mainstream media; ii) populists need to maintain an anti-elitist stance; and iii) populists use and rely on borderline truths and forged content that would not receive (sufficient) coverage on most mainstream media. Populist parties and politicians in many countries are seen as mavericks that keep up untenable positions. Journalists working for mainstream media will often be unwilling to cover them favourably (Mazzoleni, 2008; Aalberg et al., 2016).² Indeed, differences between journalists' position and that of populist parties can be stark. For example, journalists in Germany consistently rate themselves left of the middle. In a recent study, their average self-placement on a scale from zero to ten was 3.9 (Steindl et al., 2017). This compares to a perceived rating of 7.5-8.9 points for the AfD among its electorate (Bergmann and Diermeier, 2017). Given such divergence in the ideological orientation, the party would find it difficult to bring their messages across if only relying on mainstream media. Communicating online provides a viable and effective alternative.

Relatedly, communicating through online channels allows populists to more credibly maintain their anti-elitist stance. Populists often deride established media outlets as part of the mainstream elite they are blaming (Mazzoleni, 2008). For example, members of the 5-Star-Movement have often defined themselves as standing outside the so-called *casta* (caste) comprising political and economic elites, and also mainstream media (Mosca and Vaccari, 2013). The party therefore

²This is not true in all countries/media environments, however, as the cases of the Netherlands, the UK, Poland and Austria demonstrate, where populists are regularly covered favourably by at least parts of a diverse (AU, NL) or right-leaning (UK, PL) media environment (Esser et al., 2016).

is adamant to stress that it does not rely on these media to disseminate its messages. Rather, it proudly stresses its use of more down-to-earth political blogs, discussion forums and other participatory online platforms as its main channels of communication. Indeed, research suggests that this strategy pays off: during the last Italian general election, anti-elitist messages (combined with an anti-immigration stance) attracted more likes on Facebook than other, non-populist messages (Bobbà and Roncarolo, 2018).

Finally, online channels allow populists to use unverified or outrightly forged content that would unlikely be covered on mainstream media. During the 2016 U.S. electoral campaign, many news items circulated online that were proven to be factually wrong, and the vast majority of these news items favoured the populist candidate Donald Trump (Allcott and Gentzkow, 2017). This is relevant because manipulative, false content appears to diffuse ‘farther, faster, deeper, and more broadly than the truth’ (Vosoughi et al., 2018, 1146). Arguably for this reason, the Trump campaign actively engaged in further spreading this type of content (Persily, 2017). Indeed, according to some, these fake news items may eventually have tipped the presidential race in Trump’s favour (Gunther et al., 2018).

It is important to note that none of the above fully applies to mainstream parties. Established parties usually maintain good links with the mainstream press and have no need to circumvent them. They do not typically deride mainstream media and thus do not have to keep their distance. And they are usually committed to operate on the basis of facts, so that relying on false information would harm their credibility. We therefore contend that broadband internet has given an advantage to populist parties that established parties cannot fully use.

The Five Star Movement and the Alternative for Germany

In this paper, we focus on two of the major populist parties in Europe: the Five Star Movement (*Movimento 5 Stelle*, M5S) in Italy and the Alternative for Germany (*Alternative für Deutschland*, AfD) in Germany. Although the two parties show some differences in terms of ideological orientation and issue positions, they belong to the same parliamentary group in the European Parliament ('Europe of Freedom and Direct Democracy') that unites them with other populist parties like the British UK Independence Party (UKIP).

The Five Star Movement (M5S)

Founded by the charismatic comedian Beppe Grillo in 2009, the Five Star Movement competed at the national level for the first time in the general election of 2013. By gaining around a quarter of the votes for the Chamber of Deputies (25.6%), the party reached an astonishing electoral success that has no precedent for a first-time running party in post-war Italian history. In the subsequent national election in 2018, the party managed to further increase its vote share, with one Italian voter in three casting a vote for the M5S for the Chamber of Deputies (32.7%).

In terms of ideology, the M5S differs from other European right-wing populist parties. Its representatives claim to be 'outside' the left-right spectrum. Analysis of electoral flows indicates that in the 2013 election, the M5S attracted voters from both left and right (Paparo and Cataldi, 2013), and from previous supporters of both major center-left and center-right parties (Russo et al., 2017). Despite these differences, however, the M5S shares some key features of populism, such as a strong anti-elitist rhetoric—in which the 'people' are opposed to corrupted political elites—and an emphasis on a direct connection between the leader of the movement and his supporters (Corbetta and Gualmini, 2013; Passarelli and Tuorto, 2018).

M5S's main means of communicating with its supporters is Beppe Grillo's blog, which is one of the most popular websites in the country. The blog exemplifies the philosophy of the M5S, since it enables its leader to cut out mainstream media as a communication intermediary, and distribute unfiltered content. In addition to functioning as an information-dissemination-tool, the blog works as a coordination platform for the M5S supporters, and as an online space for internal polls (Mosca and Vaccari, 2013).

The Alternative for Germany (AfD)

Founded in 2013, the original agenda of the AfD was to oppose German financial support for other European countries and Europe's common monetary regime. The party then quickly drifted to the populist political right, taking up issues such as the 'fight against political correctness' and the 'political class', and the rejection of multiculturalism (Schmitt-Beck, 2017). The German government's decision to accept around 1 million refugees in the course of 2015 gave the party an additional boost, with the AfD positioning itself as a strong opponent to the 'open door' policies for refugees practiced by the German chancellor Angela Merkel and her government.

Like the Five Star Movement, the AfD quickly rose to power. When the party first participated in a national election in 2013, it gathered 4.7% of the votes—not enough for entering the parliament (which requires a party to overcome a 5% threshold), but still the best performance of a newly founded party in Germany's post-war history (Häusler and Roeser, 2015). It has since gone from success to success, entering the European parliament and regional parliaments of 14 of Germany's 16 Länder (the equivalent of US states). The AfD entered the national parliament for the first time in the general elections 2017, garnering 12.6% of the votes—the third-strongest result of all parties.

The party heavily relies on social media websites to interact with members, supporters, the media, and the general public. Facebook is of particular importance for the party. As of December 2018, the official fan page of the AfD's federal organization counted almost 440,000 likes. This is more than twice as many as the largest German parties, the Christian Democrats and the Social Democrats (with around 190,000 likes each) can muster. In addition, and unlike other, established political parties, the AfD allows followers to post messages directly on their Facebook wall, thus leading to direct interaction among party supporters, and to far more comments and messages than other parties receive (Müller and Schwarz, 2018).

Empirical strategy

We test the hypothesis that *the rise of populist parties can be partly attributed to the effect of online tools and communication strategies enabled by the proliferation of broadband access*. Our empirical strategy consists of two steps. In a first step, we show that internet use and voting for populist parties are systematically linked. In a standard regression model, using the internet to acquire political information strongly predicts voting for both the M5S and the AfD. In a second step, we seek to establish the direction of the causal arrow. Is it internet use that makes people vote for populists, or is it those who are ideologically aligned with the populist agenda (and would vote for populist parties anyway) that simply seek out information online more frequently? In other words, the challenge is to disentangle 'genuine' effects of internet use on voting from citizens' self-selection into media exposure. This challenge has acquired particular relevance in the current media environment, where voters are free to selectively choose the content that 'resonates' best with their pre-existing attitudes (Stroud, 2011). To address this problem, we follow recent contributions in the field and adopt an instrumental variable (IV) strategy (cp. Falck

et al., 2014; Sudulich et al., 2015; Lelkes et al., 2017). Specifically, we instrument individual internet use with variation in broadband coverage at level of the municipality. In what follows, we first discuss our data sources and then lay out in detail our IV strategy.

