

**AN EMPIRICAL ANALYSIS OF E-PARTICIPATION.
THE ROLE OF SOCIAL NETWORKS AND E-GOVERNMENT
OVER CITIZENS' ONLINE ENGAGEMENT**

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An empirical analysis of e-Participation. The role of social networks and e-government over citizens' online engagement

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Abstract

The aim of this paper is to further explore the drivers behind the decision of citizens' engagement in social and political participation on the internet, since mixed empirical evidence has been found in the literature. Using data from the 2011 survey on the use of information and communications technologies by households and individuals in Spain, the following two types of online participation are analyzed: reading/giving opinions about social/political issues and signing/taking part in online petitions/public consultations. Relying on an updated version of the resources approach, we investigate to what extent online participation is explained not only by traditional participation-related resources (i.e., socio-economic characteristics) but also digital skills, social networks and the online development of public administration. Results show that, while online participation is mainly associated with internet-related skills, there is a significant gender gap. Interestingly, the unemployed tend to engage social and politically online more than the rest of the population.

Key words: social and political participation, internet, information and communication technologies (ICT), digital skills, social networks, e-government.

JEL classification: D72; L86

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1. Introduction

The last decade has witnessed the revolutionary spread of information and communication technologies (ICT). ICT have become a major element in our daily life for being informed, keeping in contact with friends, family and colleagues, dealing with public authorities, and even... for contacting your doctor.

ICT have revealed themselves as well as a key tool for social and political activity. Hence, political parties and government stakeholders are using ICT as a main instrument in order to get closer to voters and citizens¹. Obama's 2008 electoral campaign is a well-known example of the intense use of the internet to diffuse their programme and interact with electors². At the same time, an increasing number of people engage themselves and others in different types of social and political participation through the internet, i.e., from posting news and/or writing opinions on political and social issues online to taking part in public consultations and/or supporting petitions.

However, it is important to take into account that ICT diffusion has not taken place uniformly across either territories or individuals. ICT-related inequalities were early identified and described under the term digital divide. As the OECD (2001: 5) pointed out "the digital divide is the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the internet for a wide variety of activities".

A decade before this definition was stated, Murdock and Golding (1989) had quite premonitorily warned against the close link between inequalities in information technology access and those traditionally observed in political participation. In this sense, political scientists had been long observing that the

¹ A recent of example of such use can be found at Campante, Durante, & Sobbrío (2013) who describe the online strategy used by the Italian "Five-star movement" led by the former comedian Beppe Grillo. This party was the most voted in the parliamentary elections held in Italy in February 2013.

² Some journalists have even stated that "were it not for the internet, Barack Obama would not be president" (Wired, 2008).

most advantaged groups (in terms of income, education, connections, ...) were the most likely to engage in (offline) social and political participation (Verba, Schlozman, & Brady, 1995).

Norris (2001) was among the first authors to explore online political engagement. While she brought attention over the potential of the internet to expand individuals' opportunities for social and political participation, she also highlighted the risk that the emerging digital divide would reinforce and widen participation inequalities as previously suggested by Murdock and Golding (1989).

Research on political engagement has generally found mixed evidence on the factors associated with citizens' online participation. While some research points out that, once the internet access divide has been overcome, traditional socio-economic variables, such as income or education, become irrelevant to explain online participation (Krueger, 2002); other authors find that these factors are important predictors of online political engagement (Best & Krueger, 2005; Hansen & Reineau, 2006). Likewise, there is mixed evidence on whether there is a gender divide in online participation (Anduiza, Cantijoch, Gallego, & Salcedo 2010a; Anduiza, Gallego, & Cantijoch, 2010b; Best & Krueger, 2005; Hansen & Reineau, 2006; Krueger, 2002). The same happens with age. The only consensus around this issue seems to arise regarding the role of digital skills. Hence, several papers have found evidence that the higher the level of digital skills, the more likely an individual is to engage in participatory activities online (Anduiza et al., 2010a,b; Best & Krueger, 2005; Krueger, 2002). However, the role of other internet-related resources (such as social networks or the development of the public administration online) remains little explored and research usually focuses on one of these resources independently from the other (Gibson, Lusoli & Ward, 2005; Saglie & Vabo, 2009).

Within this context, the aim of this paper is to contribute to this line of research and further explore the factors driving individuals' political and social participation on the internet. Using data from the 2011 Survey on ICT usage collected by the Spanish National Institute of Statistics (2011b), the following

two types of political and social online participation are analyzed: “reading and giving opinions about social and political issues on the internet” and “signing online petitions or taking part in online public consultations”. In order to explain these two online activities, we rely on an updated version of the resource theory (Verba et al., 1995). This theory states that participation is explained by four types of resources: individual resources and socio-economic characteristics; political views and attitudes; group resources; and the institutional and political context. With the emergence of online participation, this approach has been extended to include some internet-related resources. Such extension efforts have mainly focused on individual resources and, in particular, in the inclusion of variables related to digital skills, while little is known on the role played by group resources and the institutional context. Therefore, this paper will take into account not only traditional participation-related resources (i.e., socio-economic characteristics) and digital skills, but also social networks and the online development of public administration as proxies of group resources and the institutional context, respectively.

The paper is organized as follows: next section presents a review of the literature which describes, in the first place, the resources approach for offline participation and, afterwards, its update to suit online participation; then, data, methodology and variables are commented; and finally, results are presented and some concluding remarks are drawn.

2. Review of the literature

2.1 Offline participation: The resources approach

Political scientists have long been interested in the analysis of citizens' engagement in social and political participation, which can be defined as those activities that have “the intent or effect of influencing government action – either directly by affecting the making or implementation of public policy or indirectly by influencing the selection of people who make those policies” (Verba et al., 1995: 38).

