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Postal Address:
Institut d'Economia de Barcelona
Facultat d'Economia i Empresa
Universitat de Barcelona
C/ John M. Keynes, 1-11
(08034) Barcelona, Spain
Tel.: + 34 93 403 46 46
ieb@ub.edu
http://www.ieb.ub.edu

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DOES THE INTERNET CHANGE ATTITUDES TOWARDS IMMIGRANTS? EVIDENCE FROM SPAIN [*]

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ABSTRACT: In this paper, I empirically evaluate the effect of exposure to the Internet on Spanish attitudes towards immigrants. Exploiting a confidential, innovative survey dataset, I am able to identify a relationship between Internet access and attitudes towards immigrants at the micro (municipal) level. I address the endogeneity of Internet availability by looking at pre-existing voice telecommunication characteristics and using outcome variables before and after the arrival of the Internet. Results show that Internet availability between 2008 and 2012 is associated with a better knowledge of (national) immigration dynamics and that it leads to an overall improvement in attitudes towards immigrants. This result is particularly strong among young and urban individuals. Additionally, I find that access to the Internet reduces political support for the Partido Popular, Spain's traditional right-wing party.

JEL Codes: J15, J17, D15
Keywords: Internet, attitudes, voting

Alessio Romarri
University of Barcelona - Barcelona Institute of Economics (IEB)
E-mail: a.romarri@ub.edu

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1 Introduction

International migration is a highly controversial issue both in political arenas and in the media. Following the recent influx of migrants into EU territories, a surge in anti-immigrant sentiment has been recorded (Eurobarometer, 2018), matched by a dramatic fall in levels of trust in European Institutions and a hike in voter support for right-wing, anti-immigrant parties[1]. However, anecdotal and academic evidence suggests that individuals are often poorly informed about the basic facts relating to immigration. A transnational survey carried out in 2014 by Ipsos MORI[2] revealed that public estimates of the level of immigration were more than twice actual levels: thus, on average, people estimated 24% of the population to be made up of non-natives, when in reality it was only 11%. Alesina et al. (2018) confirm this bias in native perceptions of both the number and the characteristics of immigrants: in all countries included in their analysis, respondents greatly overestimated the total number of immigrants; additionally, natives believe immigrants to be culturally and religiously more distant from them and to be economically weaker – less educated, more likely to be unemployed, poorer, and more reliant on government transfers – than they actually are. Ensuring these figures are reported correctly is extremely important because, if better informed, citizens are more likely to support more open immigration policies and higher levels of redistribution (Grigorieff et al., 2020; Facchini et al., 2016). Thus, the role the media play in informing citizens about immigration and in shaping their beliefs and attitudes towards immigrants is critical (Benesch et al., 2019). In this paper, I empirically assess the effect of early exposure to one of the main sources of information – the Internet – on attitudes towards immigrants. More specifically, taking advantage of a confidential dataset that allows me to link at the micro (municipal) level both attitudes and broadband coverage, I investigate whether people in areas with higher rates of Internet penetration are characterised by a different level of information on the migratory phenomenon and by distinct attitudes towards immigrants. In the second part, I analyse how voting decisions are affected by Internet availability. Although it is well documented that, over the last decade, the Internet has become one of the main sources of news for Western citizens[3], the effect this might be having on attitudes towards immigrants is by no means a foregone conclusion. On the one hand, it seems evident that providing people with the

[1] See, among others, Dustmann et al. (2019); Halla et al. (2017); Barone et al. (2016).

[2] https://www.ipsos.com/ipsos-mori/en-uk/perceptions-are-not-reality-things-world-gets-wrong

[3] For instance, in 2013, 30% of European citizens reported that their first source of news on political matters was the Internet (Eurobarometer, 2013).

possibility of going online is potentially an opportunity for making them better informed: indeed, Internet users can consume and produce information without restriction and at a reasonable cost. However, having access to more sources of information is not necessarily synonymous with greater transparency. This is particularly true in the context of the Internet, in which the almost unlimited possibilities of supplying information generate the risk of information overflow. As a reaction, people may concentrate their attention on a limited number of topics and areas that they want to hear and read about, which may foster a degree of segregation and ideological polarisation (Mullainathan and Shleifer, 2005). A second and related concern associated with the diffusion of the Internet is that this technology may crowd out traditional (and potentially more informative) news sources, the experience suffered by newspapers following the introduction of television (Gentzkow, 2006). In this regard, both Nardotto et al. (2018) and Falck et al. (2014) find that Internet availability reduced the use of traditional media, especially (local) newspapers.

The setting for my analysis is Spain, a country which is particularly interesting for conducting a study of this nature. First and foremost, the case of Spanish immigration is unique, due to both its magnitude and timing. Indeed, during the first decade of the twenty-first century, Spain experienced one of the largest waves of migration in European history and saw its share of immigrant population increase from 1% at the beginning of the 1990s to around 12% in 2008. Second, as highlighted by Hatton (2017), among European countries, Spain is the one in which the correlation between press coverage and the salience of immigration is highest: this means that the degree of importance that Spanish people attribute to immigration as a policy issue is highly related to the attention that the media dedicate to the topic. Finally, particularly appealing data are available for analysing this issue empirically. On the one hand, the diffusion of broadband Internet in the country can be tracked at a high level of geo-localisation; on the other, an exhaustive and representative multi cross-sectional study on attitudes has been carried out by the “Centre of Sociological Investigation" (*Centro Investigaciones Sociológicas* - CIS). Access to a restricted version of the latter’s findings allows me to investigate in detail just how well informed Spanish people are about the level of immigration in their country and how they perceive the immigrants present in their territory. Pivotal to the identification strategy, the data also enable me to compare native attitudes towards immigrants before and after the arrival of the Internet.

Identifying a causal effect of Internet exposure, however, is far from straightforward. Indeed, there may well be unobserved factors correlated with both changes in Internet diffusion and attitudes towards immigrants. In such a scenario, a simple OLS regression with Internet coverage as the main explanatory variable would suffer from problems of endogeneity. I tackle this issue in two ways. The inclusion in the analysis of local fixed effects, with observations drawn from both pre- and post-Internet periods, allows me to address estimation biases due to unobserved time-persistent factors. In a similar way to Campante et al. (2017) and Falck et al. (2014), I address the endogeneity of Internet availability resulting from time-varying factors by looking at pre-existing voice telecommunication characteristics. More specifically, I instrument the availability of the Internet with the number of traditional telephone landlines recorded in 1996 in each municipality. Indeed, the diffusion of the Internet is strictly correlated with the pre-existing level of development of landlines, given that ADSL technology relies on data transmission over the user's copper telephone line. In this sense, a higher number of fixed-lines is associated with lower costs in providing Internet availability. At the same time, the wide diffusion of landline telephones in 1996 and the fact that the national provider (*Telefonica*) at that time was public – which meant the ultimate objective was to offer telephone lines to as many citizens as possible – allow me to address any selection bias in households provided with fixed-line telephones. Clearly, the number of landlines was not randomly distributed: following Campante et al. (2017), the identification strategy relies on interacting the instrument for Internet availability with the time variation between the two periods (pre- and post- Internet), assuming that the only factor that changed the relationship between the number of fixed telephone lines and some unobserved characteristic was the introduction of broadband technology. In other words, my identification strategy depends on the change in the impact of the number of landlines on the outcome variables, assuming that whatever correlation existed between these elements did not change when the Internet was introduced.

The results of this study show that, between 2008 and 2012, Internet availability generated distinct and quantitatively important effects on immigration-related issues. First, it changed the level of information obtained by Spanish people about the migratory phenomenon and, in particular, their perception of the number of immigrants present in the territory. Interestingly, perceptions about national and local numbers of immigrants differ remarkably. On the one hand, Spaniards living in areas with higher Internet coverage are more likely to estimate correctly the percentage number of for-

eigners present in the country and, in particular, they are less prone to overestimate their presence. On the other hand, the Internet is associated with a misperception of local migration dynamics and, if anything, with an upward-biased estimation of non-natives living in the respondents' municipalities. When asked their opinion on immigration, an increase in the number of natives claiming that "immigration is good for the country" was observed in areas with high Internet coverage, despite the absence of any difference in the pre-Internet era (1995-1996). This result holds when relevant personal and municipal controls – including the share and origin of the immigrant population in the respondent's municipality – were introduced as well as when several robustness checks were conducted. Additionally, this effect is stronger among young and urban respondents, i.e. those individuals are more likely to obtain information online. Other measures of attitude – related to concerns about the job market and competition for public goods as well as to worries about cultural distance – are in line with this result, suggesting overall that the possibility of going online is responsible for an increase in positive attitudes towards immigrants. Interestingly, these results are not without their political consequences. Indeed, the CIS questionnaires report which party the respondent voted for in the last election. In this regard, the Internet reduces the number of individuals that report having voted for Spain's traditional right-wing party, *Partido Popular* (PP).

This paper can be associated primarily with three strands in the economics literature. A large body of studies has analysed the main channels via which native perceptions of immigrants are shaped (see Hainmueller and Hopkins (2014) for a review). The pioneer works looked at the impact of immigrants on the labour market and public transfers (see, among others, Dustmann et al. (2005); Facchini and Mayda (2009); Preston (2014)) as well as at the racial factor (Mayda, 2006; Dustmann and Preston, 2007). A more recent development in the literature has identified another important factor that might impact support for immigration: the role of information. In this regard, by conducting online experiments, Grigorieff et al. (2020) show that individuals provided with figures about immigrants (the proportion of legal and illegal immigrants in the U.S., the unemployment rate of immigrants, their incarceration rate, and the proportion of immigrants who cannot speak English) update their beliefs and develop a more positive attitude towards immigration and look more favourably on an increase in the number of legal immigrants. Similarly, in the case of Japan, Facchini et al. (2016) find that providing individuals with information about the potential social and economic benefits of immigration led to a substantial increase in support for a more open immigration policy. Lastly,

Alesina et al. (2018) show that certain treatments of respondents' perceptions of the number, origin, and "hard working" nature of immigrants make them more favourable to redistribution. Here, using a representative survey database that covers different periods in time, I seek to generalise the external validity of my experimental results. Moreover, the high level of detail of the CIS study allows me to identify the channels via which attitudes are impacted by new information.

Some studies have sought to determine whether the media have the capacity to shape attitudes towards immigrants and if so how they do so. For instance, using data from the European Social Survey, Héricourt and Spielvogel (2014) find that individuals who spend more time informing themselves about social and political matters by reading the press or listening to the radio have a better opinion of the economic impact of immigration. By contrast, in a recent paper exploring the link between mass media coverage and immigration worries, Benesch et al. (2019) show that the number of media reports dedicated to migration issues is positively associated with concerns about immigration among the German population. Unlike the studies reviewed above that, in the main, have analysed the role of the traditional media, here, I focus on the digital media, or more specifically, the Internet, which has established itself as a source of news for an increasing number of citizens. In addition, most of the studies conducted to date are only able to detect a correlation between the variables, while, here, I specifically address the endogeneity associated with the demand side of media using a more rigorous econometric approach. Moreover, the relationship I examine between attitudes towards immigrants and media coverage is much more precisely defined in geographical terms.

Finally, in terms of methodology (and, in part, of outcome variables), this paper is similar to recent studies that have sought to evaluate the impact of the Internet on political outcomes[4]. In analyses of German and Italian political elections, respectively, Falck et al. (2014) and Campante et al. (2017) report a negative effect of Internet availability on voter turnout in parliamentary elections. A decrease in political participation was also found also by Nardotto et al. (2018) in a study of UK local elections. In terms of party preferences, an increase in the vote share for a new, web-friendly party (*Five-Stars Movement* was observed in areas with higher Internet diffusion in Italy (Campante et al., 2017); by contrast, no evidence that the Internet systematically benefits single parties was reported

[4]For a detailed literature review of the impact of Internet and Social Media on political outcomes, see Zhuravskaya et al. (2019).

in Germany (Falck et al., 2014). However, despite the obvious importance of the influence of the digital media, little is known about other politically relevant outcomes that the Internet might have. Indeed, attitudes towards immigrants can be especially malleable and they constitute a highly controversial issue in recent political debates, which makes the way in which they are formed an area of particular interest for academic study.

The rest of the paper proceeds as follows. Section 2 provides a description of the Spanish context, examining the development of Internet and analysing the country's migration dynamics and political situation; Section 3 describes the data used, focusing above all on the novel, confidential dataset provided by CIS; Section 4 outlines the empirical strategies used and analyses the effects of Internet availability on the level of information about migration dynamics as well as different attitudes towards immigrants; Section 5 studies the impact of the Internet on political outcomes; and, Section 6 concludes.