Survey data Italy

Our analysis of individual-level support for the M5S in Italy relies on survey data collected by the Italian National Election Study (ITANES). We rely on the fourth and the fifth wave of the ‘2013 inter-electoral ITANES panel’ (Belluci and Maraffi, 2014) that were conducted respectively before and after the general election of 24–25 February 2013.³ A total of 1,366 respondents took part in Wave 4, which reduced to a total of 1,157 respondents in Wave 5 due to attrition. Respondents come from 783 municipalities from all parts of Italy.

Our dependent variable is respondents’ vote as recalled in post-electoral Wave 5. We recoded the variable either as a dummy variable or as a choice variable. In the former case, we assigned a value of 1 to those who voted for M5S, and value of 0 to all other respondents. In the latter case, we assigned different values for all the parties that received more than 4 percent of the votes: the Democratic Party (PD), Berlusconi’s People of Liberty (PDL), former Prime Minister Monti’s centre party *Scelta Civica* (SC), the Northern League (LN), and the Five Star Movement (M5S). The variable includes two additional residual categories for those who voted for any of the other parties, and those who did not go to vote.

Our independent variable is based on a question in Wave 4 about the main source of information on the upcoming election. Respondents were asked: ‘Where do you receive the majority of information on the election that will be held in a few months?’ Possible answers included

³Wave 4 was fielded between 7 January and 9 February 2013, while Wave 5 was fielded between 4 and 27 March 2013. All interviews were conducted on the phone using the CATI method. The starting sample was selected using quotas based on gender, age, education, and geographical area of residence.

traditional media (TV, radio, newspapers), personal contacts, and the internet. We recoded the variable as a dummy, assigning a value of 1 to those who used the internet as main source of information, and a value of 0 to all other responses.

Survey data Germany

The individual-level data for Germany come from the German Longitudinal Election Study (GLES) project (Schmitt-Beck et al., 2009). We draw on pre-electoral surveys collected in the context of regional elections held in different German states between March 2016 and May 2017, before the national election in September 2017.⁴ The dataset comprises 1,929 observations collected by means of telephone and online interviews. We include data from pre-electoral GLES surveys conducted since the AfD changed from a national-conservative to a distinctively right-wing populist approach, marked by the leadership change from Bernd Lucke to Frauke Petry in summer 2015. The data come from five different states and a large number of municipalities (940 zip code districts) distributed across all geographical areas of the country—and thus provide ample variation in broadband coverage.⁵

Our dependent variable is the intention to vote for AfD in the 2017 national elections. In line with the analysis of the ITANES data, we present two versions of the dependent variable: a binary and a choice variable. The binary variable codes whether an individual reports to intend to vote for the AfD or not. The choice variable records which of the six major parties a person intends to cast their vote for: the social democrats (SPD), the Christian democrats (CDU), the leftist party (Linke), the free democrats (FDP), the greens (Grüne) or the AfD. Our independent

⁴In Section D in the Appendix we replicate the analysis using data from a post-election cross-section survey collected after the 2017 general elections. Although this dataset has the advantage of including a measure of self-reported actual vote choice, it does not allow us to apply our IV strategy. This is because the data was collected in a relatively small number of municipalities only, with little variation in broadband coverage.

⁵Notably, we draw on data from the states of *Schleswig-Holstein* and *Mecklenburg-Vorpommern* in the north of the country, *Sachsen-Anhalt* in the centre east, and *Rheinland-Pfalz* and *Baden-Württemberg* in the south-west. In each case, the data are representative for the state in which they were collected. The location of these states can be glanced in Figure 3, where states from which data is drawn are marked with an asterisk.

variable captures the use of the internet for political purposes. The question reads ‘During the past week, on how many days have you used the internet to inform yourself about politics and political parties?’ Respondents could answer on an 8-point-scale, ranging from ‘not at all’ to up to ‘7 days’.

Possible confounders and controls

As a means of limiting bias due to heterogeneity in our sample, in all our standard regression models we include socio-demographic control variables (respondents’ gender, age, and level of education), as well as a measure of population density to capture a location’s level of urbanization,⁶ a dummy variable for whether the respondent lives in either a central or a peripheral municipality, elevation and a standard geographical indicator for the different areas of Italy (North-West, North-East, Centre, South, Islands). Models that combine data for different states in Germany also include regional dummies to account for heterogeneity at this level.

Apart from these generic controls, we address four specific confounders that may be related to both internet use and voting for populists parties and have been discussed in the previous literature: i) the level of unemployment (Golder, 2003; Gerbaudo, 2014), ii) the age structure of the population (Heiss and Matthes, 2017), iii) overall turnout (Campante et al., 2018), and iv) the structure of the local economy (Algan et al., 2017). We control for these confounders using the unemployment rate at the municipality/zip-code level, the share of people aged over 65, the turnout rate from the preceding election, and the share of individuals working in industry.

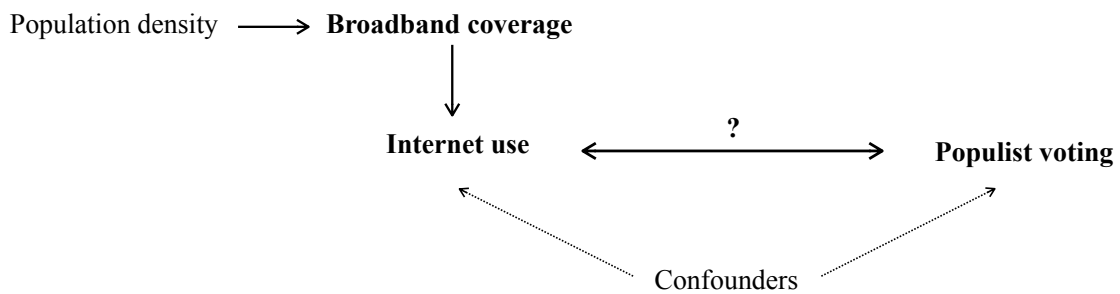
⁶We control for population density to increase comparability with our instrumental variable strategy (outlined below), which is conditional on population density. Higher population density has been linked to shifts in voting behavior such as higher turnout (Blais and Dobrzynska, 1998), although evidence on actual voter choice is more ambiguous (Rodden, 2010; Teigen et al., 2017).

Instrumental variable

While the inclusion of these variables strengthens the validity of regression estimates, it does not allow us to address the problem of reverse causation. It is plausible to assume that individuals seek out information about their preferred parties online, which would create a causal arrow running from party preference to internet use, and would bias estimates. To overcome this problem we instrument internet use with the degree to which a respondent's home municipality is covered by broadband internet through either landline or mobile phones.