This literature has put special attention to unveil the reasons why some individuals get involved in this kind of activities while others do not. The most

popular explanation, in both traditional (Barnes & Kaase, 1979; Berelson, Lazarsfeld, & Macphree, 1986; Lazarsfeld, Berelson, & Gaudet, 1948; Milbrath, 1965) and more recent literature (Ekman & Amna, 2012; Norris, 2001, 2002, 2009; Putnam, 2000), relies on the resources approach. According to Verba et al. (1995) social and political participation is an activity that involves some costs in terms of time, money, etc.; therefore, people who have more resources are more likely to carry out participation activities than those with few of them. In order to explain social and political participation four types of resources are distinguished (Anduiza & Bosch, 2004; Morales, 2001; Novo, 2012).

The first type of resources refers to individual resources and socio-economic characteristics (i.e., age, gender, education level, income, and employment status, among others). Such elements define the position of an individual in the framework of his/her social and economic relationships. Therefore these resources determine the extent to which the individual will be able to access the information and develop the necessary skills to participate. Hence, the higher education attainment the lower the cognitive obstacles to participate; likewise, the older, the more experience, and the lower the cost to engage. In addition, participation in certain issues might be related to gender, race, and language. Research has shown that participation is generally associated with those individuals with higher incomes and higher education levels, older, with a job, living in urban areas, married men, and members of some kind of political organization (Verba et al., 1995).

The second type of resources is related to political views and attitudes since they mirror an individual's preferences on public issues. Consequently they might influence his/her decision to participate. In particular, participation has been found to be associated to an individual's political interest, his/her knowledge on political issues, his/her ideological position and his/her satisfaction (dissatisfaction) with politics, politicians and the policy measures they implement (Anduiza & Bosch, 2004).

The third type of resources includes group resources (i.e., friend and professional networks). A major part of social and political participation is developed by groups of people: such are the cases of demonstrations, boycotts,

etc. Individuals might get information about these activities through their networks of friends, colleagues, and community, civic and professional organizations. Therefore, an individual's involvement in such kind of organizations and networks tends to drive his/her social and political participation.

Finally, the fourth type of resources takes into account institutional and political environments as two key elements to explain participation. In particular, participation is likely to increase when governments and institutions implement channels for citizens to access decision-making processes so that their voices can be heard.

2.2 Online participation: An update of the resources approach

The emergence of the internet and its widespread diffusion have led to a central debate among political scientists about the changes it could bring over the patterns of social and political participation and, in particular, whether it would facilitate citizens' engagement or whether online participation would mirror inequalities offline and even widen them³.

It is clear that the widespread of the internet has opened up great possibilities for social and political participation that were not possible before. It is paradigmatic the case of Malala Yousafzai, the Afghanistan blogger girl who has been calling for women's right to education since childhood (Kroes, 2012).

The advantages of the internet for participation can be summarized into four main points: (i) it makes easier and faster for people to get information on public issues (Anduiza et al., 2010b); (ii) it also facilitates the engagement in political participation by reducing the cost of social pressure: an individual can privately sign a petition on a controversial issue from his/her computer at home (Anduiza et al., 2010b); (iii) individuals can themselves encourage the participation of others through online platforms such as [Change.org](https://www.change.org) or by disseminating information through their social networks; (iv) furthermore, the

³Research on social and political participation online has increased dramatically over the last few years, being addressed from several approaches. For a literature review in this field, see Saebø, Rose, and Flak (2008), Medaglia (2012), Susha and Grönlund (2012).

internet facilitates activism at the global scale and complements today's social "repertoire of collective action" (McAdam, Tarrow, & Tilly, 2001). As Pippa Norris (2001:8) indicates "by directly linking political activists in different countries, and reducing the costs of communication and networking, the internet may foster new types of mobilization by transnational advocacy networks around the world". A recent example is the Occupy Movement which emerged in the context of the Arab Spring and, especially, of the Spanish Indignation Movement (also known as *Los indignados* or *Movimiento 15M*) and spread worldwide.

Regarding citizens' opinions on the potential of the internet for political participation, some recent figures are shown in the last two reports of the World Internet Project (March and December, respectively; Cole, Suman, Schramm, Lunn, Zhou, Tang, & Ognyanova, 2012a; Cole, Suman, Schramm, Zhou, & Tang, 2012b) This information was gathered by surveying samples of population in sixteen countries and eleven countries, respectively⁴. In particular, people were asked to express their agreement/disagreement with the following four sentences⁵: "By using the internet... (i) people like me can better understand politics; (ii) public officials will care more about what people like me think; (iii) people like me can have more political power; (iv) people like me will have more say about what the government does" (Cole et al., 2012a,b).

While answers to these questions greatly differ by country (possibly due to the different political context in each of them), some general patterns can be inferred. Hence, in most countries people believe that the internet can better help to understand politics, rather than make public officials care about their opinions. However, the percentages of people trusting the internet for empowerment are quite low, with the exceptions of Chile and Spain where 66% and 52% of internet users, respectively, (strongly/somewhat) agree that citizens

⁴ The first report gathers information on: Australia, Chile, Colombia, Cyprus (Greek), Cyprus (Turkish), Hungary, Israel, Mexico, New Zealand, Poland, Portugal, Sweden, Taiwan, the United Arab Emirates, the United Kingdom, and the United States. The second report gathers information on: Australia, Canada, Colombia, Italy, México, New Zealand, Poland, Spain, Sweden, and Switzerland.

⁵ The population base for these questions was Internet users aged 18 or older. The scale for the answers was the following: Strongly Disagree/ Somewhat Disagree/ Neutral/ Somewhat Agree/ Strongly Agree.

can have more political power by using the internet, and Taiwan and Spain where 77% of internet users (strongly/somewhat) agree that they will have more say about what the government does (Cole et al., 2012a,b)⁶.