2 Spanish context: Internet, Migration and Political background

2.1 Internet in Spain

Compared to other European countries, the diffusion of broadband Internet in Spain has lagged behind. The first Internet connections officially arrived in Spanish homes in 2000 while in 2004 the first ADSL subscriptions (1 Kbps upstream rate) were offered. However, according to Eurostat[5], in 2012, broadband Internet was available in just 67% of Spain's households, far fewer, that is, than in many other European countries, including France (77%), the UK (80%) and Germany (82%) and even below the EU27 average (72%). Moreover, according to a 2013 report by the European Commission[6], broadband access costs in Spain were the second most expensive in Europe. Nonetheless, during the period that concerns us here, the share of households supplied by broadband (ADSL) technology rose dramatically at the national level. Figure 2 in the Appendix reports the evolution taken by Internet coverage in Spain between 2006 and 2015: as shown, in this period, the share of households supplied by broadband Internet increased from less than 30% to almost 80%. Importantly for my identification strategy, this variation is apparent not only across time but also spatially, given that differences in

[5]http://ec.europa.eu/eurostat/documents/3433488/5585460/KS-SF-12-050-EN.PDF/39000dab-e2b7-49b2-bc4b-6aad0bf01279, consulted on June 2018.

[6]https://ec.europa.eu/digital-single-market/en/news/study-retail-broadband-access-prices-2013-smart-20100038

the coverage of ADSL technology can be observed between the provinces of Spain (see Figure 3).

Note that, in theory, Internet applications may be multiple, ranging from gaming to providing access to online services and platforms. Indeed, the literature examining the effect of the Internet on electoral participation posits that one of the main reasons why the Internet makes citizens less likely to vote is that, by having access to Internet, individuals consume more entertainment at the expense of time spent on acquiring political information. Thus, it is critical to analyse how broadband technology is actually used when considering whether it might change attitudes towards immigrants. In this regard, the annual "Survey on Equipment and Use of Information and Communication Technologies in Households", whose principal aim is to investigate the online habits of Spanish people, provides an interesting picture: as Figure 4 shows, the percentage share of Spaniards using the Internet to read online newspapers surged in the period considered, rising from 42% in 2008 to 64% in 2012. This serves to confirm that the Spanish used the Internet to obtain online news and that, potentially, this played a role in changing the level of information they had about politics and immigration.

2.2 Migration in Spain

As indicated above, the case of Spanish immigration is unique in both its magnitude and timing. Compared to Greece and Italy, Spain was much less involved in the 2015 refugee crisis: of the one million sea arrivals registered in Europe in 2015, only a few thousand reached Spanish shores. This can be attributed mainly to its geography, that is, located considerably further than Greece and Italy from the hotspots of Syria and the Middle East, from where the refugees were fleeing. Despite this, immigration has been very much an issue in the country in recent years. During the first decade of the twenty-first century, Spain experienced one of the largest waves of migration, relative to its population, in European history. Between 2002 and 2014, Spain received an accumulated immigration inflow of 7.3 million and a net flow of 4.1 million, making it the second-largest recipient of immigrants in absolute terms among OECD countries, after the United States (Brugel, 2015[7]). This demographic surge is clearly evident in Figure 5, which shows the total stock of foreign people living in the country over time. Most immigrants came to Spain to work, attracted by the vigorous economic growth that characterised those years, while a small percentage was composed of asylum seekers (Jofre-Monseny et al., 2016). In terms of their country of origin, the immigration wave

[7]http://bruegel.org/2015/12/the-remarkable-case-of-spanish-immigration/

was highly heterogeneous with the largest inflows originating from Ecuador, Morocco, Romania and Colombia. According to the National Statistics Office, in 2017, the largest share of non-Spanish people were Moroccans (16.4%) and Romanians (15%), followed by the English (5.3%), Italians and Chinese (both 4.6%). Table A1 shows the change in the make-up of Spain's foreign population over the last twenty years. The average immigrant arriving in this period was relatively high-skilled: according to the 2011 census, 55% (20%) were reported to have at least a secondary (tertiary) education, a figure not that distant from the figure for the native population – 64% (31%). Moreover, this relatively skilled supply of immigrants has been shown not to have damaged the native labour market, in terms of the employment rate or wages (Carrasco et al., 2008), and to have actually increased both native women's labour supply (Farré et al., 2011) and the per capita income of provinces with high immigration flows (Conde-Ruiz et al., 2008); Furthermore with respect to other European countries with a smaller share of immigrants, Spain recorded lower growth in criminal activity in this period (Alonso-Borrego et al., 2012).

2.3 Spanish Political Context

Traditionally, in Spain, the votes cast at the general elections were distributed among a very small number of political parties. Until 2011, the two main parties, the right-wing conservative *Popular Party* (PP) and the leftish Spanish Socialist Workers' Party (PSOE) split more than 70% of the vote. Although it can hardly be described as xenophobic, the PP did, nevertheless, implement policies in response to the exceptional waves of immigration described above that can be considered anti-immigrant. For example, in 2012, the PP government introduced the controversial *Real Decreto-Ley 16/2012*, depriving access to healthcare to undocumented immigrants. This anti-immigrant stance is further confirmed by quantitative content analyses of the party's manifestos, which highlight a relatively high proportion of references to the enforcement or the encouragement of cultural integration (Volkens et al., 2012).

3 Data

3.1 Attitudes towards immigrants

Despite the subject's importance, national-level data describing attitudes towards immigrants are not common and where they do exist, they are usually recent and not representative of a whole country but just of its main cities. Additionally, more often than not, questions regarding attitudes towards immigrants form part of broader (often multi-country) surveys, typically about citizens' main concerns or problems, with no specific focus on attitudes held. This, however, is not the case in Spain, where a long, (almost) annual cross-sectional study has been dedicated to just this question. In the survey, carried out by the Sociological Research Center - CIS (*Centro Investigaciones Sociológicas*)[8], Spanish respondents are asked several questions related to their opinion about the country's immigrant population, their relationship with immigrants and their fears in relation to immigration. From this survey, it is also possible to estimate the level of information – at both the national and local level – about the immigration phenomenon, by looking at the respondents' perceptions of the share of foreign people present in the country and in the municipality. Finally, political preferences are also detectable, as participants must indicate whether they voted in the last elections and, if so, for which party they cast their vote. Importantly, this paper leverages a restricted version of the survey, from which it is possible to discern the respondent's municipality. This allows me to identify the relationship between Internet access and attitudes towards immigrants with a level of geographical detail that is rare in the literature. In my analysis, I use five waves of the survey from 2008 to 2012, the same span of years for which data on Internet penetration are available. Additionally, and pivotal to my identification strategy, I use the (only) two waves carried out before the arrival of the Internet, namely in 1995 and 1996. These two waves are largely comparable to the more recent ones – both in terms of geographical representation and in terms of questions asked – and they allow me to measure how Spaniards viewed immigrants before the development of broadband technology. Once I combine the seven waves, the dataset – which, as well as the outcome variables I consider, includes the respondents' personal and social characteristics (including, gender, age, profession, social class, employment status, level of education, etc.) – comprises 19,293 observations, of which 13,110 belong to the post-Internet period (from 2008 onwards). Each wave includes at least 2,500 observation and, overall, 866 different municipalities are represented, the mean number of observations per munici-

[8] http://www.cis.es/cis/opencm/ES/2_bancodatos/estudios/listaTematico.jsp?tema=82&todos=no

pality being 109. Table A2 reports the personal characteristics of the sample while Table A3 reports those of the municipalities in which the respondents live. All interviews were carried out in person in the respondent's house.

3.2 Internet Availability

Data on Internet availability are drawn mainly from the *"Anuario Economico de España - La Caixa"* (Economic Yearbook of Spain), in which records of the number of broadband lines are provided for 2007, 2008, 2009 and 2012 at the municipal level for around 3250 municipalities [9][10]. Dividing the number of broadband lines by the total population in the municipality, I obtain the share of Internet penetration. The same database also reports the number of landlines in 1996 at the municipal level, and, as is explained in more detail in the next section, this information is used as an instrumental variable for Internet availability. An additional source for measuring Internet penetration is the aforementioned "Survey on Equipment and Use of Information and Communication Technologies in Households". This source, however, has the drawback of being limited to the provincial level. However, since it captures the online behaviour of Spaniards well, it is useful for undertaking a descriptive analysis of these habits.

3.3 Demographic Data

Data for municipal controls (time invariant and variant), including population size and density, population composition by age bracket, unemployment level, the share of people with a high level of education, number of household members, area and altitude of the location come from the INE (National Statistics Office) and from the 2001 and 2011 Spanish Censuses. Other relevant controls at the municipal level, including number of cars, banks and commercial activities, as well as the number of offices and cultural venues per capita are provided by *"Anuario Economico de España - La Caixa"*. Finally, data about the immigrant population, in particular the share and origin of immigrants, come from *Padrón Continuo*, the main official Spanish register of foreign people living in the country.

[9] They provide data for all the municipalities with more than 1,000 inhabitants, accounting for 96.8% of the population.

[10] To address the lack of data on broadband lines for 2010 and 2011, I interpolate them using the recent *ipolate* Stata command (see Cox (2015) for a comprehensive guide and Cobham and Janskỳ (2019) for a recent application).

4 Impact on the immigration topic

4.1 Perceived Number of Immigrants

Overall, people tend not to be well informed about the dynamics of immigration. They show a lack of knowledge about sophisticated facts, such as immigrant characteristics, and also about more basic facts, such as the number of immigrants present in their territory. Being clear about these figures is particularly important because, as experiments show, they can make people change their way of thinking about immigration policies (Facchini et al., 2016; Grigorieff et al., 2020). This information can be readily accessed online and we would expect a greater diffusion of the Internet to be associated with a greater level of information about the migratory phenomenon. To determine if this is indeed the case, I take advantage of the fact that, between 2008 and 2012, CIS questionnaires included a question asking respondents to report their perception of the proportion of non-Spanish people living in the country. Figure 6 shows the average share of non-natives that Spaniards thought were present compared with the actual percentage. The graph stress that Spain is no exception with respect to other European countries as respondents widely overestimated the proportion of immigrants.

To determine whether the Internet is associated with a different awareness among users of immigration dynamics, I run the following PROBIT Equation:

$$MigrationInfo_{i,m,t} = \beta_1 InternetAvailability_{m,t} + \beta_2 X_{i,t} + \beta_3 W_{m,t} + \tau_t + \psi_p + \epsilon_{m,t} \quad (1)$$

where the dependent variable is a dummy equal to one if the individual *i*, living in municipality *m*, has a correct level of information on the immigration phenomenon at time *t*. More specifically, I attribute a value equal to one to the dependent variable if individual *i* thinks that the percentage of immigrants is between 11 and 15%, given a real fraction which, in that period, fluctuated around 13% The choice of this range is essentially linked with the way the questionnaire is structured. In fact, if respondents answered “I don’t know" to the open question about the perceived share of immigrants living in Spain, they were offered a battery of ranges (0%; from 1% to 5%; 6-10%, 11-15%; 16-20%; 21-25%; 26-30%; above 30%) from which they were asked to pick the one they thought to be the most likely. In order to maximise the number of answers for the analysis, I transform the answer from the open question to a categorical indication and selected as the correct range 11-15%. I also run the

same equation where the dependent variable is equal to one if the respondents report that the share of immigrants is above 15% - i.e. if they overestimate the number of immigrants. The main explanatory variable, *Internet Availability*, is the share of Internet coverage at the municipal level in year *t*. X is a vector of individual controls of the respondent's self-reported characteristics, including gender, age, social class, working status, economic condition, level of education and political preferences. At the same time, W controls for the characteristics of the location in which the individual lives, including the population, the surface area, the population density and the altitude of each municipality. These features are relevant insofar as they capture the level of urbanisation and any infrastructural difficulties in installing the Internet. Importantly, W also includes the share of immigrants present in the municipality as well as their origin. Indeed, the cultural and ethnic composition of the immigrant population is an important element when natives are surveyed about non-natives (Lind, 2007; Luttmer, 2001). To address this issue, vector W also controls for the share (over the total population of foreign-born) of EU15, (Non-EU15) European and Sub-Saharan immigrants. Lastly, time and area fixed effects are represented by τ_t and ψ_p respectively. Specifically, for this part of the analysis, I add to the equation province[11] fixed effects (ψ_p), given that a battery of municipality dummies would lead me to losing observations from municipalities that only appear in one wave. Finally, ϵ represents a robust error term clustered at the municipal level, while throughout the analysis I weight the observations for the level of representativeness in the survey of each municipality per year[12].