The IV strategy aims at isolating the part of the variation in internet *use* that is explained by variation in *access* to broadband internet—and which hence is not affected by reverse causality. The logic of this strategy is illustrated in Figure 1. Importantly, our instrument is a measure of broadband availability instead of a measure of the share of people with an actual subscription to broadband internet. This latter measure would be problematic since it would re-introduce the self-selection problem ‘through the backdoor’. Rather, our coverage measure indicates the extent to which broadband internet is available *in principle*.

Figure 1: Logic of the empirical strategy



The availability of broadband internet has been increasing 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

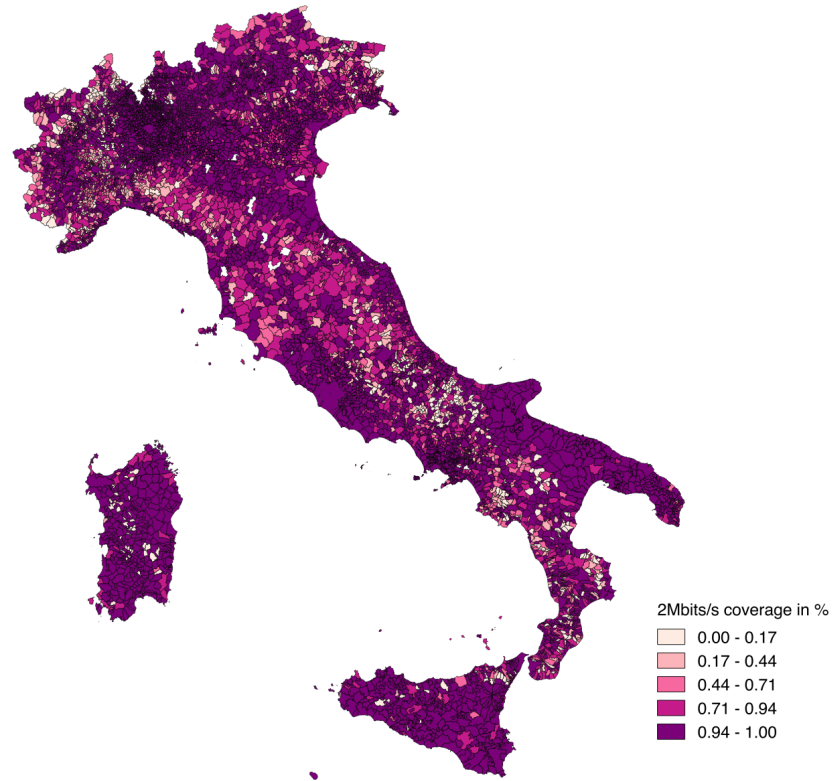
therefore relies on exploiting the remaining gaps in coverage to demonstrate causality. Although one may worry that places that lacked full coverage should be very different from those with full coverage, we argue and show below that these worries are largely unwarranted. We first describe the data used for our instrument, and then discuss the criteria that have to be met for the instrument to be valid.

Broadband coverage in Italy and Germany

Data on broadband availability in Italy was provided by *Infratel* on behalf of the Ministry for Economic Development. The figures provided measure the share of households in a municipality that had access to internet speeds of 2 Mbits/second and above in 2013. In the following analysis, we recode the values from 0 (no broadband access) to 1 (full broadband coverage).

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. For broadband internet to be available, a CO must be connected to the closest UGS via fibre optics. The crucial element for our analysis is that 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 nothing to do with strategic or market decisions that were taken at the time the telecommunication network was implemented.

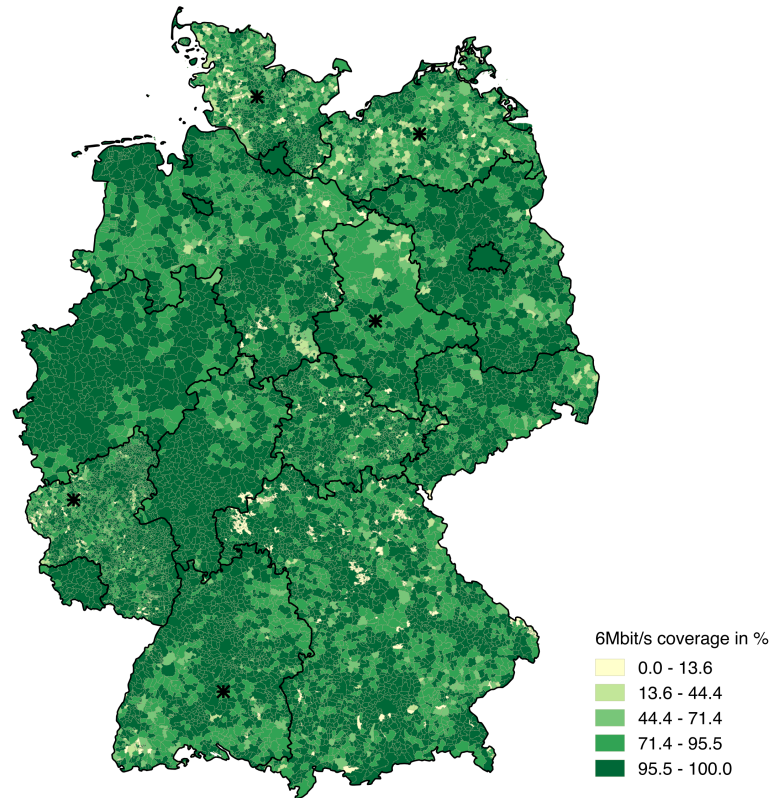
Figure 2: Broadband coverage at the municipality level in Italy in 2013



That said, strategic concerns are important to determine where internet service providers tend to implement broadband connectivity first. Of overriding concern to internet providers is the degree of urbanization, which largely determines the expected financial return of investing in broadband technology (Gruber et al., 2014). Where the existing infrastructure allowed easy rollout, providers tended to cover places with higher population density first. For this reason, in our analysis we condition on population density throughout. We also provide evidence that, at least in the cases of Italy and Germany, the population in less densely populated areas is not substantially different from the population in more densely populated areas.

Broadband coverage in Germany is measured with data provided by the *TüV Rheinland* on behalf of the Ministry of Transport and Infrastructure. The data indicate the share of households

Figure 3: Broadband coverage at the municipality level in Germany 2016



German *Länder* from which survey data is drawn marked with an asterisk (*).

in a municipality with access to internet speeds of 6 Mbits/second and above in 2016.⁷ In line with the analysis for Italy, we recode the values to a scale from 0 to 1.

Broadband internet access in Germany 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

⁷The 6 Mbits/second measure is our preferred indicator for broadband coverage as it marks the speed above which good-quality video streaming becomes unproblematic (Ezell et al., 2009). For Italy, only the 2 Mbits/second measure was available through *Infratel*, which is why we here rely on that measure.

speed, therefore, results from the distance a household is located from the MDF. While these distances can be long—and internet speed low—especially in rural areas, there is also substantial variation in internet speed in suburban areas, simply because the distance between a given household and the nearest MDF varies (cp. Falck et al., 2014). We therefore argue below that, just as in Italy, conditional on population density, broadband access is plausibly exogenous to pre-existing political attitudes, and can therefore serve as an instrument for internet use.