The December 2012's report also explores people's feelings about the freedom of expression in the online environment⁷ (Cole et al., 2012b). Results show that, in general, people feel comfortable in giving their political opinions on the internet: in fact, in five of the six reporting countries (Canada, New Zealand, Poland, Spain, and Switzerland) over half of the population agrees with that statement and, in the case of Sweden, this figure increases up to ¾. Moreover, the majority of people believe that they should be free to express their critical opinions about government's policies in the online environment: in Spain the percentage of people sharing this belief is about 85%, in Sweden 75%, and in Canada, New Zealand and Poland about 65%; the only exception is Switzerland with half of the population sharing that view.

While these two reports do not provide any explanation on cross-country differences in citizens' opinions on the internet and participation, several efforts have been devoted to unveil the gaps in online participation within countries on the basis of the resources approach. Here, two types of studies should be distinguished: descriptive studies and those using statistical models. Two recent examples of the first type are the reports by the Oxford Internet Institute (Dutton & Blank, 2011) and the Pew Research Center (Smith, 2013; Smith, Scholzman, Verba, & Brady, 2009). Both of them reach the same conclusion: among British and American citizens, political participation on the internet is mainly related to individuals' income levels and education. As Smith states (2013: 1): "the well-educated and the well-off are more likely than others to participate in civic life online -just as those groups have always been more likely to be active in politics and community affairs offline". Nevertheless, the evidence on the role of these socio-economic factors is not that clear when their influence is all taken together through statistical/econometric models. For instance, Krueger (2002) finds no statistically significant evidence on the effect of education over internet political

⁶ The report does not provide any explanation for such high rates in those countries.

⁷ This information was only gathered in six out of the 10 countries analyzed in December's report.

participation. Furthermore, his results show a negative and statistically significant association between income and internet participation, which implies that those with lower incomes are more likely to use the internet for political engagement than the high-income individuals. In contrast, Best and Krueger (2005) find the same socio-economic profile for offline and online participation: those who participate are the well-off and the well-educated. The same result is observed by Hansen and Reineau (2006). However, Aduiza et al. (2010b) analyze three types of participation online (e-contact, e-petition, and e-donation⁸) and find that education only exerts a statistically significant and positive effect over e-donation, while income does not matter for any of three types of online engagement, not even for donating money online. None statistically significant effect is found either for income or education by Aduiza et al. (2010a). Furthermore, the evidence regarding the existence of gender and age gaps in online participation is also mixed (Anduiza et al., 2010b; Best & Krueger, 2005; Krueger, 2002; Saglie & Vabo, 2009); whereas, there is some consensus that those interested in politics tend to engage online (Anduiza et al., 2010a,b; Best & Krueger, 2005; Krueger, 2002). Moreover, Gibson et al. (2005) find evidence that the internet stimulates the participation of those citizens who are little active in traditional forms of political participation.

Nonetheless, a proper analysis of social and political participation over the internet requires a review and update of the traditional resources approach in order to incorporate internet-related resources. Hence, several authors have highlighted the fact that the new media requires some specific resources for being able to participate online (Kiesler, Zdaniuk, Lundmark & Kraut, 2000; Kling, 1999; Krueger, 2002; van Deursen & van Dijk, 2009). As Hargittai (2002) states: "How can we talk about the internet's effect on political participation if a user does not possess the skills to find political information?" . In fact, van Deursen and van Dijk (2009) indicate that four new types of skills are required for citizens to be able to fully use online public information and services: (i) operational skills to operate with new media, (ii) formal skills to handle new

⁸ In Anduiza et al. (2010b), e-contact refers to having emailed a politician or administration in the last 12 months; e-petition to having signed an online petition in the last 12 months; and e-donation to having given money online to an organization in the last 12 months.

media, (iii) informational skills to search and choose relevant information, and (iv) strategic skills to use the obtained information for achieving a certain goal⁹.

In this context, much attention has been paid in order to unveil the role of digital skills over online participation. In this sense, research has generally shown that digital skills are by far the most important element to explain online participation (Anduiza et al., 2010a,b ; Krueger, 2002). Thus, the higher the level of digital skills, the more likely an individual is to participate online.

While the review of the resources approach has focused on the inclusion of digital skills as a key resource in order to explain online participation, little has been done to update other types of resources. For instance, individual's political interest is usually proxied by reading/watching political news/information offline, while the possibility of online information/news is not considered. In the same sense, the role of online social networks as group resources for social and political participation on the internet remains little explored in the resources approach, in contrast to the emerging literature which study the effects of social media over citizens' political participation. Some recent examples are Effing, van Hillegersberg and Huibers (2011), Hong and Nadler (2012) and the reports by the Pew Research Center (Smith, 2013). Effing et al. (2011) analyzed results from the 2010 and 2011 Dutch elections and observed that while social media (Facebook, Twitter, and Youtube) did not influence voting behavior in local elections, there was a positive association between politicians' engagement in social media and the votes they got in national elections. Hong and Nadler (2012) study 2012 US national elections and find that despite the high activity deployed by candidates on social media, little online attention was paid to them by citizens. Figures by the Pew Research Center show a notably growth in political activity in social networking sites in the period 2008-2012 (Smith, 2013). Thus, in 2012 almost 40% of Americans have engaged in civic/political participation through social networks. The civic/political activities carried out by those who reported themselves as social network users were several and involved different degrees of political engagement: from 38% of social network users who "like or promote material related to political/social

⁹ Recently van Dijk (2012) updated and extended this classification including two new types of digital skills: communication and content-creation skills.

issues that others have posted” to 21% who “belong to a group that is involved in political/social issues” through 35% who “encourage other people to vote” (Smith, 2013:3).

