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

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De conformidad con la base quinta de la convocatoria del Programa de Estímulo a la Investigación, este trabajo ha sido sometido a evaluación externa anónima de especialistas cualificados a fin de contrastar su nivel técnico.

La serie DOCUMENTOS DE TRABAJO incluye avances y resultados de investigaciones dentro de los programas de la Fundación de las Cajas de Ahorros.
Las opiniones son responsabilidad de los autores.
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 citizens. Obama’s 2008 electoral campaign is a well-known example of the intense use of the internet to diffuse their programme and interact with electors. 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

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1 A recent example of such use can be found at Campante, Durante, & Sobbrio (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, & Macphee, 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 lead 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 them.

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 or by disseminating information through their social networks; (iv) furthermore, the

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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

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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 environment\(^7\) (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 \(\frac{3}{4}\). 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

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\(^6\) 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-donation\footnote{In Aduiza 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.}) 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
media, (iii) informational skills to search and choose relevant information, and (iv) strategic skills to use the obtained information for achieving a certain goal. 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

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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., Reykjavík’s town hall in Iceland\(^\text{10}\)) will be a priori 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.

\(^\text{10}\) 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 survey\textsuperscript{11}, 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.

\textsuperscript{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 average\(^\text{12}\), 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)

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:

Outcome equation: Social/political participation online

\[ Y_1 = X'_1 \beta_1 + u_1 \]  

Selection equation: Internet use

\[ Y_2 = X'_2 \beta_2 + v_2 \]

\[ Y_1 \] 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: income\(^{13}\), educational attainment, employment status, gender, age\(^ {14}\) 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 3$^{15}$.

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 i2010$^{16}$ (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.

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$^{15}$ 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>
<thead>
<tr>
<th>Region</th>
<th>% of online availability of public services*</th>
<th>N. of online public services classified in stage 4 (out of 26 services)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andalucía</td>
<td>97</td>
<td>24</td>
</tr>
<tr>
<td>Aragón</td>
<td>62</td>
<td>6</td>
</tr>
<tr>
<td>Asturias</td>
<td><strong>98</strong></td>
<td><strong>25</strong></td>
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<tr>
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<td>País Vasco</td>
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<td>17</td>
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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 $\rho$ 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

<table>
<thead>
<tr>
<th>OUTCOME EQUATIONS (n=9,464)</th>
<th>Read or give opinions about social and political issues</th>
<th>Sign online petitions or take part in online public consultations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.008</td>
<td>-0.003</td>
</tr>
<tr>
<td>Age^2</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Gender (woman)</td>
<td>-0.094***</td>
<td>-0.167***</td>
</tr>
<tr>
<td>Foreigner</td>
<td>-0.273***</td>
<td>-0.235***</td>
</tr>
<tr>
<td>Income_600-1600€</td>
<td>0.011</td>
<td>0.033</td>
</tr>
<tr>
<td>Income_1600-2600€</td>
<td>0.012</td>
<td>0.045</td>
</tr>
<tr>
<td>Income_&gt;2600€</td>
<td>-0.020</td>
<td>0.048</td>
</tr>
<tr>
<td>Secondary school_1stage</td>
<td>0.012</td>
<td>0.078</td>
</tr>
<tr>
<td>Secondary school_2stage</td>
<td>0.005</td>
<td>0.118</td>
</tr>
<tr>
<td>Vocational training</td>
<td>-0.048</td>
<td>0.094</td>
</tr>
<tr>
<td>University degree</td>
<td>0.058</td>
<td>0.251**</td>
</tr>
<tr>
<td>Unemployed</td>
<td>0.095*</td>
<td>0.086*</td>
</tr>
<tr>
<td>E-government_index</td>
<td>0.099</td>
<td>0.115</td>
</tr>
<tr>
<td>Online social network user</td>
<td>0.450***</td>
<td>0.688***</td>
</tr>
<tr>
<td>Reading news online</td>
<td>0.485***</td>
<td>0.579***</td>
</tr>
<tr>
<td>Digital skills score</td>
<td>1.815***</td>
<td>1.463***</td>
</tr>
<tr>
<td>Self-assessed digital skills</td>
<td>0.132***</td>
<td>0.138***</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.946***</td>
<td>-2.531***</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SELECTION EQUATIONS (n=15,772)</th>
<th>Internet use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.051***</td>
</tr>
<tr>
<td>Age^2</td>
<td>0.000</td>
</tr>
<tr>
<td>Gender (woman)</td>
<td>-0.136***</td>
</tr>
<tr>
<td>Foreigner</td>
<td>-0.250***</td>
</tr>
<tr>
<td>Income_600-1600€</td>
<td>0.308***</td>
</tr>
<tr>
<td>Income_1600-2600€</td>
<td>0.613***</td>
</tr>
<tr>
<td>Income_&gt;2600€</td>
<td>0.764***</td>
</tr>
<tr>
<td>Secondary school_1stage</td>
<td>0.503***</td>
</tr>
<tr>
<td>Secondary school_2stage</td>
<td>1.191***</td>
</tr>
<tr>
<td>Vocational training</td>
<td>1.386***</td>
</tr>
<tr>
<td>University degree</td>
<td>1.876***</td>
</tr>
<tr>
<td>Unemployed</td>
<td>-0.074*</td>
</tr>
<tr>
<td>Size: 10-20,000 inhabitants</td>
<td>0.091**</td>
</tr>
<tr>
<td>Size: 20-50,000 inhabitants</td>
<td>0.134***</td>
</tr>
<tr>
<td>Size: 50-100,000 inhabitants (no capital city)</td>
<td>0.202***</td>
</tr>
<tr>
<td>Size: &gt;100,000 inhabitants (no capital city)</td>
<td>0.245***</td>
</tr>
<tr>
<td>Size: Capital city</td>
<td>0.124***</td>
</tr>
<tr>
<td>Size: Capital city &amp; &gt;500,000 inhabitants</td>
<td>0.308***</td>
</tr>
<tr>
<td>Constant</td>
<td>1.650***</td>
</tr>
<tr>
<td>ρ</td>
<td>-0.212*</td>
</tr>
</tbody>
</table>