Table 1 reports the results: specifically, the first two columns refer to a correct perception of the national immigration dynamics, while columns 3 and 4 examine the effect of Internet availability on the probability of overestimating the number of immigrants. The coefficients show that greater Internet availability is associated with a higher probability of answering the question correctly. In other words, having access to the Internet is reported as being associated with a better knowledge of immigration dynamics in Spain. At the same time, the last two columns report that between 2008 and 2012 respondents living in areas with higher Internet penetration are less likely to overestimate the share of non-natives in the country[13]. Both results are stable when municipal and personal controls are introduced. The interpretation of PROBIT coefficients is not straightforward; the second

[11] Spain is made up of 50 provinces, with populations ranging from 95,258 to 6,458,684.

[12] In the appendix, I provide results for the unweighted regressions, as well as when alternative weights are used, i.e. the (log of the) population of the municipality.

[13] Results are consistent also when using higher thresholds, 20%, instead of 15%.

Table 1: Information on Immigration - National dynamics

	(1)	(2)	(3)	(4)
	Correct estimation		Overestimation	
Internet share	1.104***	0.882**	-1.240***	-0.801**
	(0.400)	(0.389)	(0.296)	(0.316)
Average Marginal Effect	0.239	0.186	-0.478	-0.290
Municipal Controls:	No	Yes	No	Yes
Personal Controls:	No	Yes	No	Yes
Observations:	11141	11141	11163	11163

Probit model. Dependent Variables: Dummy equal to one if the respondent reports a correct estimated range of immigrants living in the country (column (1) and (2)); Dummy equal to one if the respondent reports an over-estimated range of immigrants (>15%) living in the country (column (3) and (4)). Real share of immigrants: between 12.8% (2012) 13.9% (2009). Years: 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants, % of non-EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrants population. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

panel in the table shows the average marginal effects of the coefficient which are helpful in this respect: setting all variables to their means, a one-unit change in Internet penetration, increases the probability of estimating the number of immigrants correctly by 18 percentage points.

I was also interested in determining whether this same trend held for the perception of immigrant numbers at the local level. Indeed, one of the potential effects of the diffusion of the Internet is that it may have accelerated the decline of newspaper distribution, most notably of the local press, as found in Germany and in the UK, respectively by Falck et al. (2014) and Nardotto et al. (2018). Indeed, newspapers are the most important source of information on local issues and local politics (Bruns and Himmler, 2011) and it may be the case that the Internet might generate different effects on the level of information about national vs. local immigration dynamics. This idea is confirmed by Table 2, which shows the results for Equation 1, where the dependent variable is a dummy equal to one if respondents correctly perceive the share of immigrants at the local level or if they over-estimate their presence[14]. Indeed, totally different perceptions are detected when local immigration dynamics are investigated. Spaniards living in areas with high Internet penetration are less likely to estimate correctly the share of immigrants living in their municipality and, once personal and

[14]The dependent variable is constructed following the ranges used for the national level analysis.

Table 2: Information on Immigration - Local dynamics

	(1)	(2)	(3)	(4)
	Correct estimation		Overestimation	
Internet share	-1.356**	-1.430***	0.334	0.791*
	(0.619)	(0.501)	(0.596)	(0.455)
Average Marginal Effect	-0.383	-0.391	0.130	0.278
Municipal Controls:	No	Yes	No	Yes
Personal Controls:	No	Yes	No	Yes
Observations:	10803	10803	10803	10803

Probit model. Dependent Variables: Dummy equal to one if the respondent reports a correct estimated range of immigrants living in the municipality (column (1) and (2)); Dummy equal to one if the respondent reports an over-estimated range of immigrants living in the municipality (column (3) and (4)). Years: 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants, % of non-EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrants population. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

municipal controls are introduced, they seem to significantly overestimate this share. This pattern confirms that the Internet might have a differential impact on the level of user information. On the one hand, it makes people better aware of global/national issues; yet, on the other, they suffer a loss of information regarding local dynamics.

4.2 Attitudes towards immigrants: Empirical approach

Individual perceptions of and attitudes towards immigrants can be formed from different sources, among which, the media represent one of the most important (Vliegenthart et al., 2008). Doubtless, the media constitute a major channel of information and, as such, a key determinant of beliefs; however, a priori, it is not clear in which direction access to news content might impact citizens' views on immigrants, especially if we consider the highly self-segregated news platform provided by the Internet. Here, I undertake an empirical analysis of this question by examining the responses to the survey on attitudes towards immigrants that the CIS conducts on an almost annual basis. In terms of its level of representation and detail, as well as the number of waves, this study is unique in Europe. Additionally, the fact that I have been afforded access to the restricted version of the survey means I have been able to identify the municipality in which each respondent lives and so

I can study the relationship between Internet penetration and attitudes towards immigrants with a topographical level of detail rarely seen in the literature. Equally important is the availability of two earlier waves of the survey, corresponding to 1995 and 1996 – i.e. before the arrival of the Internet – which, in terms of their geographical representation and questions asked, are largely comparable to those conducted between 2008 and 2012. Specifically, in all the waves, including those for 1995 and 1996, participants are asked several (identical) questions related to their perceptions of immigrants. Among these, one of the most interesting seeks to evaluate Spaniards' general attitudes towards immigrants and is formulated as follows: *"Overall, do you think that immigration is bad, good, or neither bad nor good for the country?"*. Exploiting responses to this question both pre- and post-Internet, I run the following equation:

$$AttitudeImmigrants_{i,t} = \beta_1 InternetShare_{m,t} + \beta_2 X_{i,t} + \beta_3 W_{m,t} + \tau_t + \psi_p + \epsilon_{m,t} \quad (2)$$

where the dependent variable is a dummy equal to one if the respondent reports that immigration is good for the country and 0 if (s)he has a different opinion (note, missing answers or "Don't know" are not included). As in Equation 2, here the main explanatory variable, *Internet Availability*, is measured as the ratio between the number of broadband lines and the population living in a municipality and is equal to 0 in the pre-Internet period. In this regard, it should be pointed out that broadband access is a slightly better measure than penetration because the latter is obviously the result of endogenous individual decisions. Additionally, in the robustness check, I run the same regressions with total number of households in the municipality as the denominator rather than the population. As described above, X and W are, respectively, vectors of relevant personal and municipal characteristics; while τ_t and ψ_p represent time and area (province) fixed effects, respectively.

As previously highlighted, Internet diffusion is far from being random. Indeed, Internet suppliers are more likely to invest in places where demand is potentially higher, given the characteristics of the location and its inhabitants. These unobservable characteristics might potentially be correlated with local perceptions of immigrants and the results derived from OLS regressions might suffer from problems of endogeneity. In line with the recent literature examining the impact of broadband technology on political outcomes, I address this issue in two ways. The introduction of local fixed effects, with observations from both before and after the introduction of Internet technology, allows me to

overcome the estimation bias attributable to unobserved time-persistent factors. However, there may still be some unobservable time-varying factors that affect both attitudes towards immigrants and Internet availability. To address this issue, I instrument for Internet availability as follows:

$$InternetShare_{m,t} = \gamma_1(LandlinesShare1996_m * PostInternet) + \gamma_2 X_{i,t} + \gamma_3 W_{m,t} + \theta_t + \zeta_p + \eta_{m,t} \tag{3}$$

where θ_t and ζ_p are year and province fixed effects. *LandlinesShare1996* is the time-invariant share of fixed-telephone lines (over the total population) in municipality m in 1996. Above all, in the early phase, the diffusion of the Internet was strictly correlated with the pre-existing level of development of landlines, given that ADSL technology relies on data transmission over the user's copper telephone line. In this sense, a higher number of fixed-lines is associated both with a smaller cost in providing Internet services and with a greater proximity to the local telephone exchange (or Main Distribution Frame - MDF)[15]. Figure 7 confirms the high correlation between the share of landlines in 1996 and Internet penetration, while the spatial correlation is demonstrated by the maps in Figure 8. At the same time, I should stress another important point related to this identification strategy. In 1996, the use of the home telephone was very common. In this sense, low telephone network coverage should be associated with difficulties in bringing the telephone service into the municipality and not with the individual's choice of not having a telephone in the home. Moreover, the national company responsible for the telephone service - *Telefónica* - was public at the time, which clearly suggests that the ultimate goal was to provide a telephone service for the largest number of citizens, even in areas where it was not economically viable to invest. This reinforces the idea that low telephone network coverage should be associated with technical difficulties (due, for instance, to the nature of the terrain or the presence of mountains) in providing the service and not with selection bias in households provided with fixed-line telephones.

Although the demand for fixed telephones in 1996 preceded the development of the Internet, it is, of course, also related to certain municipal characteristics which, in turn, might be associated with the municipality's view of immigrants. Following Campante et al. (2017) to 'net out' the correlation

[15]One of the most commonly used instruments for Internet availability in the literature (Campante et al., 2017; Falck et al., 2014) is the location of MDFs - which connect the central office switches to lines that go into people's homes. However, data on their position in Spain are not available. Other instruments include location of backbones (Miner, 2015) and rainfall (Nardotto et al., 2018).

between our outcomes of interest and these characteristics, the instrument used in Equation 3 is constructed by interacting the share of landlines with a dummy equal to one for the post-Internet observations. In essence, I implement a differences-in-differences approach, 'turning the instrument on' when the observations come from the post-Internet era. The identification assumption is that any change in the impact of the number of fixed telephone lines on the dependent variable occurs only through Internet availability. In other words, I am 'netting out' the change in the effect of the number of landlines of the variables of interest, under the assumption that any change in that effect occurs exclusively through the new technology.

4.3 Attitudes towards immigrants: main results

Before describing the econometric results obtained with the identification strategy outlined above, it is worth noting that, when it comes to attitudes towards immigrants, Spain today is an outlier. In 2018, it was the country with the highest percentage of respondents reporting that they would feel comfortable having an immigrant as a social relation (more than 80% in contrast with an EU average of around 55%)[16]. However, these attitudes were by no means prevalent during the period analysed here. For instance, in 2012, the percentage of people agreeing with the statement "Immigrants contribute a lot to your country" was just 48%, one percentage point lower than the EU27 average (Eurobarometer, 2012). Similar attitudes can also be observed in Figure 9, which shows the trend in the nature of CIS respondents' initial response, or 'first thought' in relation to immigration. These thoughts have been categorised as positive – or, at least, empathetic – (such as "inequality", "poverty" or "lack of human rights"), neutral ("foreign people") and negative sentiments ("crime", "steal jobs", "reduction in public goods"). As is evident, for most of the period of analysis (i.e., from 2008 to 2011), the majority of respondents expressed negative sentiments in relation to the word immigration. A shift in the trend, however, can be observed in 2012, when the percentage of respondents with empathetic sentiments overtook that of those reporting negative sentiments, as is evident in the right tail of the trend, this gap increased substantially in the last two waves (2014 and 2015). Additionally, Figure 10 highlights two more interesting patterns. First, an inspection of the left-hand side of the figure, which reports Spanish attitudes towards immigrants before the arrival of the Internet, reveals no differences in the rates of positive views between the municipalities with (future) high and low Internet coverage. In 1995-1996, 41.3% of respondents living in areas with low Internet penetration in

[16] see https://www.economist.com/graphic-detail/2018/04/19/europeans-remain-welcoming-to-immigrants

2008-2012 reported having positive attitudes towards immigrants: a very similar percentage to that recorded in areas with future high broadband diffusion (41.2%). This provides suggestive evidence that the parallel trend hypothesis holds and, reassuringly for the identification strategy, that the results are not picking up some underlying trend in attitudes that just happened to be correlated with the diffusion of broadband. Second, as is evident from the right-hand side of the figure, in municipalities with a higher level of Internet share, the percentage of respondents reporting that immigration is good for the country increased, while a dramatic drop is observable in the "low-Internet" areas. This pattern is confirmed by Table 3, which shows the results of Equation 2. The OLS coefficients, both with and without municipal and personal controls are positive and significant, showing that access to the Internet is associated with a higher probability of having a positive view of immigration. Columns (3) to (5) present the results when Internet availability is instrumented as described in Equation 3. First, it should be noted the relatively high values of the F-Statistics and the strong significance of the first stage, whose coefficient has the expected positive sign. The IV coefficients are positive and the addition of personal and municipal controls does not alter the result. In the most complete specification – i.e. when controlling for both personal and local features as well as for year and province fixed effects – the result is positive and significant; additionally, the IV coefficient is higher, highlighting a downward bias of the OLS coefficient. In terms of magnitude, the difference between OLS and IV coefficients is similar to that found in studies that use similar identification strategies (Falck et al., 2014; Campante et al., 2017; Nardotto et al., 2018).