There is also little evidence on the effects that the online development of public administrations might exert over citizens’ social and political participation on the internet. Hence, an individual living in an area where local/regional/national authorities have largely implemented online mechanisms for citizens’ political participation (i.e., Reykiavkic’s town hall in Iceland¹⁰) will be *a priory* more likely to participate than those living in areas where such participatory online tools have not been developed. Saglie and Vabo (2009) are one of the scarce papers which explore this issue and find a weak association between the efforts done by local authorities to stimulate e-participation and citizens’ online engagement. In addition, it is worth mentioning that the United Nations has been surveying governments worldwide in order to assess the extent to which they are facilitating that citizens can take part in decision-making processes. In particular, the information collected is summarized in the so-called E-Participation Index (United Nations, 2012). Such index takes into account the following three dimensions: “e-information sharing”, that is, the provision of information by the government to the citizens; “e-consultation”, meaning communication with stakeholders, and “e-decision making”, referring to communication that results in direct input into public policy. Hence, “a country’s e-participation index value reflects how useful these features are and how well they have been deployed by the government compared to all other countries” (United Nations, 2012: 126).

Given all this, this paper aims to throw some light on the factors shaping individuals’ political participation online by taking into account not only traditional resources but also those internet-specific and, in particular, the role of social networks and of the institutional environment online.

¹⁰ This example will be further commented in the following section.

3. Data

The data used in this paper come from the survey on ICT usage in households and by individuals collected by the Spanish National Institute of Statistics (2011b). The sampling universe of households refers to those with at least one member aged between 16 and 74 years old, and the sampling universe of individuals consists of precisely those in that age interval. A three-stage sampling is used over these populations: in the first stage, the relevant statistical units are census sections (tracks), stratified by town size; in the second stage, households and finally, in the third stage, people over 15 years old. Out of this universe, an independent, representative and random sample is drawn for each region. Such sample is a rotating panel that annually renews itself by fourths (Spanish National Institute of Statistics, 2011a).

The 2011 survey collected information on 15,801 individuals between 16 and 74 years old. However, our final sample consisted of 15,772 individuals due to some missing cases related to the variable education. Out of this total, 9,464 individuals reported having used the internet in the last three months and, therefore they were considered as internet users since this is the relevant time framework for the definition of an individual as an internet user in the survey.

Individuals classified as internet users were asked, for the first time in the history of this survey¹¹, about their engagement in social and political participation on the internet. In particular, they were asked whether “they had read or gave opinions about social and political issues on the internet” and whether “they had signed online petitions or had taken part in online public consultations”.

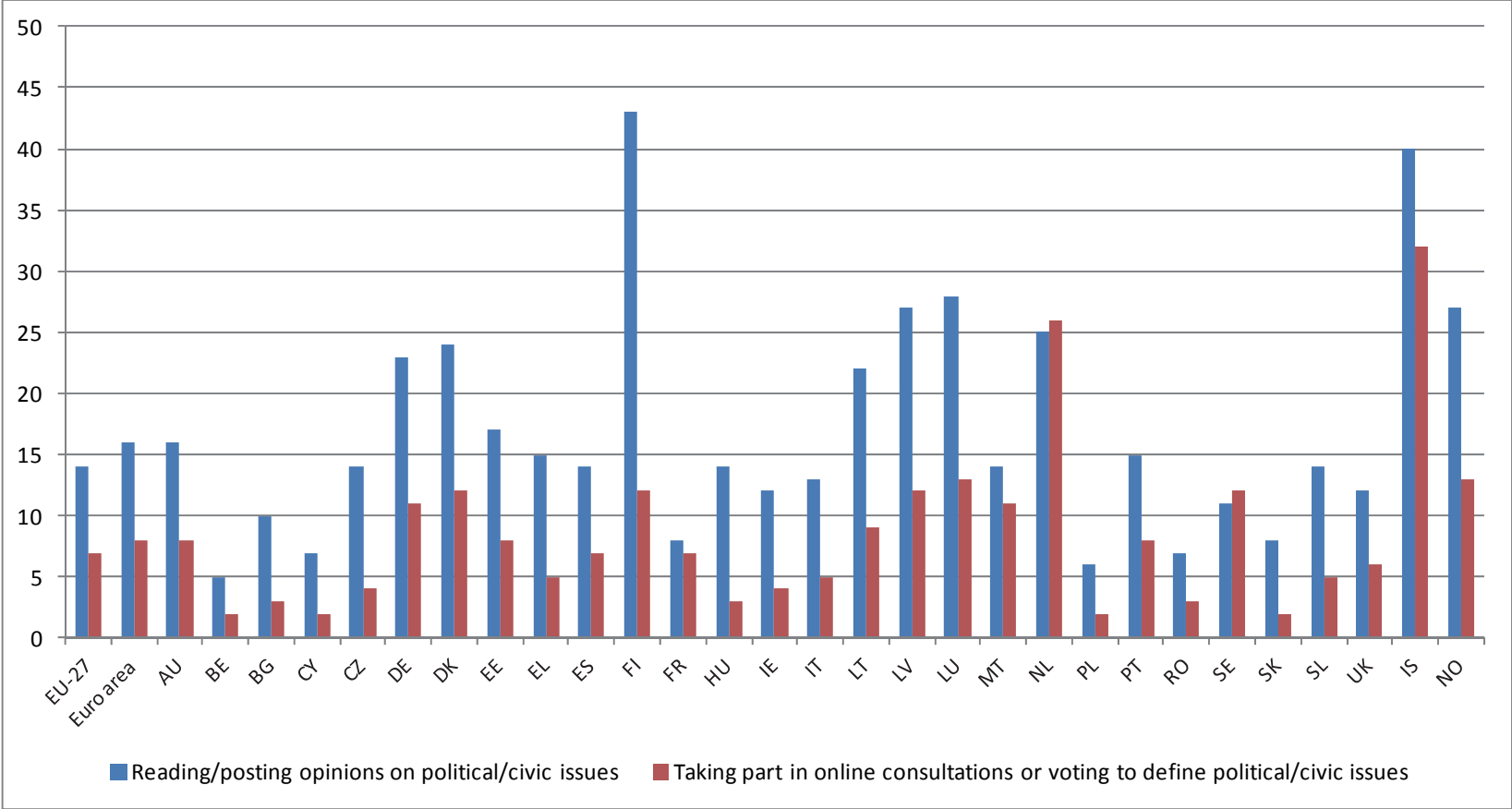
Data shows that 67.1% of individuals between 16 and 74 years old have used the internet in the last three months. Among them, 21.2% have read or gave opinions about social and political issues, 10.2% have signed online petitions or have taken part in online public consultations, and 7.2% have participated in both ways.