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 on\textsuperscript{17}.

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 (Andúiza 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 that those who do not. Likewise, those internet users who belong to social online networks are more likely to participate online that 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

\textsuperscript{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. Morever, 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’ engagement\textsuperscript{18}. 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

\textsuperscript{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

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<thead>
<tr>
<th>Acronym</th>
<th>Country</th>
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<tr>
<td>EU-27</td>
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<tr>
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<th>Title</th>
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<tbody>
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<tr>
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<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
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Ignacio Álvarez Peralta

¿Flexibilidad o rigidez salarial en España?: un análisis a escala regional
Ignacio Moral Arce y Adolfo Maza Fernández

Intangible relationship-specific investments and the performance of R&D outsourcing agreements
Andrea Martínez-Noya, Esteban García-Canal & Mauro F. Guillén

Friendly or Controlling Boards?
Pablo de Andrés Alonso & Juan Antonio Rodríguez Sanz
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>439/2009</td>
<td>La sociedad Trenor y Cía. (1838-1926): un modelo de negocio industrial en la España del siglo XIX</td>
</tr>
<tr>
<td>440/2009</td>
<td>Continental bias in trade</td>
</tr>
<tr>
<td>441/2009</td>
<td>Determining operational capital at risk: an empirical application to the retail banking</td>
</tr>
<tr>
<td>442/2009</td>
<td>Costes de mitigación y escenarios post-kyoto en España: un análisis de equilibrio general para España</td>
</tr>
<tr>
<td>443/2009</td>
<td>Las revistas españolas de economía en las bibliotecas universitarias: ranking, valoración del indicador y del sistema</td>
</tr>
<tr>
<td>444/2009</td>
<td>Convergencia económica en España y coordinación de políticas económicas. un estudio basado en la estructura productiva de las CC.AA.</td>
</tr>
<tr>
<td>445/2009</td>
<td>Instrumentos de mercado para reducir emisiones de co2: un análisis de equilibrio general para España</td>
</tr>
<tr>
<td>446/2009</td>
<td>El comercio intra e inter-regional del sector Turismo en España</td>
</tr>
<tr>
<td>447/2009</td>
<td>Efectos del incremento del precio del petróleo en la economía española: Análisis de cointegración y de la política monetaria mediante reglas de Taylor</td>
</tr>
<tr>
<td>448/2009</td>
<td>Bologna Process and Expenditure on Higher Education: A Convergence Analysis of the EU-15</td>
</tr>
<tr>
<td>449/2009</td>
<td>Global Economy Dynamics? Panel Data Approach to Spillover Effects</td>
</tr>
<tr>
<td>450/2009</td>
<td>Pricing levered warrants with dilution using observable variables</td>
</tr>
<tr>
<td>452/2009</td>
<td>A Detailed Comparison of Value at Risk in International Stock Exchanges</td>
</tr>
<tr>
<td>453/2009</td>
<td>Understanding offshoring: has Spain been an offshoring location in the nineties?</td>
</tr>
<tr>
<td>454/2009</td>
<td>Outsourcing decision, product innovation and the spatial dimension: Evidence from the Spanish footwear industry</td>
</tr>
</tbody>
</table>
Does playing several competitions influence a team’s league performance? Evidence from Spanish professional football
Andrés J. Picazo-Tadeo & Francisco González-Gómez

Does accessibility affect retail prices and competition? An empirical application
Juan Luis Jiménez and Jordi Perdiguero

Cash conversion cycle in smes
Sonia Baños-Caballero, Pedro J. García-Teruel and Pedro Martínez-Solano

Un estudio sobre el perfil de hogares endeudados y sobreendeudados: el caso de los hogares vascos
Alazne Mujika Alberdi, Iñaki García Arrizabalaga y Juan José Gibaja Martíns

Imposing monotonicity on outputs in parametric distance function estimations: with an application to the spanish educational production
Sergio Perelman and Daniel Santin