Another potentially interesting outcome variable to explore are the responses to the question: *"Do you think there are too many immigrants in the country?"*. Here, too, the question was asked both before and after the arrival of the Internet and, thus, the same identification strategy can be applied. Table 14 in the Appendix reports the results, where the dependent variable is a dummy equal to one if the respondent answered the question in the affirmative. Although not as strong statistically, the results are qualitatively similar to those in Table 3, indicating a negative impact of the Internet on the probability of considering there to be too many immigrants in the country.

Taken together, these results point to a number of interesting patterns. Internet penetration is associated with a better knowledge of immigration dynamics, although this is limited to the national context; by contrast, if anything, a negative relationship between broadband technology and aware-

Table 3: Positive view (OLS and IV regressions)

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	1.358***	0.834***	3.761***	3.038***	2.841**
	(0.190)	(0.165)	(0.760)	(0.813)	(1.136)
First Stage	-	-	0.177***	0.175***	0.168***
F Test:			88.39	82.04	69.03
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17036	17036	17036	17036	17036

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

ness of immigration dynamics at the local level is found. In the case of attitudes towards immigrants, Internet availability is responsible for an overall better view of immigrants. Indeed, the Internet increases the probability that respondents believe immigration to be good for the country, while it decreases the likelihood that respondents believe there to be too many immigrants in the country. In the next sections, the robustness of these findings is checked and I explore whether the results are heterogeneous depending on the conditions.

4.4 Reduced form and robustness checks

Table 4 presents the results of the reduced form. Specifically, the first three columns display the results when the equation is run for the post-Internet era, while columns (4) and (5) show the results for the pre-Internet era. Taking the municipal share of landlines in 1996 as the explanatory variable, a positive and significant effect on attitudes towards immigrants is still generated in the 2008-2012 period, and while the coefficient values are smaller, they remain comparable to the OLS in Table 3. Reassuringly, no effect is found when the same equation is run in the 1995-1996 period: indeed, the coefficients in columns (4) and (5) are not significant and they are close to zero. Additionally, Figure 1 reports the coefficients of the reduced form equation estimated separately for each year, including the full set of controls. As is evident, in the two years before the arrival of the Internet, the coeffi-

cients are close to zero and relatively similar to each other; by contrast, a significant increase in the coefficients can be observed from 2008 onwards.

Table 4: Positive view (OLS regressions) - Reduced form

	(1)	(2)	(3)	(4)	(5)
		Post-Internet era			Pre-Internet era
Telephone 96 share	0.533***	0.362***	0.408***	0.0467	-0.0684
	(0.0748)	(0.0786)	(0.105)	(0.182)	(0.211)
Municipal Controls:	No	No	Yes	No	Yes
Personal Controls:	No	Yes	Yes	No	Yes
Observations:	17036	17036	17036	4691	4691

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 2008-2012 (Columns 1-3); 1995-1996 (Columns 4-5). All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Explanatory Variable: share of landlines in 1996. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Figure 1: Coefficients from the reduced-form regressions, controls included

Tables 15 to Table 19 in the Appendix provide robustness checks on the results presented in Table 3. First, given the dichotomous nature of the dependent variable, Table 15 presents the results using a

Probit and an IV Probit approach: as is evident, the coefficients are comparable in terms of direction and level of significance; however, during my analysis, I prefer to implement an OLS / IV approach because the results can be interpreted more readily. Furthermore, Table 16 shows the coefficients when the population weights are not used. Indeed, taking advantage of the local representativeness of the inquiry, throughout the analysis I weighted the observation by the number of respondents for each municipality in each year. However, it is important to check that the results are not driven by the weights, as confirmed by Table 16. Similarly, Table 17 presents the results when using an alternative weight, namely the (log of) population of the municipality. Indeed, when it comes to survey data, weighting the population observations is useful so as to increase the level of national representativeness (Johnson, 2008). In this case too, the results hold. My main explanatory variable gives rise to an additional concern due to the fact that it might potentially suffer from a measurement error as I divide the number of broadband lines by the total population of the municipality rather than by the number of households. The housing censuses of 2001 and 2011 are useful here for addressing this issue, given that they provide the number of households at the municipal level for these two years. Thus, in Table 18, I calculate the Internet penetration dividing the number of broadband lines by the number of households in 2011 whereas the instrument is calculated as the share of the number of telephone lines in 1996 over the total number of households in 2001. As is evident, results are almost unchanged when this Internet measure is used, despite a clear reduction in the magnitude of the coefficient. On the one hand, this approach has the advantage of providing a measure closer to the real Internet penetration rate; by contrast, it suffers from a measurement error linked with the fact that it does not capture the change in the population. Given that the relevance of this measurement error is unknown, throughout my analysis, I prefer to calculate the Internet penetration rate by looking at the time-varying population. Finally, another source of concern might derive from the fact that my instrumented explanatory variable, *Internet Availability*, is calculated at the municipal level, while the dependent variable and the personal controls are at the individual level; this mismatch may weaken my identification strategy. I address this concern by collapsing the analysis at the municipal level – i.e. using as a dependent variable the share of individuals with a positive view over the total number of respondents in the municipality. As shown in Table 19, the results remain stable with this approach.

4.5 Additional results

In this section, I explore potential mechanisms that might drive this pattern by looking at other attitudinal indexes. A large body of literature has studied the main channels via which native perceptions of immigrants are shaped. Overall, natives seem to be concerned about immigration as they fear competition in the labour market (Mayda, 2006) and reduced access to public goods (Facchini and Mayda, 2009). Cultural and ethnic differences in the immigrant population are a further source of worry (Dustmann and Preston, 2007). The CIS survey is particularly suitable for studying the mechanisms that shape respondents' attitudes, given that questions related to the above concerns are put to them. The three concerns – related, that is, to the labour market, public goods and cultural distance – are likely to correlate with the general attitudes expressed and studied up to this point. Indeed, this intuition is confirmed by Table 5. In this table, I focus my attention on individuals with negative attitudes to immigrants; that is, I attribute to the dependent variable a value equal to one if the respondent reports believing that immigration is bad for the country (while a value of 0 is attributed if (s)he believes that it is good or neither good nor bad). Columns (1) to (5) show the results for different potential attitude-related mechanisms. Specifically, columns (1) and (2) investigate job market competition concerns, assigning a value equal to one if the respondent agrees, respectively, with the statements: "Immigrants steal jobs from natives" and "Immigrants force native salaries down"; column (3) examines concerns related to competition for public goods, by attributing a dummy equal to one if the respondent believes that immigrants should not obtain unemployment subsidies; finally, in columns (4) and (5), cultural distance is examined, by determining whether the individual agrees, respectively, with the following statements: "Immigrants should renounce their own culture" and "Immigrants should not be able to obtain Spanish nationality". As is evident, all the coefficients are positive and strongly significant, stressing a high correlation between a generally negative attitude towards immigrants and the mechanisms mentioned above. The results do not change if all the dummies are introduced simultaneously (column (6)).

In order to understand which of these potential channels are most affected by the Internet, I run the instrumented version of the equation 2, where the dependent variables are dummies equal to one if the respondent agrees with the above statements mentioned, taking advantage of the fact that the same question was asked in the surveys both before and after the arrival of the Internet. Tables 6 - 8

Table 5: Channels that explain why immigration is something bad (OLS regressions)

	Immigration is overall bad for the country					
	(1)	(2)	(3)	(4)	(5)	(6)
Steal jobs from natives	0.315***					0.228***
	(0.0137)					(0.00752)
Reduce salaries		0.198***				0.0690***
		(0.00516)				(0.00487)
Unempl. benefit			0.385***			0.217***
			(0.0245)			(0.0413)
Renounce their culture				0.272***		0.125***
				(0.0337)		(0.0402)
No Spanish nationality					0.343***	0.179***
					(0.0108)	(0.0102)
Controls:	Yes	Yes	Yes	Yes	Yes	Yes
Observations:	16238	16088	16266	16547	15336	13631

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is bad for the country" (Blank and Don't know answers excluded). Explanatory variables: Dummy equal to one if the respondent agrees with the following statements: "Immigrants steal jobs from natives"; "Immigrants force native salaries down"; "Immigrants should not obtain unemployment subsidies"; "Immigrants should renounce their own culture"; "Immigrants should not be able to obtain Spanish nationality". Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

(and, in the Appendix, Tables 20 and 21) report the results, following a similar structure to that employed in Table 3 – i.e. reporting the OLS and the IV coefficients with year and province fixed effects, with and without controls. Overall, the results are significant and consistent with those presented in Tables 3 and 14, confirming that Internet availability is responsible for an improvement in attitudes towards immigrants. In the case of concerns related to competition in the labour market, the Internet reduces the percentage number of Spaniards believing that immigrants steal jobs from natives and that their presence drives native salaries down (Tables 6 and 20). Moreover, the Internet plays a role in relation to concerns about increased competition for public goods: broadband technology generates a reduction in the percentage number of respondents claiming that immigrants should not obtain unemployment subsidies, as reported in Table 7. Finally, although the coefficients related to this channel are statistically weaker, the Internet alleviates native fears attributable to cultural distance: indeed, a decrease in the number of people claiming that immigrants should not be able to obtain Spanish nationality is observable as well as among those that believe immigrants should renounce their own culture once they settle in Spain, as is evident from Tables 8 and 21, respectively.

Table 6: Immigrants steal jobs from natives (OLS and IV regressions)

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	IV	IV	IV
Internet share	-0.896***	-0.232	-3.124***	-2.064***	-1.479**
	(0.160)	(0.150)	(0.444)	(0.474)	(0.584)
F Test:			18.13	17.17	15.88
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17573	17573	17573	17573	17573

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigrants steal jobs from natives ". Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.6 Heterogeneity analysis

Finally, it is interesting to determine whether the Internet may have a different impact on attitudes towards immigrants depending on the respondents' personal characteristics or the characteristics

Table 7: Immigrants should not obtain unemployment subsidies (OLS and IV regressions)

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	-0.255***	-0.139*	-0.797**	-0.656**	-0.597*
	(0.0838)	(0.0809)	(0.317)	(0.329)	(0.360)
F Test:			18.34	17.41	14.51
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17598	17598	17598	17598	17598

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigrants should not obtain unemployment subsidies". Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at the municipal level in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Immigrants should not be able to obtain Spanish nationality (OLS and IV regressions)

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	-0.622***	-0.362**	-1.566***	-1.190**	-0.678
	(0.147)	(0.144)	(0.527)	(0.487)	(0.676)
F Test:			18.33	17.29	15.65
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	16555	16555	16555	16555	16555

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigrants should not be able to obtain Spanish nationality". Years 1995, 1996; 2008-2012. Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

of the municipality in which they live. Tables 9 and 10 show the results associated with Equation 2 when splitting the sample according to characteristics of the municipality (below vs. above the median) or the respondent. However, it should be noted that in order not to lose statistical power, in this part of the analysis the standard errors are not clustered (this explains the high value of the F-test). To check if the effect is statistically different, the tables also report the p-value for a test of equality of coefficients for Internet share across the subsamples. Table 9 presents interesting findings with

regard to the characteristics of the municipality. First, the effect of the Internet on attitudes seems to be particularly strong for respondents living in densely populated areas. In addition, there is no differential effect depending on the presence of immigrants (the p-value between low and high share of immigrants is not significant). However, in this sense, the origin of foreigners is relevant: the impact of the Internet on positive attitudes towards immigrants is statistically different (stronger) for respondents living in municipalities with a low share of immigrants of sub-Saharan origin. Table 10 presents findings with regard to the personal characteristics of the respondents. As is evident, there does not seem to be a difference in the impact of the Internet according to the gender of the respondent. Likewise, employment status (unemployed vs employee) does not generate differences in the effect of the Internet. By contrast, the level of education plays a relevant role: indeed, the effect of the Internet on the attitudes of individuals with a low level of education (primary or lower) is weaker and statistically different compared to people with a university education. Finally, a further personal characteristic that is worth investigating is the age of the interviewer. Indeed, Internet usage is more frequent among the younger generations. In this regard, I expect to find some heterogeneity in my results when comparing young vs old respondents. Table 11 reports the most complete specification (including clustered standard errors) of Table 3 by age quintile. As expected, the magnitude and statistical significance of the coefficients is, overall, higher for younger respondents. Indeed, the effect is particularly strong for individuals aged between 31-40 and 41-52, i.e. those whom anecdotal evidence suggests are more likely to use the web for consuming information. By contrast, the coefficient for those over the age of 53 is smaller and not statistically significant. Lastly, as reported in Table 22 and 23, respectively, no significant differences are noted when it comes to concerns about job market competition (i.e. when considering whether the respondent agrees with the statement: “Immigrants steal jobs from natives") and the distribution of public goods (“Immigrants should not obtain unemployment subsidies").