¹¹ This survey was launched in 2002.

Figure 1 shows some data related to online political and social participation across the European Union, Iceland and Norway (Eurostat, 2012). In general, the activity of reading and giving opinions on political and social issues is much more frequent than that related to taking part in online consultations or signing online petitions. The European average for the first type of participation just doubles the one for the second type (14% versus 7%). Nordic countries present the highest rates in both kinds of online activities: in the first type of participation, the leading countries are Finland and Norway, with 43% and 40% of their populations, respectively, reading or giving opinions about social and political issues on the internet. In the second type of participation, Iceland and the Netherlands are at the top, with rates of 32% and 26%, respectively. Iceland is a paradigmatic case. The severe economic crisis that hit the country in 2008 drove deep changes not only in its financial and political systems but also in citizens' involvement in public and political issues. An outstanding fact is that the Icelandic constitution was rewritten by a panel of 25 citizens with all the process being public to population by means of social media (Twitter, Facebook...) (The Guardian, 2011). Another initiative worth mentioning is the website Better Reykjavik (<http://betrireykjavik.is>), which has been awarded the 2011 European e-democracy prize. In this website, citizens can post their proposals to improve life conditions in Reykjavik and open them to be voted (whether endorsed or opposed) by other citizens. Every month top endorsed proposals are processed by Reykjavik's city council (Citizens Foundation Iceland, 2012). The rest of the countries are quite far behind these leading nations. Spain is around the European average¹², while Belgium and Poland show the lowest percentages of engagement in both kinds of activities (about 7% and 2% in each type of participation).

¹² The figures for Spain reported in the previous paragraph and those in Figure 1 are not the same because base populations differ. In the former case, percentages are calculated over the total of internet users, while in the latter the base is the full population between 16 and 74 years old (whether they are internet users or not).

Figure 1. Social and political participation online in the European Union, Iceland and Norway (percentages of individuals aged 16 to 74)



Note: See annex for country acronyms. Source: Eurostat (2012).

4. Methodology and variables

4.1 Econometric model

Given the binary nature (yes/no) of the variables regarding social and political participation on the internet, discrete choice modeling is the most appropriate methodological framework in order to analyze an individual's decision on whether to participate or not (Greene, 2007). In particular, a probit model is used, controlling for potential selection bias. Selection bias could arise since the analysis of participation only makes sense for those being internet users, however data come from a sample of the full population. In such a context, if the analysis is carried out just taking into account internet users, sample selection bias will be introduced. In order to avoid this bias, literature suggests the estimation of a model of two equations (Greene, 2007): a first selection equation to determine whether an individual uses the internet or not, and a second outcome equation to explain whether he/she participates online, given that he/she is an internet user. Then the model will be specified as follows:

$$\text{Outcome equation: Social/political participation online} \quad Y_1 = X_1' \beta_1 + u_1 \quad (1)$$

$$\text{Selection equation: Internet use} \quad Y_2 = X' \beta_2 + v_2 \quad (2)$$

Y_1 is only observed when $Y_2=1$

Where Y_1 is a binary variable which takes value 1 when an internet user chooses to participate online (and 0 otherwise). Likewise, Y_2 is a binary variable which takes value 1 if the individual is an internet user (and 0 otherwise). Y_1 is only observed when $Y_2=1$; X_1 and X are the vectors of explanatory variables, and u_1 and v_2 the error terms in the outcome and selection equations, respectively. Assuming that u_1 and v_2 are normally distributed (bivariate normal distribution with zero-mean and unit variance) with correlation $\rho_{u,v}$, (1) and (2) define a bivariate probit model corrected by sample selection. Such model will be appropriate when $\rho_{u,v} \neq 0$. In addition, its estimation requires that, at least, one variable in X is not included in X_1 , that is, to consider something that determines selection but not the outcome.

4.2 Variables

As previously outlined, online participation is measured through two dummy variables related to the aforementioned yes/no questions about “reading and giving opinions about social and political issues on the internet” and “signing online petitions or taking part in online public consultations”. Separate probit regressions (controlling for selection bias, respectively) have been run for each of these variables in order to assess whether there are differences in the factors influencing them.

The explanatory variables have been selected according to the literature review made in section 2. In the first place, individuals’ demographic characteristics are considered: income¹³, educational attainment, employment status, gender, age¹⁴ and town size. As mentioned in section 4.1, literature indicates that the estimation of a probit model controlling for selection bias requires excluding from the outcome equation at least one of the variables considered in the selection equation (Greene, 2007). In this case, the variable excluded from the outcome equation is town size, since once internet access has been gained, the type of area where an individual lives is little likely to be associated with his/her activities online.