Instrument strength and exclusion restriction

In order for broadband access to be a valid instrument, two criteria have to be met. First, the instrument has to be correlated with the endogenous predictor ‘internet use’ in meaningful ways. Previous research showed that, typically, this criterion is fulfilled, i.e. internet use is strongly elastic to access to fast internet connections. For example, in the US, the adoption of broadband increased total usage by an estimated 1,300 min per month (Hitt and Tambe, 2007), and the same trend held for Europe (Anderson, 2008).⁸

Instrument strength is measured in a first-stage OLS regression where the endogenous predictor is regressed on the instrument plus the other pre-treatment covariates used in the analysis. Instruments that produce an F-value of 10 or larger in such a regression are typically considered strong instruments, while instruments that produce a lower F-value are considered ‘weak’ instruments (Stock et al., 2002). With weak instruments, IV estimates can be unstable and imprecise, but nevertheless remain median-unbiased (Angrist and Pischke, 2009). Estimating the first-stage using our survey data from Italy and Germany reveals that our instruments are right at the border of the critical threshold. For Italy, the F-statistic is 11.50, and for Germany it is 10.04 (Table 1).

⁸Our own analyses confirm this result. Using Eurostat data from 2013, we find a clear correlation between the frequent use of the internet and the percentage of households with broadband coverage in EU Member States (see Figure A4 in the Appendix).

Table 1: First-stage regression of the potentially endogenous predictor (internet use) on the instrument (broadband coverage) and other control variables

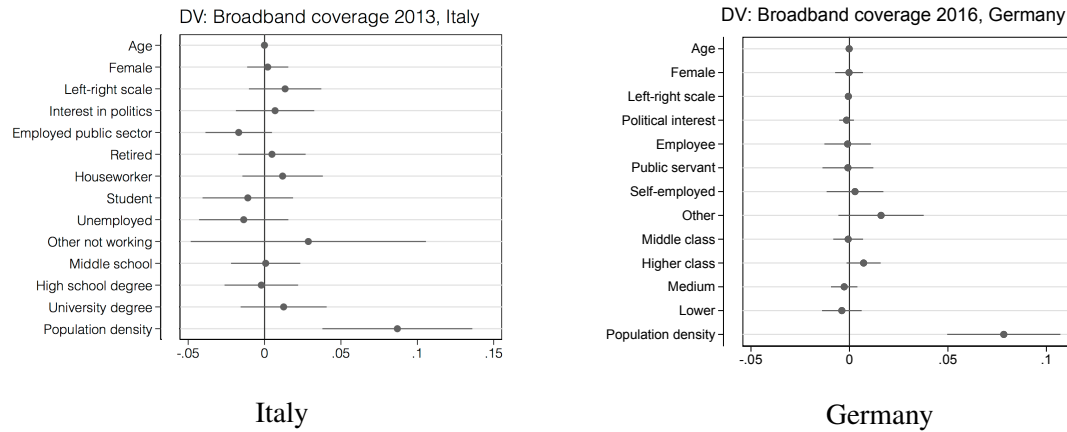
	<i>Italy</i>	<i>Germany</i>
Broadband coverage	0.211*** (0.064)	3.290*** (0.834)
Socio-demographics	yes	yes
Municipality-level controls	yes	yes
N	1,157	1,929
F-statistic	11.50	10.04

OLS regression. Dependent variables: Respondents who chose ‘internet’ as main source of news on the upcoming election (Italy); number of days the internet was used to obtain information on politics and political parties (Germany). Standard errors in parentheses. For complete results, see Table A1 in the Appendix. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Since we are dealing with relatively weak instruments, we follow the advice by Angrist and Pischke (2009) to focus on confidence intervals rather than point estimates, and to also report reduced form estimates, i.e. the results from a regression of the outcome on the instrument. In an experimental setting, the reduced form estimates the intention-to-treat (ITT) effect. That is, the effect of full internet coverage on the probability to vote for populist parties, no matter whether people individually make use of broadband internet or not. More importantly, the reduced form is estimated using OLS and hence does not suffer from systematic bias. The reduced form estimates therefore provide a good first intuition with regard to the existence and sign of the causal relationship.

Second, for the instrument to be valid the exclusion restriction has to be met. That is, the only channel through which broadband availability influences voting behavior should be to make it easier for people to use the internet. Another way of conceiving of the exclusion restriction is that broadband access should be ‘as good as’ randomly distributed, or rather, that its distribution should be orthogonal to the outcome of interest, voting for populist parties. Given our descriptions above, our claim is that conditional on population density, this criterion is fulfilled.

Figure 4: Regression of broadband coverage on various covariates and population density



Although the orthogonality requirement cannot be tested in itself, we can at least check whether broadband coverage correlates with a set of control variables. Figure 4 depicts the outcome of this test. The figure shows coefficient plots for regressions of broadband coverage on individual-level characteristics, simultaneously controlling for population density. We see that population density is indeed positively correlated with broadband coverage in both Italy and Germany, meaning that the availability of broadband is higher in municipalities that are more densely populated. However, once we control for population density, our instrument does not correlate significantly with any of the socio-demographic variables included as controls, and neither with other variables such as the type of employment, interest in politics, and left-right self-placement.

As an additional test, we conduct a falsification exercise. If the exclusion restriction is met, broadband availability should not predict behaviors that are not linked to internet use. For instance, it should not predict the use of newspapers as a main source of news. In Table A5 in the Appendix, we report the results of regressions of newspaper use on our instrument, broadband availability. Reassuringly, no effect is found, increasing our confidence in the validity of the instrument.

Results

We start by presenting naive regression results where we regress voting for populist parties in Italy and Germany on internet use. In a second step, we show results based on our instrumental-variable strategy.

Naive regression results

We begin our analysis by testing whether the use of the internet as the main source of news positively correlates with voting for M5S in Italy. Table 2 presents the results from two different models: a linear probability (OLS) model (Model 1) and a multinomial logistic regression (Model 2). In all models, we control for the potential confounders introduced above. Standard errors are clustered at the level of the municipality to account for potential interdependencies among individuals from the same municipality.

Table 2: Internet use and party vote in Italy

	(1)		(2)		
	M5S vs. others	M5S	<i>Base outcome = voted for PD</i>		
			PDL	Scelta Civica	Lega Nord
Internet main source	0.140*** (0.041)	0.109*** (0.026)	-0.051 (0.037)	-0.015 (0.023)	-0.003 (0.019)
Socio-demographics	yes			yes	
Municipality-level controls	yes			yes	
N	1,157			1,157	
R2/Pseudo R2	0.065			0.051	

Model 1: Linear probability model (OLS regression). Dependent variable: Vote for M5S as recalled in post-election Wave 5. Model 2: 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 (SEs) in parentheses. SEs clustered at the municipality level. For complete results, see Table A2 in the Appendix. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Results from Model 1 show that use of broadband internet significantly and strongly predicts voting for M5S: those who rely on the internet as main source of political information are 14 percentage points more likely to vote for M5S than those who rely on other sources of information. Results from a multinomial logistic regression in Model 2 confirm these results.