5 Impact on political preferences

In this section, I evaluate the impact of the Internet on political outcomes. Specifically, I analyse the relationship between voting behaviour and attitudes towards immigrants; additionally, I investigate whether the political success of the right-wing conservative party, the *Partido Popular* (PP), has been affected by the arrival of the Internet. Indeed, if voters consume online news according to their po-

Table 9: Positive view: Heterogeneity Analysis - Munic. Characteristics (IV Regressions)

	Immigration is overall bad for the country					
	Pop. Density		Immigrant (%)		African Immigrant (%)	
	Low	High	Low	High	Low	High
Internet share	1.323	2.239***	2.529**	4.355**	3.058***	0.535
	(0.931)	(0.542)	(1.249)	(1.902)	(0.709)	(0.761)
Eq. of coef. (p-value)	0.031		0.411		0.060	
F Test:	82.26	1594.2	9.054	49.40	1088.5	292.1
Controls:	Yes	Yes	Yes	Yes	Yes	Yes
Observations:	8324	8712	7029	10007	7467	9569

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. The row "Eq. of coef. (p-value)" refers to the p-value for a test of equality of coefficients for Internet share across the subsamples. Low and High refers to the municipalities with population density, share of immigrant and share of Sub-Saharan immigrants below vs above the median. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Positive view: Heterogeneity Analysis - Personal Characteristics (IV Regressions)

	Immigration is overall bad for the country					
	Gender		Working Status		Education	
	Female	Male	Working	Unempl.	Low	High
Internet share	3.422***	2.015**	3.087***	4.977***	1.537**	2.989***
	(0.804)	(0.809)	(0.754)	(1.497)	(0.710)	(1.011)
Eq. of coef. (p-value)	0.336		0.911		0.021	
F Test:	679.4	684.4	748.7	185.0	709.5	492.5
Controls:	Yes	Yes	Yes	Yes	Yes	Yes
Observations:	8591	8445	9264	2882	8295	6970

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. The row "Eq. of coef. (p-value)" refers to the p-value for a test of equality of coefficients for Internet share across the subsamples. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Positive view (IV regressions): Heterogeneity Analysis - By age

	(1)	(2)	(3)	(4)	(5)
	Age: 18-30	31-40	41-52	53-65	>66
Internet share	3.588**	4.135***	4.739***	2.003	0.361
	(1.563)	(1.176)	(1.361)	(1.734)	(1.481)
F Test:	15.93	12.99	14.96	16.38	15.47
Municipal Controls:	Yes	Yes	Yes	Yes	Yes
Personal Controls:	Yes	Yes	Yes	Yes	Yes
Observations:	3706	3351	3566	3378	3035

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landline in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

litical preferences, this should not alter support for the parties. At the same time, if the diffusion of the Internet affected voter opinions on politically relevant issues – as demonstrated in the previous section with attitudes towards immigrants – this might also lead to a change in political behaviour. To evaluate this issue empirically, I implement an identification strategy similar to the one employed so far in this study, focusing on those individuals who report having voted for the PP, leveraging that in all the waves, including those in the 'pre-Internet' era, respondents were asked which party they voted for in the last election.

First, Table 12 produces evidence that the attitudes of PP voters towards immigrants are different. Controlling for personal and municipal characteristics, individuals who report having voted for this right-wing party are less likely to say that immigration is good for the country (Column (1)). Similarly, the other measures of attitude strongly correlate with political behaviour: PP voters are more likely to be concerned about immigrants due to fears concerning the job market and competition for public goods (Columns (2) and (3), respectively). Furthermore, they are more likely to report that immigrants should not be allowed to obtain Spanish nationality. Overall, these results are in line with those reported by Barone et al. (2016) in the Italian context; however, my sample is bigger and, arguably, more representative.

Table 12: Factors accounting for the relationship between immigration and voting for the centre-right

	Voting for PP			
	(1)	(2)	(3)	(4)
Immigration is good	-0.105***			
	(0.0154)			
Steal Job		0.102***		
		(0.0205)		
No Subsidy			0.0649***	
			(0.0107)	
No Nationality				0.121***
				(0.0176)
Municipal Controls:	Yes	Yes	Yes	Yes
Personal Controls:	Yes	Yes	Yes	Yes
Observations:	13835	14308	14298	13464

Dependent Variable: Dummy equal to one if the respondent reports having voted for the PP in the last elections (Blank and Don't know answers excluded; respondents reporting not having voted in the last elections excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at the municipal level in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Having established a relationship between conservative party voters and attitudes towards immigrants, as well as a relationship between the Internet and these attitudes, an additional question I seek to address is whether and how the Internet has impacted voting behaviour. I, thus, run the instrumented version of Equation 2, where the dependent variable is a dummy equal to one if the respondent reported having voted for the PP in the last election (excluding those respondents who reported not having turned out). Table 13 reports the results. Among the individuals that took part in the CIS survey, the Internet seems to have a negative effect – which proves to be significant when the IV approach is used – on the probability of voting for the PP. This result is confirmed in Appendix C when the actual election results are investigated: comparing a battery of national elections between 1996-2000 - i.e. before the arrival of the Internet - to the ones that occurred between 2008-2011, I find evidence that the conservative political force Popular Party (PP) is seen to be significantly worse off after the diffusion of the Internet.

Table 13: Internet impact on PP votes (OLS and IV regression)

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	-0.0792	-0.187	-0.871*	-0.925*	-1.645**
	(0.141)	(0.140)	(0.495)	(0.524)	(0.722)
F Test:			17.46	16.36	15.96
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	15153	15153	15153	15153	15153

Dependent Variable: Dummy equal to one if the respondent reports having voted for the PP in the last elections (Blank and Don't know answers excluded; respondents reporting not having voted in the last elections excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status and education level. Municipal controls: population, surface in Km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

6 Conclusion

Since 2014, 1.8 million refugees have arrived in Europe, more than 1 million of them in 2015 alone. This immigration crisis has been associated with far-reaching changes in the political scenario in

many countries of the European Union: the surge in the number of immigrants has been matched by a dramatic fall in the level of trust in European Institutions and a hike in voter support for right-wing, populist parties (Barone et al., 2016; Halla et al., 2017; Dustmann et al., 2019). The media, and especially the Internet, have played a role in shaping these reactions: indeed, the last few years have been characterised by a peak in the diffusion, especially via social platforms, of fake news which has impacted political outcomes and people's beliefs about immigration (Allcott and Gentzkow, 2017; Pennycook and Rand, 2018). This study has sought to determine whether the Internet has been a source of misinformation about immigration dynamics from the outset and whether there has been a shift in attitudes from those days when the social media were less prevalent and fake news was not an issue. More specifically, this paper has examined the role played by early Internet availability on political and migration-related outcomes in Spain, a country that, in the first decade of the 2000s, experienced an inflow of immigrants comparable (if not higher) in quantitative terms to the numbers recorded during the most recent European refugee crisis.

Here, I have explored whether access to the Internet has made citizens more conscious of the dynamics of immigration and whether, at the same time, it has changed the way they perceive immigrants. The results found were, in part, unexpected. First, while higher Internet exposure is associated with a better knowledge of immigration dynamics at the national level – citizens living in areas where broadband Internet coverage is higher were more likely to know the share of non-natives living in Spain and were less prone to overestimate this percentage – respondents in municipalities with high Internet penetration seem to have greater misperceptions when it comes to the dynamics of local immigration. Second, despite the absence of any differences in the pre-Internet era, respondents with greater Internet availability were more likely to hold a positive view of the immigration phenomenon in the post-Internet period. This generally more positive attitude is more prevalent among younger generations and is further confirmed when more specific outcomes are investigated, including fear of competition in the job market, the redistribution of public goods and ethnic diversities – the main factors influencing native perceptions of immigrants.

These results are not without their consequences. Indeed, attitudes to immigration can be considered a major driver of voting behaviour and this is made evident in the second part of the paper. Here, respondents that report casting their vote for the *Partido Popular* – Spain's traditional right-

wing party – are characterised by different (i.e. worse) attitudes towards immigrants, while the results of this conservative party have been worse since the diffusion of the Internet. If we combine these two outcomes, it is possible to hypothesise that the availability of a new cheap source of information – the Internet – has made the Spanish more conscious of immigration dynamics and reduced their migration-related fears; this, in turn, has driven Spanish voters to punish the conservative parties for promoting restrictive immigration policies.

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Appendix A: List of Figures

Figure 2: Share of households covered by ADSL, national level (2006-2015)

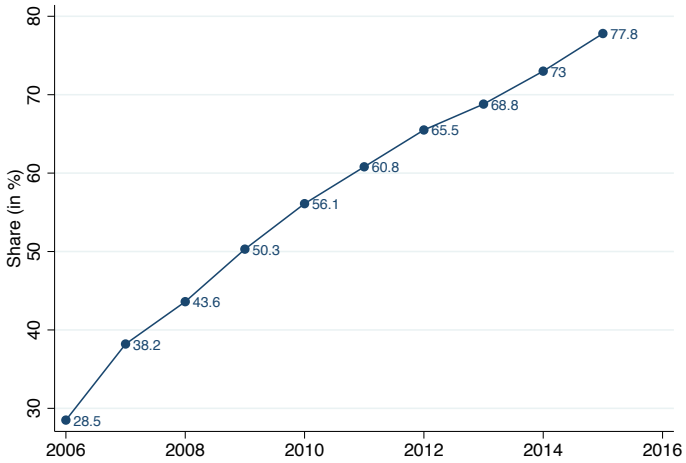


Figure 3: Share of households covered by ADSL, province level (2006-2012)

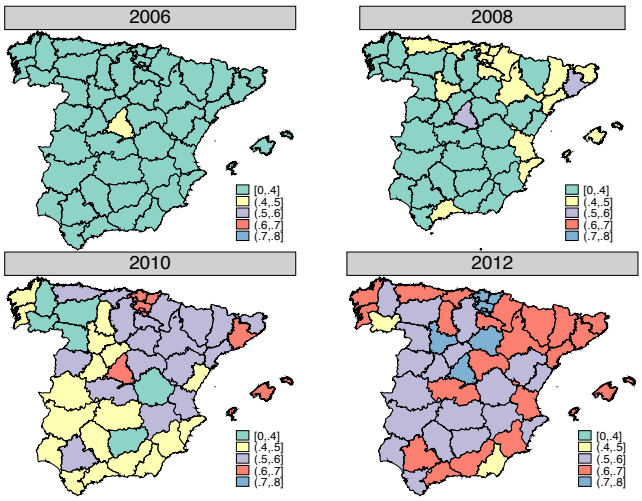


Figure 4: Share of households reading news online

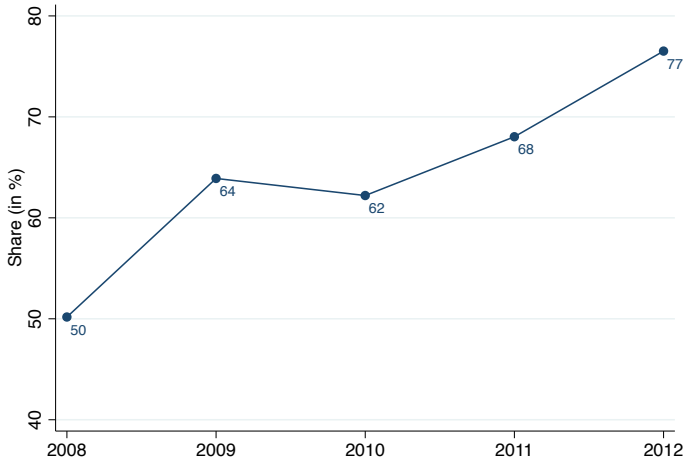


Figure 5: Total inflow of foreign people in Spain (1996-2017)