In the second place, two measures of digital skills are considered. Following previous research (Anduiza et al., 2010b; Best & Krueger, 2005; Krueger, 2002), the level of digital skills is measured by taking into account the number of different online activities carried out by an individual. In particular, an index of digital skills is developed by calculating the average number of tasks performed by an individual and then normalizing it to a scale 0-1. An alternative measure of digital skills is also considered by paying attention to individuals’ self-assessed online skills. This variable is built by using respondents’ answers to the following yes/no questions: “do you believe your computer skills to be good enough: (1) as to communicate through the internet; (2) as to protect your personal information; (3) as to protect your computer from viruses”. Individuals’

¹³ Multiple imputation has been used over the variable income due to the number of missing cases (26%).

¹⁴ The square of age has also been included in the estimations in order to take into account that the relationship between age and participation might not be linear.

positive answers are added and summarized in a variable that takes values from 0 to 3¹⁵.

In the third place, political interest is measured by a dummy variable that takes into account whether an individual usually reads news online. As previously described, the factor related to political views and attitudes is complex and involves multiple issues (political interest, political knowledge and information, ideology, satisfaction or dissatisfaction with politics and politicians...). In the present analysis, it is hypothesized that reading news online indicates, at least, to some extent, an individual's interest on the current socio-economic circumstances and politics.

Then, the fact of being member of a social online network is included as a proxy of group resources.

Finally, the institutional and political environment is considered through a measure of the regional development of e-government. In particular, we use a composite index which is the regional version of the one developed to benchmark e-government availability in the framework of the European plan i2010¹⁶ (Capgemini, Sogeti, IDC, RAND Europe & the Danish Technological Institute, 2010; Eurostat, 2011). Such regional index has been developed by Fundación Orange (2011) and analyzes the level of online availability of 26 public services (16 services for citizens and 10 services for enterprises) across Spanish regional administrations. For each service, the degree of sophistication of online availability is measured through a five-stage classification: (0) no online service; (1) basic information; (2) one-way interaction; (3) two-way interaction; and (4) full electronic case handling. Such classification is then normalized to scale from 0 to 100% and the average of the scores on the 26 evaluated services is calculated. This average is taken as region's score. Table 1 shows the results across Spanish regions in the year 2011.

¹⁵ The survey also included the following question regarding digital skills: "do you believe your computer skills to be good enough in case you were looking for a (new) job?". Despite the interest of such a question, there was a high number of missing cases which prevented us from including it.

¹⁶ Initially this index was developed to benchmark the eEurope plan by analyzing 20 public services. The regional version used in this paper introduces a little variation since it considers 26 public services.

Table 1. E-government availability in Spain at the regional level

Region	% of online availability of public services*	N. of online public services classified in stage 4 (out of 26 services)
Andalucía	97	24
Aragón	62	6
Asturias	98	25
Baleares	72	11
Canarias	71	10
Cantabria	63	7
Castilla-La Mancha	84	19
Castilla y León	87	18
Cataluña	78	14
Ceuta	68	13
Comunidad Valenciana	78	14
Extremadura	67	9
Galicia	75	13
La Rioja	92	21
Madrid	98	25
Melilla	49	3
Murcia	73	12
Navarra	94	23
País Vasco	84	17

Note: Maximum and minimum values are in bold. (*) This is the variable related to e-government included in the estimations. Stage 4 refers to those public services with fully online handling. See section 4.2 for a methodological summary on the development of these indicators. Source: Fundación Orange (2011).

5. Results

Table 2 shows the results from the estimations. As previously mentioned, separate probit regressions (controlling for potential selection bias) have been run for the two considered types of online participation in order to identify whether the same factors drive them or not.

The lower part of the table presents the estimated coefficients for the selection equation, which refers to whether an individual is an internet user or not, and the upper part of the table shows the estimated coefficients for the outcome equations, which refer to online participation. The last line of the table reports the estimated ρ which, in general, significantly differ from zero. Such results indicate the appropriateness of our estimation strategy that controls for selection bias.

Results for the selection equations show that a significant digital divide exists in the use of the internet in Spain. All the socio-economic variables considered are found to be statistically significant and the estimates point out that the individuals who are more likely to use the internet are those belonging to the traditionally most advantaged groups: the well-off and the well-educated, living in urban areas. Results also show that there are gender and age gaps in internet use: thus, women and the eldest are significantly less likely to use the internet compared to men and youngsters. In addition, unemployment is negatively associated with internet use. Such result is a serious concern since it implies that unemployed people are not taking advantage of the internet to look for a job (McQuaid, Lindsay, & Greig, 2004; Stevenson, 2008). Being a foreigner is also found to be negative and statistically significant. Although some authors have claimed that foreigners may tend to use the internet more intensively than nationals in order to overcome isolation and keep in contact with their families and friends (Sinai & Waldfogel, 2004), our results show that this is not the case, possible due to some shortcomings in education or/and to the existence of large communities of foreigners in the country of residence which attenuate the feeling of isolation (Schleife, 2010).