Those who relied on the internet as primary news source were 11 percentage points more likely to vote for M5S, as compared to those who voted for the main centre-left party (PD). No significant correlations occur with vote for the other parties.⁹ If we set ‘non-voters’ as base-outcome, we find again that internet use is associated with an increased probability to vote for M5S, but not for other parties.

Table 3: Internet use and party vote in Germany

	(1)	(2)				
	AfD vs. others	AfD	<i>Base outcome = voted for SPD</i>			
			CDU	Greens	FDP	Linke
Internet political use	0.015*** (0.003)	0.014*** (0.003)	-0.013** (0.004)	-0.004 (0.003)	0.005* (0.002)	0.001 (0.003)
Socio-demographics	yes		yes			
Municipality-level controls	yes		yes			
N	1,929			1,929		
R2/Pseudo R2	0.062			0.069		

Model 1: Linear probability model (OLS regression). Dependent variable: Intends to vote for the AfD in the 2017 general elections. Model 2: Marginal effects from multinomial probit 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. Standard errors (SEs) in parentheses. SEs clustered at the zip-code level. For complete results, see TableA3 in the Appendix. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Our findings from Germany, presented in Table 3, mirror those from Italy. Use of the internet for political purposes strongly predicts voting intentions for the AfD. Each additional day of internet use increases the inclination to vote for the AfD by 1.5 percentage points (Model 1). Moving from not using the internet for political purposes to using internet seven days a week increases the probability to vote for AfD by around 11 percentage points—an effect closely resembling the estimates from Italy. These results hold up when AfD supporters are compared to voters of the other major parties in a multinomial logistic model (Model 2). In this latter model, we see that internet use strongly predicts voting for the AfD, and marginally for the liberals (FDP).¹⁰

⁹It should be noted that the Lega Nord (Northern League) shares many features of other right-wing populist parties (Tarchi, 2007). We may thus expect to see a positive effect of internet use for this party as well. However, due to an embezzlement scandal, in 2013 the party gained only 4 percent of the votes, losing half of their votes compared to the previous national election. It is only with the subsequent change of leadership that the party, now led by Matteo Salvini, adopted a communication strategy that strongly relies on social media, and which may have contributed to the electoral success in the 2018 general election (Bobbà and Roncarolo, 2018).

¹⁰Interestingly, the FDP was not represented in the national parliament during the legislative period 2013-2017 as it did not manage to clear the 5% threshold in the 2013 general elections. Lacking access to the main political stage,

Internet use for political purposes is negatively associated with voting for the conservative CDU. In both models, the effect of internet use on the intention to vote for the AfD is highly precisely estimated at the 0.001 level.

Instrumental variable estimates

Next, we implement our instrumental-variable strategy (Table 4). Models 1 and 2 present the results for Italy. Both the reduced form and the second stage from the two-stage-least-square (TSLS) regression strongly and positively predict voting for M5S. The reduced form/ITT suggests that the expansion of broadband coverage from zero to full coverage is associated with a 12.4 percentage points increase in the likelihood of voting for the Five Star Movement. The second-stage gives us an estimate of the local average treatment effect (LATE) for compliers – that is, an estimate of the treatment effect for those enabled by broadband coverage to use the internet as their main source of news. We estimate that among this subgroup, the probability of voting for M5S increases by 62%.¹¹ As may be expected when using a relatively weak instrument, our results are estimated with some uncertainty. Indeed, the corresponding standard error is 0.31, resulting in a 95% confidence interval that ranges from 4% to 116%. We hence cannot be certain that the LATE actually corresponds to the high point estimate. However, the second-stage TSLS estimator comfortably includes our point estimates from the standard regressions, giving us confidence that these can be interpreted as causal.¹²

Models 3 and 4 repeat the same analysis for Germany. Here, too, we see that both the reduced form estimates and the two-stage-least-square estimates significantly predict voting for the

the FDP may have relied more strongly on direct communications with its supporters, not unlike the populist AfD.

¹¹It is important to consider that we do not estimate the effect of using the internet for the *entire population*, but only for those who *decided* to use the internet once broadband was available (the compliers). Partially for this reason, the TSLS-regression estimates are substantially larger than the reduced-form estimates.

¹²Following the advice for handling weak instruments by Angrist and Pischke (2009), we re-estimated the regression using the Limited Information Maximum Likelihood (LIML) estimator. The results are almost identical to those obtained with TSLS.

Table 4: 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)	(2)	(3)	(4)
	Reduced Form (ITT)	TSLS (LATE)	Reduced Form (ITT)	TSLS (LATE)
Broadband coverage	0.124*** (0.046)		0.267** (0.119)	
Internet use		0.620** (0.310)		0.081** (0.022)
Socio-demographics	yes		yes	
Municipality-level controls	yes		yes	
N	1,157		1,929	

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 (SEs) in parentheses. SEs clustered at the municipality level. For complete results, see Table A4 in the Appendix. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

populists of the AfD. Our second-stage estimates suggest that an additional day of internet use for political purposes goes along with a 8.1 percentage point higher likelihood of voting for the AfD. Moving from zero use to everyday use is thus associated with an estimated LATE of 56.7%—remarkably similar to the estimate obtained for Italy. Again, this estimate is not very precise, however, with the 95% confidence interval ranging from 1.2% to 16.2%. Yet it comfortably covers the standard regression estimates. The results from Germany therefore help to confirm the existence of a causal effect of broadband access on populist voting.¹³

Conclusion

We tested whether the dissemination of broadband internet can help to explain the rise of populist parties in Europe. Our answer is affirmative. We show that internet use strongly and consistently goes along with voting for populist parties, both in Italy and Germany. Exploiting variation in access to broadband internet, we show that this effect is causal. Our analysis of the potential

¹³A natural next step is to ask *why* broadband access should translate into populist voting. We present a tentative analysis in Section C of the Appendix.

channels relating internet use and populist voting indicates that, most plausibly, the internet is used by populist parties to activate individuals' 'inner populists'—converting already existing ideological leanings into actual voting. These findings are in line with the understanding of populism as a communication style that directly appeals to people's concerns that have been left unaddressed by other parties. Populists, we show, do find the perfect tool in broadband internet.

To what kind of contexts may our findings generalize? We believe that two interrelated scope conditions may be important: a lack of access to the main political stages, and exclusion from mainstream media coverage. As explained, both conditions were true for the two parties we focus on during the time periods of our analysis. However, this is not necessarily the case for other parties. In the UK, for example, the populist UKIP receives substantial favorable coverage by the tabloid press, despite not being represented in the national parliament. Under such conditions, populists might not perceive the need to take their mobilizing efforts online. The extent to which our findings hold in other contexts is an empirical question that should be addressed by means of further research.

Finally, it is worth asking how lasting the broadband-induced support for populists will be. On the one hand, populist parties saw the potential of the internet first, and used it emphatically. It is therefore possible that they might lose this advantage in the future when other parties have managed to catch up. On the other hand, there are good reasons to believe that what we are observing is the result of a structural change. Almost by definition, populist parties address issues that are outside of mainstream party politics, often verging well into the territory of the politically incorrect, and drawing on information that is hardly verified. The communication style of U.S. president Trump is a case in point. Conventional parties and the mainstream media are, for good reasons, hesitant to cover this type of content. Broadband internet allows populists

to get their message across nonetheless. The internet thus appears to have expanded political communication options in a way that disproportionately benefits populists. In other words, the advantage populists have gained with the spread of broadband internet is likely to persist.