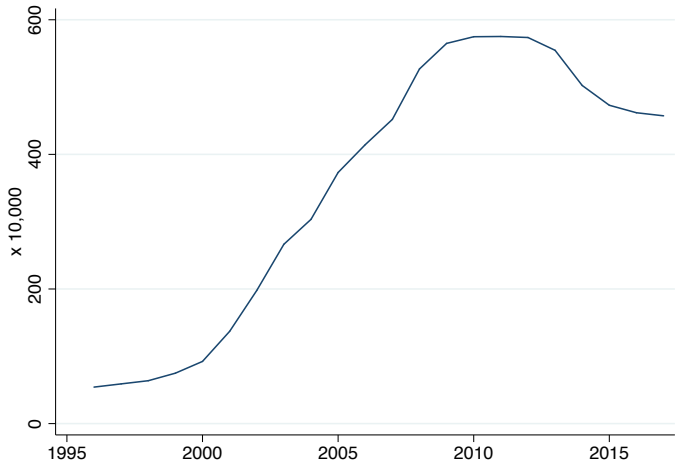


Figure 6: Real vs perceived share of immigrants, by year (2008-2012)

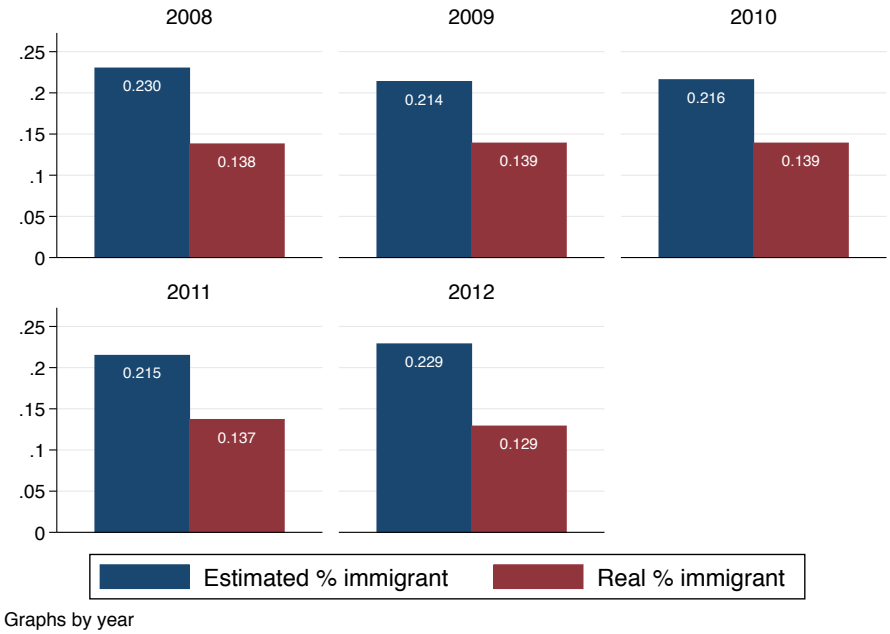


Figure 7: Correlation between share of landlines in 1996 and share of broadband, municipal level (2008-2012)

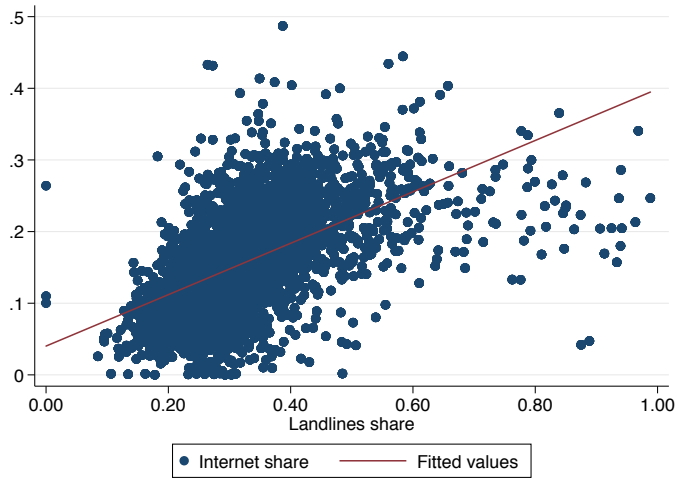
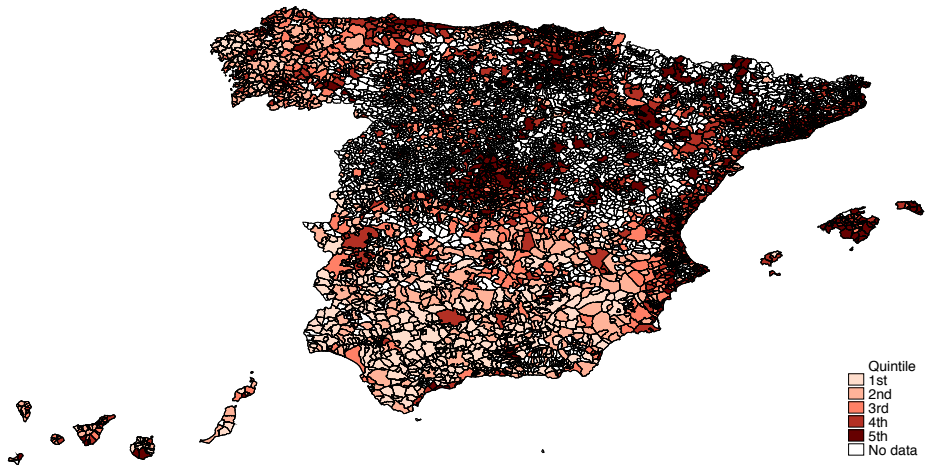
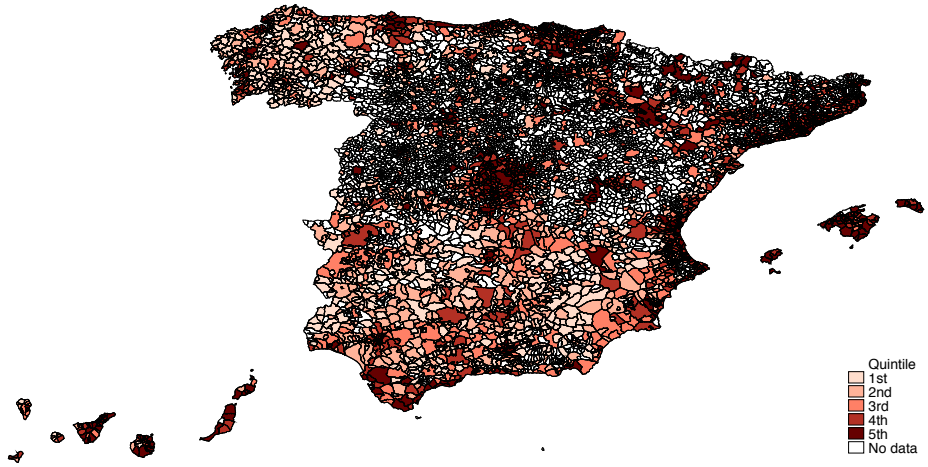


Figure 8: Geographical distribution of landlines and broadband lines



(a) Landlines per 1,000 population (1996)



(b) Broadband lines per 1,000 population (2009)

Figure 9: Sentiments ('first thought') in relation to immigration (2008-2015)

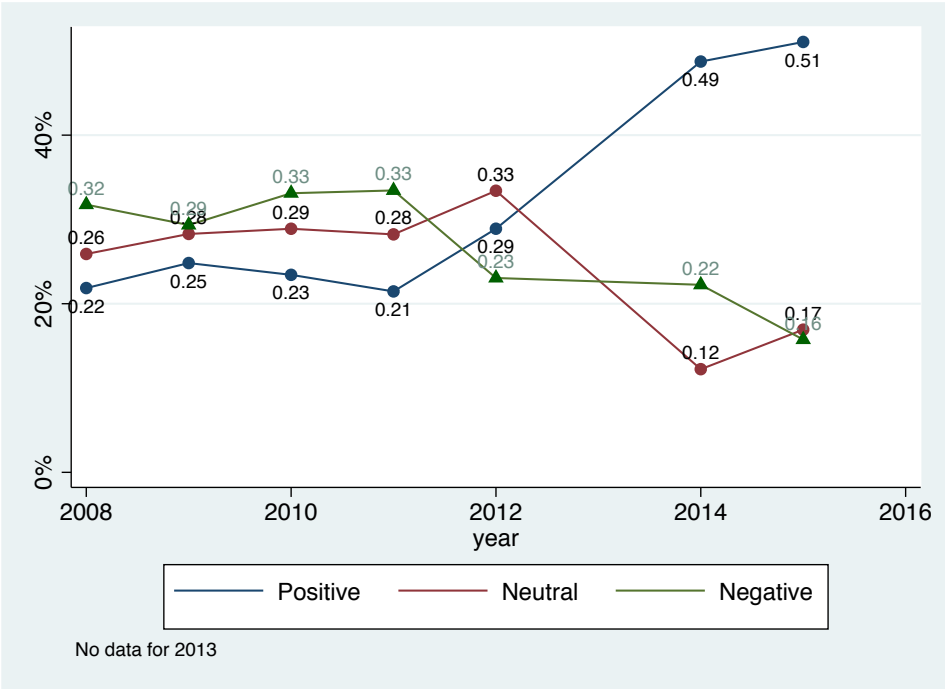
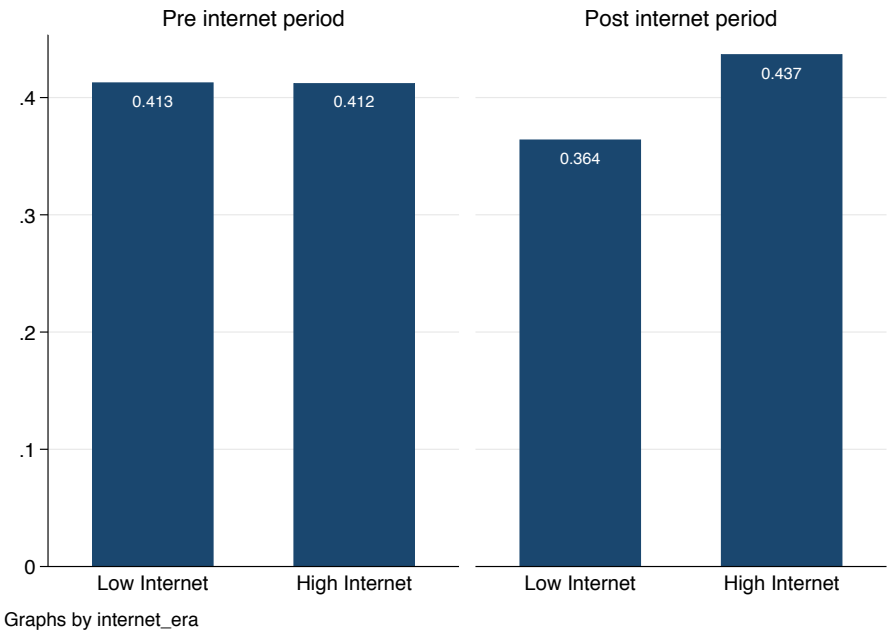


Figure 10: Share of respondents with a positive view of immigrants, over Internet penetration



Appendix B: List of Tables

Table 14: Too Many (OLS and IV regressions)

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	-0.693***	-0.223	-2.192**	-1.191	-0.444
	(0.219)	(0.168)	(0.983)	(0.983)	(1.279)
F Test:			89.76	82.90	70.29
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17267	17267	17267	17267	17267

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "There are too many immigrants in the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 15: Positive view (PROBIT and IVPROBIT)

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	3.560***	2.376***	9.589***	8.350***	7.815**
	(0.504)	(0.469)	(1.873)	(2.214)	(3.058)
First Stage			0.142***	0.139***	0.0715***
			(0.023)	(0.023)	(0.027)
F Test:	-	-	34.52	32.10	27.57
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17036	17036	17036	17036	17036

Probit and IV Probit model. Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: number of landline in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: (log of) population, surface in km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 16: Positive view (OLS and IV regressions) - Not weighted

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	0.825***	0.545***	3.743***	2.639***	2.871***
	(0.130)	(0.117)	(0.769)	(0.736)	(0.835)
First Stage	-	-	0.136***	0.128***	0.0621***
F Test:			26.86	23.82	18.73
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17036	17036	17036	17036	17036