Table 2. Probit estimated coefficients for online participation

OUTCOME EQUATIONS (n=9,464)		Read or give opinions about social and political issues		Sign online petitions or take part in online public consultations	
Dependent variable: Online Participation		Coef.	Coef.	Coef.	Coef.
Age		0.008	-0.003	0.018	0.010
Age^2		0.000	0.000	0.000	0.000
Gender (woman)		-0.094***	-0.167***	-0.057***	-0.118***
Foreigner		-0.273***	-0.235***	-0.087	-0.051
Income_600-1600€		0.011	0.033	0.065	0.074
Income_1600-2600€		0.012	0.045	0.031	0.048
Income_>2600€		-0.020	0.048	0.000	0.047
Secondary school_1stage		0.012	0.078	-0.117	-0.060
Secondary school_2stage		0.005	0.118	-0.107	-0.034
Vocational training		-0.048	0.094	-0.227	-0.119
University degree		0.058	0.251**	-0.120	0.022
Unemployed		0.095*	0.086*	0.096	0.086
E-government_index		0.099	0.115	0.349***	0.334***
Online social network user		0.450***	0.688***	0.362***	0.565***
Reading news online		0.485***	0.579***	0.582***	0.674***
Digital skills score		1.815***		1.463***	
Self-assessed digital skills			0.132***		0.138***
Constant		-2.946***	-2.531***	-4.651***	-4.277***
SELECTION EQUATIONS (n=15,772)					
Dependent variable: Internet use		Internet use			
Age		-0.051***	-0.051***	-0.050***	-0.050***
Age^2		0.000	0.000	0.000	0.000
Gender (woman)		-0.136***	-0.134***	-0.135***	-0.133***
Foreigner		-0.250***	-0.253***	-0.248***	-0.253***
Income_600-1600€		0.308***	0.309***	0.306***	0.306***
Income_1600-2600€		0.613***	0.618***	0.612***	0.617***
Income_>2600€		0.764***	0.768***	0.761***	0.764***
Secondary school_1stage		0.503***	0.503***	0.503***	0.502***
Secondary school_2stage		1.191***	1.200***	1.185***	1.193***
Vocational training		1.386***	1.400***	1.384***	1.398***
University degree		1.876***	1.891***	1.876***	1.890***
Unemployed		-0.074*	-0.070*	-0.077**	-0.073*
Size: 10-20,000 inhabitants		0.091**	0.076*	0.086**	0.072
Size: 20-50,000 inhabitants		0.134***	0.128*	0.140***	0.135***
Size: 50-100,000 inhabitants (no capital city)		0.202***	0.193***	0.202***	0.196***
Size: >100,000 inhabitants (no capital city)		0.245***	0.242***	0.241***	0.238***
Size: Capital city		0.124***	0.111***	0.141***	0.129***
Size: Capital city &>500,000 inhabitants		0.308***	0.306***	0.314***	0.315***
Constant		1.650***	1.655***	1.632***	1.638***
ρ		-0.212*	-0.155	-0.551***	-0.519***

Notes: ***, **, * indicate significant at the 1%, 5%, and 10% levels, respectively. The reference categories are: men, Spanish, monthly income less than 600€, primary studies, employed and inactive, towns with less than 10,000 inhabitants. Coef. stands for coefficients.

Overall, it is worth highlighting that while these results are in line with the large empirical evidence on the digital divide (Goldfarb & Prince, 2008; Montagnier & Wirthmann, 2011; National Telecommunications and Information Administration, 1995; Noce & McKeown, 2008; Orviska & Hudson, 2010; Schleife, 2010; Vicente & López, 2006, 2010), it is quite shocking to find that individuals' socio-economic background still makes a difference to explain internet use when its penetration levels are about to reach the threshold of 70% in Spain (see section 3).

Regarding online participation, the first thing to draw attention at is the fact that, once an individual is online, internet-related resources play the main role for explaining citizens' political and social engagement while traditional resources such as income and education do not matter anymore for any of the two considered types of online participation. Generational barriers also seem to disappear in the online environment, since age is found not to be statistically significant. Only gender keeps exerting a statistically significant and negative effect over both types of online participation. Hence, women are less likely than men to express their opinions on social and political issues on the internet as well as to sign petitions or take part in online consultations. Statistically significant effects are also found for being a foreigner and being unemployed in relation with online participation via reading or giving opinions. Thus, foreigners are less likely than nationals to express their opinions online; while unemployed internet users are more likely to engage in this kind of participation. The latter result is quite interesting since the resources approach states that unemployed people tend to little engage in political participation. The positive sign observed in this analysis might be explained by the fact that participation is a less expensive activity for unemployed people, once they are online, since they have more free time compared to those working. In addition, since they have more free time to surf the web they are more likely to be exposed to "participation stimuli". Furthermore, it is important to take into account the impacts of the current economic crisis in Spain: it is the nation presenting the highest levels of unemployment across the European Union (the unemployment rate in 2013 first trimester reach 27.16%; Spanish National Statistical Institute, 2013). Within this

context, it reasonable to think that those without a job have more reasons to be angry, complain and give their opinions about what is going on¹⁷.

As just mentioned, internet-related resources play a main role in explaining political and social engagement among internet users. Our results confirm previous evidence on the importance of digital skills as predictors of social and political participation online (Anduiza et al., 2010b; Best & Krueger, 2005; Krueger, 2002). Thus, results indicate that higher levels of digital skills are associated with an individual being more likely both to give his/her political opinions in the internet and to take part in online consultations or to join online petitions. As can be seen in Table 2, such positive and statistically significant association is observed for the two measures of digital skills included in the estimations, digital skills score and self-assessed digital skills.

Positive and statistically significant associations are also observed between online participation, online political interest and social networks. In particular, results indicate that internet users who are interested in news are more likely to engage in political and social participatory activities online than those who do not. Likewise, those internet users who belong to social online networks are more likely to participate online than those who do not belong to this kind of networks. This latter result is especially interesting since the role of social online networks, to authors' knowledge, has not been previously considered as predictors of online participation activities in the popular resources approach. As mentioned before, the little evidence available comes from descriptive reports such as the latest published by the Pew Research Center (Smith, 2013), which highlights the increasing importance of social online networks as catalysts for civic engagement. As Campante et al. (2013) indicate these online networks facilitate citizens' participation since they have greatly reduced the barriers to entry in this kind of activities. In addition, the

¹⁷ The last survey by the Spanish Sociological Research Center (Centro de Investigaciones Sociológicas, CIS) show that 82.8% of Spanish adults think that the political situation is bad or very bad; 93.2% of Spanish adults think that it is similar or worse than a year before, and 77.4% predict that next year it will be the same or even worse. Moreover, the number of demonstrations that took place in Madrid increased in 74% between 2011 and 2012 (Madridiario, 2013).

widespread of social online networks implies that any content posted has the potential to reach a broad set of people.