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Appendix for ‘Voter mobilization in the echo chamber’

A Complete results for Tables 1–4

Table A1: First-stage regression of the potentially endogenous predictor (internet use) on the instrument (broadband coverage) and other control variables – Full results for Table 1 above

	<i>Italy</i>	<i>Germany</i>
Broadband coverage	0.211*** (0.064)	3.290*** (0.834)
Age	-0.004*** (0.001)	0.0155*** (0.004)
Female	-0.085*** (0.023)	-0.935*** (0.113)
Education	0.018*** (0.004)	0.196*** (0.038)
Population density	0.000 (0.000)	0.000 (0.000)
Elevation	0.000 (0.000)	0.001* (0.000)
Unemployment	-0.004 (0.005)	0.000 (0.000)
Share over 65 years	0.000 (0.000)	0.000 (0.000)
Share employed in industry	-0.004 (0.005)	0.000 (0.000)
Turnout prev. election	-0.476* (0.283)	0.004 (0.011)
Region fixed-effects	yes	yes
N	1,157	1,929
F-statistic	11.50	10.04

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). Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A2: Internet use and party vote in Italy – Full results for Table 2 above

	(1)		(2)		
	M5S vs. others	M5S	<i>Base outcome = voted for PD</i>		
			PDL	Scelta Civica	Lega Nord
Internet main source	0.140*** (0.041)	0.109*** (0.026)	-0.051 (0.037)	-0.015 (0.023)	-0.003 (0.019)
Age	-0.002*** (0.001)	-0.002*** (0.001)	-0.003 (0.001)	-0.000 (0.001)	0.000 (0.000)
Female	-0.004 (0.020)	-0.005 (0.020)	0.151 (0.019)	0.011 (0.014)	-0.009 (0.011)
Education	-0.002 (0.004)	0.002 (0.004)	-0.009** (0.004)	0.008*** (0.003)	-0.003 (0.003)
Population density	0.000 (0.000)	0.000 (0.000)	0.000** (0.000)	0.000 (0.000)	0.000 (0.000)
Elevation	-0.000 (0.000)	0.001* (0.000)	0.000 (0.000)	0.000* (0.000)	0.000 (0.000)
Unemployment	-0.000 (0.000)	0.000 (0.003)	0.003 (0.003)	0.002 (0.0024)	0.000 (0.000)
Share over 65 years	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
Share employed in industry	0.001 (0.001)	0.001 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)
Turnout prev. election	0.093 (0.278)	0.120 (0.293)	-0.037 (0.293)	0.134 (0.209)	0.017 (0.204)
Region fixed-effects	yes			yes	
N	1,157			1,157	
Pseudo R2	0.065			0.051	

Model 1: Linear probability model (OLS regression). Model 2: Marginal effects from multinomial logistic regression, categories 'other parties' and 'did not vote' omitted for readability purposes. 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. Standard errors (SEs) in parentheses. SEs 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 3 above

	(1)		(2)			
	AfD vs. others	AfD	<i>Base outcome = voted for SPD</i>			
			CDU	Greens	FDP	Linke
Internet political use	0.015*** (0.003)	0.014*** (0.003)	-0.013** (0.004)	-0.004 (0.003)	0.005* (0.002)	0.001 (0.003)
Age	-0.004*** (0.000)	-0.001** (0.001)	0.001 (0.001)	0.001 (0.001)	0.000 (0.000)	-0.000 (0.001)
Female	-0.061*** (0.014)	-0.061*** (0.015)	0.004 (0.001)	0.063*** (0.017)	-0.020 (0.012)	0.000 (0.014)
Education	-0.030*** (0.001)	-0.029*** (0.005)	0.016** (0.004)	0.017*** (0.006)	0.011** (0.005)	-0.005 (0.007)
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)
Elevation	-0.000 (0.000)	0.001 (0.000)	-0.000 (0.000)	0.000* (0.000)	0.000 (0.000)	0.000 (0.000)
Unemployment	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.002 (0.004)	0.000 (0.000)	0.000 (0.000)
Share over 65 years	0.000 (0.000)	0.000 (0.000)	-0.008** (0.003)	0.000 (0.000)	0.005*** (0.001)	-0.001 (0.002)
Share employed in industry	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)	0.000 (0.000)
Turnout prev. election	-0.002 (0.001)	0.000 (0.000)	0.003* (0.002)	0.000 (0.001)	0.001 (0.001)	-0.001 (0.001)
Region fixed-effects	yes			yes		
N	1,929			1,929		
Pseudo R2	0.08			0.07		

Model 1: Linear probability model (OLS regression). Model 2: Marginal effects from multinomial probit regression. Category 'other parties' not included in the table to increase readability. 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. Standard errors (SEs) in parentheses. SEs clustered at the zip-code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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 – Full results for Table 4 above

	<i>Italy</i>		<i>Germany</i>	
	(1)	(2)	(3)	(4)
	Reduced Form (ITT)	TSLS (LATE)	Reduced Form (ITT)	TSLS (LATE)
Broadband coverage	0.124*** (0.046)		0.267** (0.119)	
Internet use		0.620** (0.310)		0.081** (0.022)
Age	-0.003*** (0.000)	-0.000 (0.001)	-0.001** (0.000)	-0.002*** (0.001)
Female	-0.016 (0.020)	0.034 (0.033)	-0.074*** (0.015)	-0.002 (0.040)
Education	0.000 (0.004)	-0.011 (0.007)	-0.023*** (0.005)	-0.044*** (0.001)
Population density	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000* (0.000)
Elevation	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Unemployment	-0.001 (0.004)	0.002 (0.004)	-0.000* (0.000)	0.000 (0.000)
Share over 65 years	0.000 (0.000)	0.000 (0.000)	-0.002 (0.002)	-0.002 (0.002)
Share employed in industry	0.001 (0.001)	0.001 (0.001)	0.000 (0.000)	-0.000 (0.000)
Turnout prev. election	-0.022 (0.278)	0.257 (0.300)	-0.002 (0.001)	-0.002 (0.001)
Region fixed-effects	yes		yes	
N	1,157		1,929	

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); Intends to vote for the AfD in the 2017 general elections (Germany). Standard errors (SEs) in parentheses. SEs clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

B Falsification exercise

Table A5: Regression of newspaper use on broadband coverage

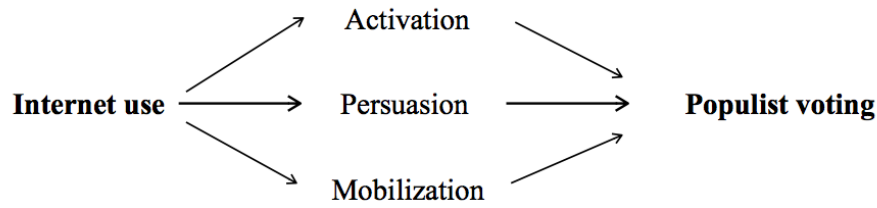
	<i>Italy</i>	<i>Germany</i>
Broadband coverage	0.026 (0.082)	-0.091 (0.126)
Age	0.003*** (0.001)	0.003*** (0.001)
Female	-0.058*** (0.019)	-0.037*** (0.017)
Education	0.018*** (0.004)	0.016*** (0.006)
Population density	-0.000 (0.000)	-0.000 (0.000)
Elevation	0.000 (0.000)	0.000 (0.000)
Unemployment	-0.008*** (0.000)	0.000 (0.000)
Share over 65 years	0.000* (0.000)	0.006** (0.003)
Share employed in industry	-0.001 (0.001)	0.000 (0.000)
Turnout prev. election	-0.132 (0.272)	0.001 (0.002)
Region fixed-effects	yes	yes
N	1,157	1,929
F-statistic	11.11	3.06