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects. Instrumental Variable: share of landline in 1996 (over the total households of municipality) * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 17: Positive view (OLS and IV regressions) - Alternative weight

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	0.909***	0.588***	3.839***	2.775***	3.038***
	(0.137)	(0.121)	(0.732)	(0.719)	(0.809)
First Stage	-	-	0.142***	0.135***	0.0809**
F Test:			33.62	29.79	24.81
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17036	17036	17036	17036	17036

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects are weighted for the (log of) population of the municipality. Instrumental Variable: share of landline in 1996 (over the total households of municipality) * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 18: Positive view (OLS and IV regressions) - Alternative Internet

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	0.444***	0.305***	2.435***	2.059***	1.620***
(Total hh)	(0.0704)	(0.0587)	(0.461)	(0.470)	(0.371)
First stage			0.157***	0.154***	0.200***
F Test:			30.76	28.59	42.00
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17036	17036	17036	17036	17036

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landline in 1996 (over the total households of municipality) * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 19: Positive view - Municipal level collapsed

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	0.637***	0.352***	3.608***	2.500*	2.995*
	(0.118)	(0.114)	(1.090)	(1.351)	(1.734)
First Stage	-	-	0.0987***	0.0663**	0.0596*
F Test:			12.25	6.357	4.771
Municipal Controls:	No	Yes	No	Yes	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	1540	1498	1540	1540	1498

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigration is good for the country" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landline in 1996 * Post Internet dummy. (Self-reported) Personal controls: (municipal average of) gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Robust standard errors clustered at municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 20: Immigrants force native salaries down (OLS and IV regressions)

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	-0.866***	-0.438***	-2.208***	-1.476***	-0.194
	(0.121)	(0.115)	(0.376)	(0.448)	(0.659)
F Test:			18.55	17.58	13.37
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17348	17348	17348	17348	17348

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigrants force native salaries down". Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landline in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in km^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrants population. Standard errors partially clustered at municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 21: Immigrants should renounce their own culture (OLS and IV regressions)

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Internet share	-0.347***	-0.187**	-0.763***	-0.542**	-0.420
	(0.0804)	(0.0840)	(0.252)	(0.250)	(0.369)
F Test:			18.01	17.15	15.68
Municipal Controls:	No	Yes	No	No	Yes
Personal Controls:	No	Yes	No	Yes	Yes
Observations:	17946	17946	17946	17946	17946

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "In order to be integrated, immigrants should renounce their own culture". Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landline in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in KM^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. Standard errors partially clustered at municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 22: Heterogeneity Analysis - Personal Characteristics (IV Regressions)

	Immigrants steal jobs from natives					
	Gender		Working Status		Education	
	Female	Male	Working	Unempl.	Low	High
Internet share	-1.273*	-1.581**	-1.698***	-1.017	-0.001	-1.550**
	(0.746)	(0.777)	(0.596)	(1.378)	(0.994)	(0.650)
Eq. of coef. (p-value)	0.176		0.367		0.021	
F Test:	759.0	703.5	1190.8	219.3	501.1	792.0
Controls:	Yes	Yes	Yes	Yes	Yes	Yes
Observations:	8983	8590	14500	2967	7125	8678

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigrants steal jobs from natives" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in KM^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrants population. The row "Eq. of coef. (p-value)" refers to the p-value for a test of equality of coefficients for Internet share across the subsamples. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 23: Heterogeneity Analysis - Personal Characteristics (IV Regressions)

	Immigrants should not obtain unemployment subsidies					
	Gender		Working Status		Education	
	Female	Male	Working	Unempl.	Low	High
Internet share	-0.0749	-0.913**	-0.400	-1.270	-0.243	-0.359
	(0.438)	(0.427)	(0.328)	(0.907)	(0.449)	(0.512)
Eq. of coef. (p-value)	0.154		0.830		0.660	
F Test:	725.6	698.0	1158.5	213.3	764.1	492.5
Controls:	Yes	Yes	Yes	Yes	Yes	Yes
Observations:	8982	8616	14534	2958	8616	7195

Dependent Variable: Dummy equal to one if the respondent agrees with the statement: "Immigrants should not obtain unemployment subsidies" (Blank and Don't know answers excluded). Years 1995, 1996; 2008-2012. All regressions include year and province fixed effects and are weighted for the number of respondents per municipality-year. Instrumental Variable: share of landlines in 1996 * Post Internet dummy. (Self-reported) Personal controls: gender, age, squared-age, social class, occupational status, economic status, political preferences and education level. Municipal controls: population, surface in KM^2, population density, altitude, % immigrants over total population, % of EU15 Immigrants and % of Sub-Saharan African Immigrants over immigrant population. The row "Eq. of coef. (p-value)" refers to the p-value for a test of equality of coefficients for Internet share across the subsamples. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A1: Immigration in Spain - By country of origin

	2017		2008		1998	
	Total	Share	Total	Share	Total	Share
Total Foreign	4,572,807		5,268,762		637,085	
EU (15)	861,852	0.188	1,090,122	0.207	277,844	0.436
UK	240,785	0.053	352,957	0.067	75,600	0.119
Bulgaria	127,669	0.028	153,973	0.029	1,453	0.002
Romania	687,733	0.150	731,806	0.139	2,258	0.004
Ukraine	103,072	0.023	79,096	0.015	462	0.001
Morocco	749,670	0.164	652,695	0.124	111,043	0.174
Argentina	70,221	0.015	147,382	0.028	19,315	0.030
Colombia	145,358	0.032	284,581	0.054	9,997	0.016
Ecuador	141,810	0.031	427,718	0.081	3,972	0.006
China	208,075	0.046	125,914	0.024	11,611	0.018

Source: INE - National Statistics Office

Table A2: Summary statistics - Respondents' characteristics

	Obs.	Mean	St. Dev.
Age	19293	47.22	17.972
Gender:			
Female	19293	0.517	0.500
Male	19293	0.483	0.500
Social class:			
High	19293	0.002	0.048
Upper Middle	19293	0.057	0.232
Middle	19293	0.531	0.499
Lower Middle	19293	0.248	0.432
Working	19293	0.136	0.343
Occupational Status:			
Employed	19285	0.545	0.498
Retired	19285	0.231	0.422
Unemployed	19285	0.164	0.370
Student	19285	0.054	0.227
Political Ideology:			
Centre	19268	0.586	0.493
Left	19268	0.113	0.317
Right	19268	0.061	0.240
Economic Situation:			
Very good	19293	0.131	0.338
Good	19293	0.261	0.439
Average	19293	0.388	0.487
Bad	19293	0.166	0.372
Very bad	19293	0.046	0.209
Education level:			
No education	19293	0.107	0.309
Primary	19293	0.391	0.488
Secondary	19293	0.191	0.393
Professional	19293	0.135	0.341
University	19293	0.079	0.269

Residual category in order to sum 100%: "Don't know / Other / Refuse to answer"

Table A3: Summary statistics - Municipalities' characteristics

	Obs.	Mean	St. Dev.
Broadband Lines	19293	62423.350	173511.801
Fixed-phone Lines	19293	182823.227	402981.193
Population	19293	399860.549	829186.532
Area (km^2)	19293	209.772	280.838
Altitude	19019	301.591	298.430
Population density	19293	2596.574	3993.772
Real share of immigrant pop. (local)	19155	0.081	0.084
Immigrants from EU (%)[1]	19057	0.377	0.194
Immigrants from Non EU (%) [1]	13110	0.034	0.030
Immigrants from sub-Saharan countries (%)[1]	13110	0.040	0.043

[1] Over the immigrant population;

Table A4: Summary statistics - Outcome variables

	Obs.	Mean	St. Dev.
Immigration is bad for the country overall	17593	0.371	0.483
There are too many immigrants	17810	0.429	0.495
Estimated immigrant share (national)	9711	0.221	0.149
Estimated immigrant share (local)	9972	0.199	0.173
Voted for PP in the last election	19293	0.147	0.354
Immigrants:			
Steal natives jobs	18163	0.621	0.485
Force native salaries down	17922	0.733	0.443
Should not be allowed to receive unemployment subsidy	18183	0.088	0.283
Should not be allowed to vote	17094	0.361	0.480
Should not be allowed to gain Spanish nationality	17137	0.183	0.386
Should renounce their culture	18549	0.112	0.316

Appendix C: Electoral Data Analysis

To generalise the result found in Table 13, in this section I make use of the actual electoral data downloadable from the Spanish Interior minister. In particular, I look at the electoral performance of *Partido Popular* (PP) in a battery of elections before and after the arrival of the Internet: the congressional elections in 1996 and 2000 (pre) and 2008 and 2011 (post)[17]. The main equation I estimate is the following:

$$PPVoteShare_{m,t} = \beta_1 InternetAvailability_{m,t} + \beta_2 X_{m,t} + \tau_t + \psi_m + \epsilon_{m,t} \quad (4)$$

where, the dependent variable is the share of votes – in municipality m in the election year t – obtained by PP. As in the main body of the analysis, *Internet Availability* is measured as the ratio between the number of broadband lines and the population living in a municipality and is equal to 0 in the pre-Internet period. X is a vector which includes several local characteristics. The time-variant controls I use for this part of the analysis are the (logarithm of the) population, the number of banks, of commercial activities and cars present in the municipality. X also includes some topographic features, such as extension and altitude of the municipality. Additionally, I consider other relevant municipality characteristics coming from 2001 Census, like the share of people below 25, the share of people aged 65 or above, the percentage of people with a higher level of education, the number of offices and cultural venues per capita and the average number of child per family. Moreover, I also control for indexes present in the Census which capture the municipality's development of tourism, economic activities, education and the third sector. All those relevant, time-invariant demographic features are interacted with a year dummy variable to allow for any effect to vary across election years. Last but not least, I control for regional dummies[18] interacted with election-year dummies, which allows me to tackle any effect of unobservable regional factors over time[19]. This allows to take into account the possibility of pre-existing or underlying trends that could confound the causal interpretation of my estimated coefficients. Finally, τ_t and ψ_m are, respectively, a set of year and municipality fixed effects.

[17] Given the lack of clear data about Internet diffusion in 2004, I will not consider the election round that took place in that year. An additional source of concern that led me not to consider in my analysis the 2004 elections is the terrorist attack that took place few days before the vote.

[18] In Spain there are 17 *Comunidad Autonomas* or CC.AA. characterised by a very heterogeneous level of development.

[19] The same results hold if I introduce the interaction with the 50 provinces instead of the CC.AA.

As already highlighted, the introduction of municipalities fixed effects, with observation coming before and after the introduction of the Internet technology, allows to overcome estimation bias that comes from unobserved time-persistent factors; to alleviate bias linked with unobservable time-varying factors that affect both political outcomes and access to the Internet, broadband availability is instrumented in the following way:

$$InternetAvailability_{m,t} = \gamma_1(Landlines1996_m * PostInternet) + \gamma_2 X_{m,t} + \alpha_t + \zeta_m + \eta_{m,t} \quad (5)$$

where *Landlines1996* is the time-invariant number of fixed telephone lines (over the total population) present in municipal m in 1996, while α_t and ζ_m are year and municipality fixed effects. As in the main analysis, the underlying identification assumption is that whatever correlation existed between the number of landlines and relevant municipality characteristics, this did not change at the time of introduction of the broadband technology.

Table B1 present the OLS and IV results. The table has the following structure: column (1) shows the OLS results, column (2) moves to the IV identification strategy, adding municipal controls and region (x year) fixed effects in column (3). Finally, column (4) presents a falsification test: similar to Campante et al. (2017) and Falck et al. (2014), I run the same IV regression of Column (4) just for the pre-Internet elections (namely 1996 and 2000) assuming that the pattern of Internet share in 2000 is equal to 2008 one. In line with the results found in Table 13, Table B1 confirms that Internet diffusion leads to a decrease in the vote share for the right-wing party PP. Indeed, both the OLS and the IV coefficients (with and without controls) are negative and strongly significant. Also in this case a downward bias of the OLS coefficient is observable, while the big reduction of the magnitude of coefficient between Columns (2) and (3) suggests that the introduction of controls is very relevant. In the most complete specification, the Internet effect on voting behaviour is quite relevant: given an average vote share for PP in 1996 and 2000 of 39.5%, going from zero to full broadband access would correspond to a decline in its political success of about 33 percentage points. It is important to highlight that the placebo test works well: coefficient in column (4) is insignificant and almost equal to zero. As an additional robustness check, I also run the equation having as dependent variable the share of vote calculated over the total number of eligible voters, as opposed to the number of voters

who actually turned out. This would address some estimation bias due to a change in voting turnout, given that the literature has identified a negative Internet effect on electoral participation. Results (available upon request) are mostly identical.