Another new finding of this paper is the positive and statistically significant association observed between the online development of public administrations and political participation. While previous research has mainly focused on individual's characteristics to explain whether he/she gets involved in online political participation, this paper analyzes the role that public administrations can play in facilitating (constraining) citizens' civic engagement. Our results show that this role differs by type of political participation: while the estimated coefficients of the variable "e-government index" are positive for the two types of online participation considered in the paper, they are only statistically significant for one of them. Results show that those internet users, living in regions with higher levels of development of public services online, are more likely to participate online via joining petitions and/or taking part in public consultations than who do not. However, no significant association is detected for participation via giving opinions on social or political issues in the internet. Such results can be explained by the fact that the two types of participation analyzed require a different level of involvement by public administrations: hence, an individual would only be able to take part in an online public consultation to the extent that it had been implemented by a public body; whereas he/she could express his/her opinion on political and social issues independently from the online development of public stakeholders.

6. Concluding remarks

The use of information and communications technologies as a new channel for social and political participation is a research area of increasing interest. Some of the efforts in this field have focused on unveiling whether these technologies are contributing to expand participation activities to sectors of citizens which have not been previously involved in offline participatory activities, or whether the traditional divides observed in participation reproduce as well in the online environment and even widen.

Given the mixed empirical evidence on such an issue, this paper has tried to throw some light on it by incorporating some internet-related resources in the analysis that have not been considered in previous literature.

This paper follows an estimation strategy that, controlling for potential selection bias, consists of estimating a first selection equation on whether an individual uses the internet or not; and then an outcome equation regarding online participation among internet users. In this way, we get insights not only on social and political participation online, but also on whether there is an initial divide in internet use.

In fact, results on internet use reveal some serious concerns since they show that individuals' socio-economic features are still statistically significant factors to explain whether someone is an internet user or not. Hence, the individuals who are more likely to be on the internet are the well-off, the well-educated, living in urban areas, men, nationals and employed. All this imply that the traditionally most disadvantage groups in society are also those being digitally excluded.

Once people are online, such socio-economic inequalities seem to disappear except for the one related to gender. Thus, women are less likely to participate online than men. Another interesting result is the one related to the positive association found between being unemployed and online participation. Such result might be a signal of the two following facts: on the one hand, that the cost of such activity is less for the unemployed since they have more free time than those working; and, on the other hand, it might reflect, at least to some extent, the annoyance of Spanish population given the severe economic crisis they are going through and which is characterized by high unemployment rates (over 20% since 2010 and having reached the threshold of 27% in the 2013 first trimester; Spanish National Statistical Institute, 2013).

Overall, results highlight that social and political participation online is mainly associated with internet-related resources. In fact, results confirm the importance of digital skills, as observed in previous literature: the higher level of digital skills, the more likely an internet user is to engage in participation. Moreover, some new results are also found. In the first place, instead of using

offline news interest as a proxy of an individual's political interest, we use online news interest and find a significant association between it and online participation. In the second place, it is observed that individuals belonging to social online networks are more likely to engage in online participation. Such result highlights the increasing importance that these networks are acquiring not only for individuals' leisure but also for other kind of activities such as civic engagement. In fact, these networks have dramatically reduced the barriers to entry in participatory activities compared to the traditional offline ones. In the third place, statistically significant evidence is also found on the role of public administrations as enablers of citizens' participation online. In particular we observe a positive association between the degree of development of e-government and citizens' engagement in public consultation and petitions.

Some important implications for policy making can be inferred from these results. A first key point is to pay attention to the initial divide that exists in internet use, and that it might worsen in the near future given the severe economic crisis that hits many countries. With poverty indices dramatically increasing in countries like Spain –according to recent estimates, poverty has increased by 8% in Spain in between 2008 and 2011 (Instituto Valenciano de Investigaciones Económicas, 2012) - it is very likely that those individuals that are becoming socially excluded will also become digitally excluded, while more and more content and activities will be taking place online. Therefore, it is a must for any policy aimed at fostering citizens' civic engagement online to first address the initial divides in access; otherwise, more and more inequality will arise among citizens with regard to their opportunities to participate in the democratic process. Such actions must be complemented by measures towards the improvement of citizens' digital skills since they are key predictors of online participation. There is also a need that public administrations deeply get involved in implementing tools for citizens' engagement¹⁸. In this sense, it is a key aspect for the success of this type of actions that public administrations not only open consultations on relevant issues to citizens but also that they commit

¹⁸ See Bertot, Jaeger and Hansen (2012) for a review of the challenges of American policy for the implementation of social media tools and citizens' engagement.

themselves to actually take into account citizens' opinions and concerns. Better Reykjavik is an ideal model to follow, where the city hall analyzes every month top citizens' proposals.

Finally, it is worth highlighting the importance that future research gets deeper insights into the different options for social and political participation on the internet. This paper has focused on just two types of participation due to data restrictions; however, the internet allows for a wide variety of participatory activities that should be deeply analyzed. Especially important is as well to explore political engagement over social online networks. This paper has done a first attempt and has found a significant association between them. With more and more people becoming members of these networks and more and more public administrations having their profiles in them, social online networks are very likely to become the most important platform for online political engagement in the nearly future. Therefore, much more research is needed in this area.

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Annex. Country acronyms

Acronym	Country
EU-27	European Union
AU	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	The Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LV	Latvia
LU	Luxembourg
MT	Malta
NL	The Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SK	Slovak Republic
SL	Slovenia
UK	The United Kingdom
IS	Iceland
NO	Norway

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