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

C Mechanisms

After demonstrating a causal effect of broadband access on support for populist parties, a next natural step is to explore through which channels this effect works. This is done in the section that follows. The analyses here are tentative, as are the empirical tests used (esp. the use of interaction effects for testing for the presence of mechanisms). We include this section as providing suggestive evidence for future work. From the literature we distilled three possible mechanisms: the activation of pre-existing political attitudes, persuasion, and the mobilization of previous non-voters (Figure A1).

Figure A1: Possible mechanisms linking internet use to populist voting



A first possibility is that internet use might activate pre-existing political attitudes and helps to turn them into actual political behavior. According to classic theories, politicians take positions that already exist among voters, and make them actionable (Weber, 1978). That is, they provide a platform and channel to turn these political stances into political action, namely voting. Broadband internet makes key aspects of activation easier. Most importantly, the internet serves as coordination device. Through the internet, potential voters of as-of-yet fringe populist parties can find out that others share their opinion, especially by engaging in many-to-many dialogues that sets online communication apart from traditional media (Bimber, 1998; Weare, 2002). At the extreme, the internet allows individuals to enter into echo chambers, where their own opinion appears to dominate. With just a few clicks on social media platforms, it is possible to create personalized information environment where one's opinion is shared by virtually everyone else (Sunstein, 2008; Quattrociocchi et al., 2016). As a result, potential voters of fringe parties may convince themselves that their vote is not cast in vain—that together they can muster the critical mass necessary to carry their party past the threshold for entering parliament.¹⁴

We test this idea by looking at the interaction between internet use and our subjects' self-placement on the left-right scale. Assuming, as others do, that left-right placement is a relatively stable trait (Huber, 1989; Knutsen, 1995), we expect internet use to have a stronger mobilizing

¹⁴These thresholds exist in both countries studied here. In Italy, a party must win at least 3% of votes to enter the parliament, and in Germany, the threshold for both regional and the federal parliament is 5%.

force among those that share the political orientation of the populist parties in focus. For Germany, we thus expect a stronger effect among subject who place themselves on the political right. Due to the ideological amorphousness of M5S, making predictions for Italy in this regard is more difficult. We therefore present another test, interacting internet use with an indicator for authoritarianism available in the Italian data.¹⁵ Just like an individual's ideological orientation, authoritarianism is widely considered a stable character trait (Hetherington and Weiler, 2010). A significant interaction can therefore be interpreted as the trait being politically activated by internet use.

Closely related to this first channel, another possibility is that voters might get newly *persuaded*, meaning that populist politicians convince voters of political positions they did not previously hold. A first way in which broadband internet can contribute to persuasion is by enabling direct contact between populist politicians and potential voters. In classic studies of political behavior, such direct social interactions are considered the primary channel through which political persuasion takes place (Lazarsfeld et al., 1944). Broadband internet allows for both direct appeal through social media.

Another reason why broadband internet can be a particularly effective tool for persuasion is more subtle, and has to do with the type of communication it allows political actors to deploy. Populist web-content often makes use of classic techniques of propaganda, notably negative messaging, fear appeals, and the spreading of misinformation (Jowett and O'Donnell, 2011)—techniques that have been shown to be particularly effective in shifting political opinions among ideologically receptive audiences (Enikolopov et al., 2011). We test the persuasion channel by exploiting the finding that propaganda is more effective among less educated individuals

¹⁵The question reads 'Schools should teach children to obey the authorities', to which respondents can answer on a 5-point ranging from 1 'completely agree' to 5 'completely disagree.' This variable was only collected for half of the sample.

(Zaller, 1992; Yanagizawa-Drott, 2013). If internet use influences right-wing support through the persuasion channel, the interaction between levels of education and internet use should therefore negatively predict populist voting.

A final channel that might link internet use to support for populist parties is the mobilization of new voters. While this mechanism is related to the two above, it is distinct enough to be tested separately. Post-election polls from both Germany and Italy showed that the AfD and M5S attracted particularly many previous non-voters (Blickle et al., 2017; Maggini, 2014)—but where they disproportionately mobilized by messages consumed online? We address this question by interacting internet use with a dummy variable coding whether a person took part in the previous election. A negative interaction term would inform us that internet use more strongly mobilizes previous non-voters.

Table A6: Interaction models testing for mechanisms linking internet use with voting for populist parties

	<i>Italy</i>				<i>Germany</i>		
	Activation (1)	(2)	Persuasion (3)	Mobilization (4)	Activation (5)	Persuasion (6)	Mobilization (7)
Internet use × left-right scale	0.012 (0.013)				0.007*** (0.001)		
Internet use × authoritarianism		0.089** (0.040)					
Internet use × education			0.061 (0.050)			-0.004* (0.002)	
Internet use × previous vote				0.089 (0.081)			-0.011 (0.018)
Constitutive terms	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,046	544	1,157	1,157	1,834	1,929	1,861

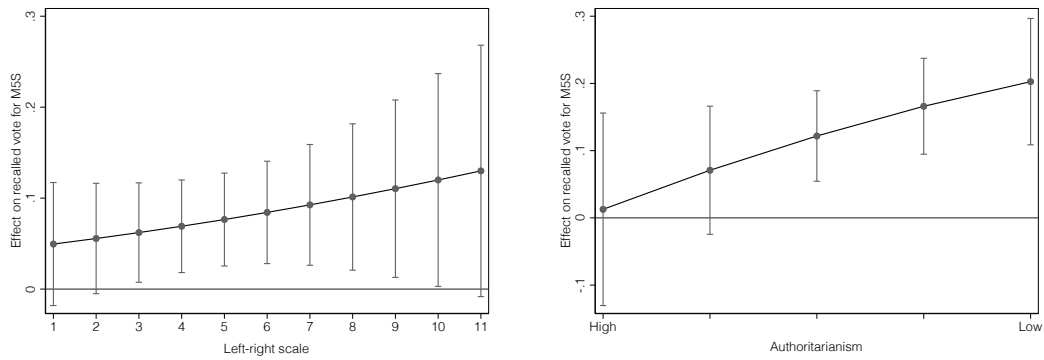
OLS estimates. Independent variables: Choice of ‘internet’ as main source of news on the upcoming election (Italy), and number of days the internet was used to obtain information on politics and political parties (Germany). Deviations from full sample due to missing variables/response only collected for one half of sample (in case of Model 2). Standard errors (SEs) in parentheses. SEs clustered at the municipality/zip-code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6 presents the results of these tests, and Figures A2 and A3 depict the results graphically. We can see fairly strong support for the idea that internet use translates into populist voting by activating previously held convictions. Ideological orientation does not interact with internet use