Table B1: Internet impact on PP votes (OLS and IV regression) - Electoral data

	(1) OLS	(2) IV	(3) IV	(4) IV
Internet share	-0.115***	-0.972***	-0.131**	
	(0.0140)	(0.0503)	(0.0548)	
Internet Share Fake				-0.0405
				(0.0466)
Mean % PP vote (1996 and 2000)	0.395			
First Stage:	-	0.232***	0.187***	-
F Test:	-	32.09	21.13	16.21
Controls:	No	No	Yes	Yes
Observations:	12895	12895	12690	6282

Years: 1996, 2000, 2008 and 2011. All regressions include year and municipality fixed effects. Instrumental Variable: number of landlines in 1996 * Post Internet dummy. Column (4) is a falsification test. Time-varying demographic controls: (Log) population, unemployment rate, cars, banks and commercial activities per capita. Demographic Controls from 2001 census: % people under 25, % people over 65, % people with not-compulsory education, the average number of children; offices, and cultural venues per capita; extension and altitude of the municipality. Region fixed effects are interacted with a year dummy in Columns 3, 4 and 5. Robust standard errors clustered at the municipal level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2015

2015/1, Foremny, D.; Freier, R.; Moessinger, M-D.; Yeter, M.: "Overlapping political budget cycles in the legislative and the executive"
2015/2, Colombo, L.; Galmarini, U.: "Optimality and distortionary lobbying: regulating tobacco consumption"
2015/3, Pellegrino, G.: "Barriers to innovation: Can firm age help lower them?"
2015/4, Hémet, C.: "Diversity and employment prospects: neighbors matter!"
2015/5, Cubel, M.; Sanchez-Pages, S.: "An axiomatization of difference-form contest success functions"
2015/6, Choi, A.; Jerrim, J.: "The use (and misuse) of Pisa in guiding policy reform: the case of Spain"
2015/7, Durán-Cabré, J.M.; Esteller-Moré, A.; Salvadori, L.: "Empirical evidence on tax cooperation between sub-central administrations"
2015/8, Batalla-Bejerano, J.; Trujillo-Baute, E.: "Analysing the sensitivity of electricity system operational costs to deviations in supply and demand"
2015/9, Salvadori, L.: "Does tax enforcement counteract the negative effects of terrorism? A case study of the Basque Country"
2015/10, Montolio, D.; Planells-Struse, S.: "How time shapes crime: the temporal impacts of football matches on crime"
2015/11, Piolatto, A.: "Online booking and information: competition and welfare consequences of review aggregators"
2015/12, Boffa, F.; Pingali, V.; Sala, F.: "Strategic investment in merchant transmission: the impact of capacity utilization rules"
2015/13, Slemrod, J.: "Tax administration and tax systems"
2015/14, Arqué-Castells, P.; Cartaxo, R.M.; García-Quevedo, J.; Mira Godinho, M.: "How inventor royalty shares affect patenting and income in Portugal and Spain"
2015/15, Montolio, D.; Planells-Struse, S.: "Measuring the negative externalities of a private leisure activity: hooligans and pickpockets around the stadium"
2015/16, Batalla-Bejerano, J.; Costa-Campi, M.T.; Trujillo-Baute, E.: "Unexpected consequences of liberalisation: metering, losses, load profiles and cost settlement in Spain's electricity system"
2015/17, Batalla-Bejerano, J.; Trujillo-Baute, E.: "Impacts of intermittent renewable generation on electricity system costs"
2015/18, Costa-Campi, M.T.; Paniagua, J.; Trujillo-Baute, E.: "Are energy market integrations a green light for FDI?"
2015/19, Jofre-Monseny, J.; Sánchez-Vidal, M.; Viladecans-Marsal, E.: "Big plant closures and agglomeration economies"
2015/20, Garcia-López, M.A.; Hémet, C.; Viladecans-Marsal, E.: "How does transportation shape intrametropolitan growth? An answer from the regional express rail"
2015/21, Esteller-Moré, A.; Galmarini, U.; Rizzo, L.: "Fiscal equalization under political pressures"
2015/22, Escardíbul, J.O.; Afcha, S.: "Determinants of doctorate holders' job satisfaction. An analysis by employment sector and type of satisfaction in Spain"
2015/23, Aidt, T.; Asatryan, Z.; Badalyan, L.; Heinemann, F.: "Vote buying or (political) business (cycles) as usual?"
2015/24, Albæk, K.: "A test of the 'lose it or use it' hypothesis in labour markets around the world"
2015/25, Angelucci, C.; Russo, A.: "Petty corruption and citizen feedback"
2015/26, Moriconi, S.; Picard, P.M.; Zanaj, S.: "Commodity taxation and regulatory competition"
2015/27, Brekke, K.R.; Garcia Pires, A.J.; Schindler, D.; Schjelderup, G.: "Capital taxation and imperfect competition: ACE vs. CBIT"
2015/28, Redonda, A.: "Market structure, the functional form of demand and the sensitivity of the vertical reaction function"
2015/29, Ramos, R.; Sanromá, E.; Simón, H.: "An analysis of wage differentials between full-and part-time workers in Spain"
2015/30, Garcia-López, M.A.; Pasidis, I.; Viladecans-Marsal, E.: "Express delivery to the suburbs the effects of transportation in Europe's heterogeneous cities"
2015/31, Torregrosa, S.: "Bypassing progressive taxation: fraud and base erosion in the Spanish income tax (1970-2001)"
2015/32, Choi, H.; Choi, A.: "When one door closes: the impact of the hagwon curfew on the consumption of private tutoring in the republic of Korea"
2015/33, Escardíbul, J.O.; Helmy, N.: "Decentralisation and school autonomy impact on the quality of education: the case of two MENA countries"
2015/34, González-Val, R.; Marcén, M.: "Divorce and the business cycle: a cross-country analysis"
2015/35, Calero, J.; Choi, A.: "The distribution of skills among the European adult population and unemployment: a comparative approach"

2015/36, Mediavilla, M.; Zancajo, A.: "Is there real freedom of school choice? An analysis from Chile"
2015/37, Daniele, G.: "Strike one to educate one hundred: organized crime, political selection and politicians' ability"
2015/38, González-Val, R.; Marcén, M.: "Regional unemployment, marriage, and divorce"
2015/39, Foremny, D.; Jofre-Monseny, J.; Solé-Ollé, A.: "'Hold that ghost': using notches to identify manipulation of population-based grants"
2015/40, Mancebón, M.J.; Ximénez-de-Embún, D.P.; Mediavilla, M.; Gómez-Sancho, J.M.: "Does educational management model matter? New evidence for Spain by a quasiexperimental approach"
2015/41, Daniele, G.; Geys, B.: "Exposing politicians' ties to criminal organizations: the effects of local government dissolutions on electoral outcomes in Southern Italian municipalities"
2015/42, Ooghe, E.: "Wage policies, employment, and redistributive efficiency"

2016

2016/1, Galletta, S.: "Law enforcement, municipal budgets and spillover effects: evidence from a quasi-experiment in Italy"
2016/2, Flatley, L.; Giulietti, M.; Grossi, L.; Trujillo-Baute, E.; Waterson, M.: "Analysing the potential economic value of energy storage"
2016/3, Calero, J.; Murillo Huertas, I.P.; Raymond Bara, J.L.: "Education, age and skills: an analysis using the PIAAC survey"
2016/4, Costa-Campi, M.T.; Daví-Arderius, D.; Trujillo-Baute, E.: "The economic impact of electricity losses"
2016/5, Falck, O.; Heimisch, A.; Wiederhold, S.: "Returns to ICT skills"
2016/6, Halmenschlager, C.; Mantovani, A.: "On the private and social desirability of mixed bundling in complementary markets with cost savings"
2016/7, Choi, A.; Gil, M.; Mediavilla, M.; Valbuena, J.: "Double toil and trouble: grade retention and academic performance"
2016/8, González-Val, R.: "Historical urban growth in Europe (1300–1800)"
2016/9, Guio, J.; Choi, A.; Escardíbul, J.O.: "Labor markets, academic performance and the risk of school dropout: evidence for Spain"
2016/10, Bianchini, S.; Pellegrino, G.; Tamagni, F.: "Innovation strategies and firm growth"
2016/11, Jofre-Monseny, J.; Silva, J.I.; Vázquez-Grenno, J.: "Local labor market effects of public employment"
2016/12, Sanchez-Vidal, M.: "Small shops for sale! The effects of big-box openings on grocery stores"
2016/13, Costa-Campi, M.T.; García-Quevedo, J.; Martínez-Ros, E.: "What are the determinants of investment in environmental R&D?"
2016/14, **García-López, M.A; Hémet, C.; Viladecans-Marsal, E.:** "Next train to the polycentric city: The effect of railroads on subcenter formation"
2016/15, Matas, A.; Raymond, J.L.; Dominguez, A.: "Changes in fuel economy: An analysis of the Spanish car market"
2016/16, Leme, A.; Escardíbul, J.O.: "The effect of a specialized versus a general upper secondary school curriculum on students' performance and inequality. A difference-in-differences cross country comparison"
2016/17, **Scandurra, R.I.; Calero, J.**: "Modelling adult skills in OECD countries"
2016/18, **Fernández-Gutiérrez, M.; Calero, J.**: "Leisure and education: insights from a time-use analysis"
2016/19, Del Rio, P.; Mir-Artigues, P.; Trujillo-Baute, E.: "Analysing the impact of renewable energy regulation on retail electricity prices"
2016/20, Taltavull de la Paz, P.; Juárez, F.; Monllor, P.: "Fuel Poverty: Evidence from housing perspective"
2016/21, Ferraresi, M.; Galmarini, U.; Rizzo, L.; Zanardi, A.: "Switch towards tax centralization in Italy: A wake up for the local political budget cycle"
2016/22, Ferraresi, M.; Migali, G.; Nordi, F.; Rizzo, L.: "Spatial interaction in local expenditures among Italian municipalities: evidence from Italy 2001-2011"
2016/23, Daví-Arderius, D.; Sanin, M.E.; Trujillo-Baute, E.: "CO2 content of electricity losses"
2016/24, Arqué-Castells, P.; Viladecans-Marsal, E.: "Banking the unbanked: Evidence from the Spanish banking expansion plan"
2016/25 Choi, Á.; Gil, M.; Mediavilla, M.; Valbuena, J.: "The evolution of educational inequalities in Spain: Dynamic evidence from repeated cross-sections"
2016/26, Brutti, Z.: "Cities drifting apart: Heterogeneous outcomes of decentralizing public education"
2016/27, Backus, P.; Cubel, M.; Guid, M.; Sánchez-Pages, S.; Lopez Manas, E.: "Gender, competition and performance: evidence from real tournaments"
2016/28, Costa-Campi, M.T.; Duch-Brown, N.; García-Quevedo, J.: "Innovation strategies of energy firms"

2016/29, Daniele, G.; Dipoppa, G.: "Mafia, elections and violence against politicians"
2016/30, Di Cosmo, V.; Malaguzzi Valeri, L.: "Wind, storage, interconnection and the cost of electricity"

2017

2017/1, González Pampillón, N.; Jofre-Monseny, J.; Viladecans-Marsal, E.: "Can urban renewal policies reverse neighborhood ethnic dynamics?"
2017/2, Gómez San Román, T.: "Integration of DERs on power systems: challenges and opportunities"
2017/3, Bianchini, S.; Pellegrino, G.: "Innovation persistence and employment dynamics"
2017/4, Curto-Grau, M.; Solé-Ollé, A.; Sorribas-Navarro, P.: "Does electoral competition curb party favoritism?"
2017/5, Solé-Ollé, A.; Viladecans-Marsal, E.: "Housing booms and busts and local fiscal policy"
2017/6, Esteller, A.; Piolatto, A.; Rablen, M.D.: "Taxing high-income earners: Tax avoidance and mobility"
2017/7, Combes, P.P.; Duranton, G.; Gobillon, L.: "The production function for housing: Evidence from France"
2017/8, Nepal, R.; Cram, L.; Jamasb, T.; Sen, A.: "Small systems, big targets: power sector reforms and renewable energy development in small electricity systems"
2017/9, Carozzi, F.; Repetto, L.: "Distributive politics inside the city? The political economy of Spain's plan E"
2017/10, Neisser, C.: "The elasticity of taxable income: A meta-regression analysis"
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