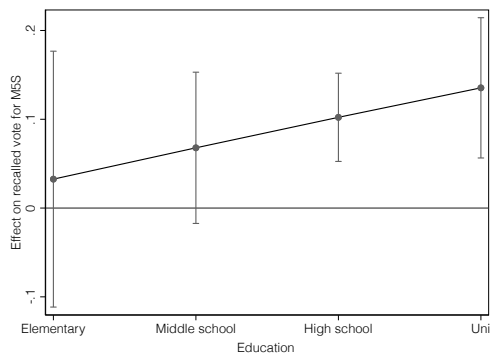
in meaningful ways in Italy, which was to be expected given the ambiguous ideological stance of the Five-Star-Movement. However, in Germany, where the AfD can be clearly classified as right-wing, the same interaction is positive, strong and highly statistically significant. Individuals placing themselves on the right-end of the left-right-scale increase their propensity to vote for the AfD clearly more when having access to broadband internet than those who place themselves further left. A second bit of evidence supports the idea that activation matters. As can be glanced in the second line, in Italy, it is among those who hold highly anti-authoritarian attitudes that internet use is linked with a higher propensity to vote for the populists of the M5S.

Support from the interaction models for the other mechanisms is rather weak. The only estimate that reaches common levels of statistical significance is the interaction term with education in the case of Germany. In this case, we find the expected negative interaction between education and internet use, providing tentative support for the idea that broadband internet is being used as a tool for persuasion.

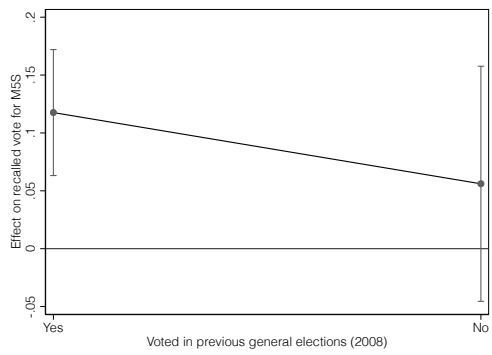
Figure A2: Italy



Activation

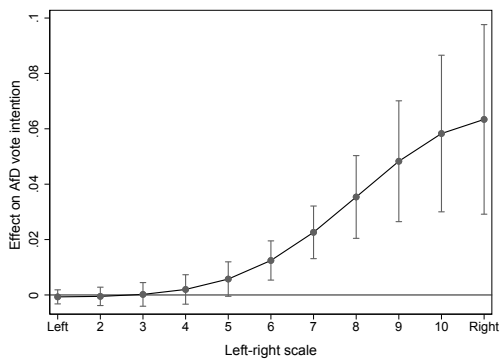


Persuasion

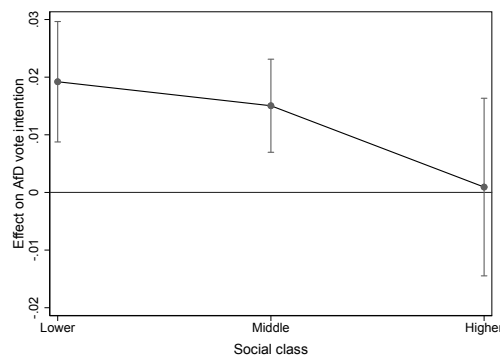


Mobilization

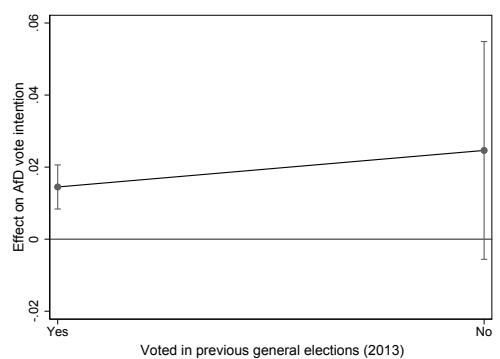
Figure A3: Germany



Activation



Persuasion



Mobilization

D Replication of results for Germany with data from post-electoral survey

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 A7 replicates the analysis presented in Table 3 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 A8. 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 A7: Internet use and party vote in Germany – Replication of results from Table 3 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)
Slope	-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 probit 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 (SEs) in parentheses. SEs clustered at the zip-code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

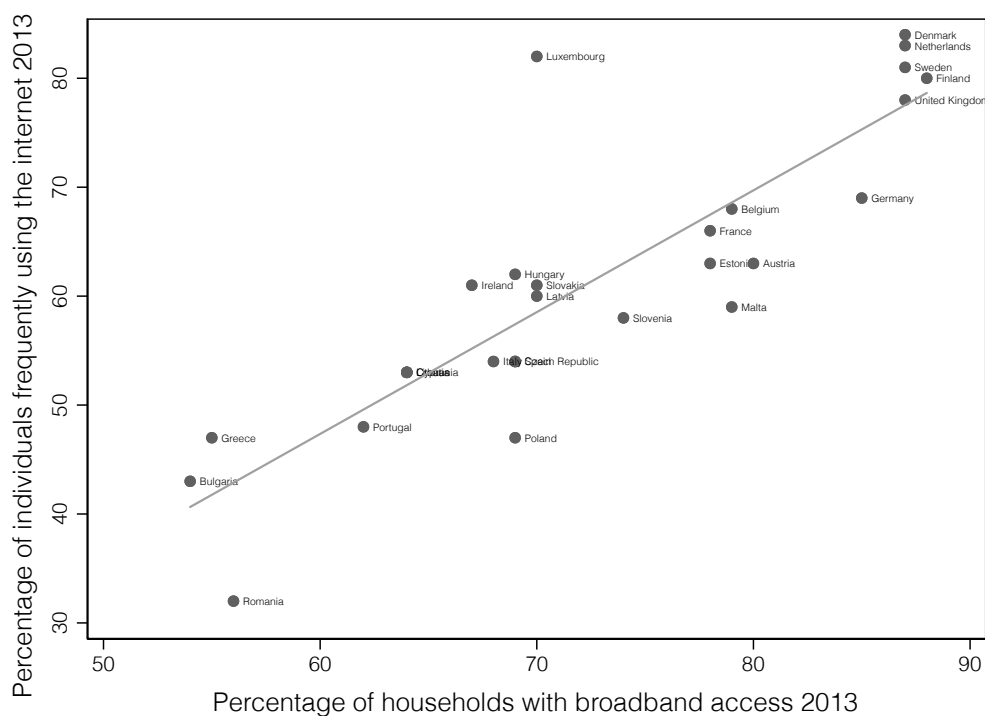
Table A8: Instrumental variable (first-stage, reduced form and two-stage-least-square) estimates predicting the effects of internet use on recalled vote for the AfD – Replication of results from Table 1 and Table 4 using post-electoral (GLES) data

	(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)
Slope	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 (SEs) in parentheses. SEs clustered at the municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

E Correlation between broadband coverage and internet use

Figure A4: Internet use and broadband coverage in EU countries



Notes: The availability of broadband is measured by the percentage of households that are connectable to an exchange that has been converted to support xDSL-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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