Key issues when using tax data for concentration analysis: an application to the Spanish wealth tax
José Mª Durán-Cabré and Alejandro Esteller-Moré

¿Se está rompiendo el mercado español? Una aplicación del enfoque de feldstein –horioka
Saúl De Vicente Queijeiro, José Luis Pérez Rivero y María Rosalía Vicente Cuervo

Financial condition, cost efficiency and the quality of local public services
Manuel A. Muñiz & José L. Zafra

Including non-cognitive outputs in a multidimensional evaluation of education production: an international comparison
Marián García Valiñas & Manuel Antonio Muñiz Pérez

A political look into budget deficits. The role of minority governments and oppositions
Albert Falcó-Gimeno & Ignacio Jurado

La simulación del cuadro de mando integral. Una herramienta de aprendizaje en la materia de contabilidad de gestión
Elena Urquía Grande, Clara Isabel Muñoz Colomina y Elisa Isabel Cano Montero

Análisis histórico de la importancia de la industria de la desalinización en España
Borja Montaño Sanz

The dynamics of trade and innovation: a joint approach
Silviano Esteve-Pérez & Diego Rodríguez

Measuring international reference-cycles
Sonia de Lucas Santos, Inmaculada Álvarez Ayuso & Mª Jesús Delgado Rodríguez

Measuring quality of life in Spanish municipalities
Eduardo González Fidalgo, Ana Cárrega García, Juan Ventura Victoria & Jesús García García

¿Cómo se valoran las acciones españolas: en el mercado de capitales doméstico o en el europeo?
Begoña Font Belaire y Alfredo Juan Grau Grau

Patterns of e-commerce adoption and intensity. evidence for the european union-27
Maria Rosalía Vicente & Ana Jesús López

On measuring the effect of demand uncertainty on costs: an application to port terminals
Ana Rodríguez-Álvarez, Beatriz Tovar & Alan Wall

Order of market entry, market and technological evolution and firm competitive performance
Jaime Gomez, Gianvito Lanzolla & Juan Pablo Maicas

La Unión Económica y Monetaria Europea en el proceso exportador de Castilla y León (1993-2007): un análisis de datos de panel
Almudena Martinez Campillo y Mª del Pilar Sierra Fernández
475/2009 Do process innovations boost SMEs productivity growth?
Juan A. Mañez, Maria E. Rochina Barrachina, Amparo Sanchis Llopis & Juan A. Sanchis Llopis

476/2009 Incertidumbre externa y elección del modo de entrada en el marco de la inversión directa en el exterior
Cristina López Duarte y Marta Mª Vidal Suárez

477/2009 Testing for structural breaks in factor loadings: an application to international business cycle
José Luis Cendejas Bueno, Sonia de Lucas Santos, Inmaculada Álvarez Ayuso & Mª Jesús Delgado Rodríguez

478/2009 ¿Esconde la rigidez de precios la existencia de colusión? El caso del mercado de carburantes en las Islas Canarias
Juan Luis Jiménez y Jordi Perdiguero

479/2009 The poni test with structural breaks
Antonio Aznar & María-Isabel Ayuda

480/2009 Accuracy and reliability of Spanish regional accounts (CRE-95)
Verónica Cañal Fernández

481/2009 Estimating regional variations of R&D effects on productivity growth by entropy econometrics
Esteban Fernández-Vázquez y Fernando Rubiera-Morollón

482/2009 Why do local governments privatize the provision of water services? Empirical evidence from Spain
Francisco González-Gómez, Andrés J. Picazo-Tadeo & Jorge Guardiola

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María Rosalía Vicente & Ana Jesús López

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José Manuel Cordero Ferrera, Eva Crespo Cebada & Daniel Santín González

485/2009 Spatial analysis of public employment services in the Spanish provinces
Patricia Suárez Cano & Matías Mayor Fernández

486/2009 Trade effects of continental and intercontinental preferential trade agreements
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano

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Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano

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José Manuel Cordero Ferrera, Eva Crespo Cebada & Luis R. Murillo Zamorano
489/2009  Capital structure determinants in growth firms accessing venture funding
Marina Balboa, José Martí & Álvaro Tresierra

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Víctor M. González

491/2009  Análisis del efecto de la aplicación de las NIIF en la valoración de las salidas a bolsa
Susana Álvarez Otero y Eduardo Rodríguez Enríquez

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Ana Viñuela-Jiménez, Fernando Rubiera-Morollón & Begoña Cueto

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Isabel Acero Fraile y Nuria Alcalde Fradejas

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Vanessa Solis-Rodriguez & Manuel Gonzalez-Diaz

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Santiago Carbó, David Humphrey & Francisco Rodriguez

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Antoni Rubí-Barceló

497/2010  Beneficios ambientales no comerciales de la directiva marco del agua en condiciones de escasez: análisis económico para el Guadalquivir
Julia Martin-Ortega, Giacomo Giannoccaro y Julio Berbel Vecino

498/2010  Monetary integration and risk diversification in eu-15 sovereign debt markets
Juncal Cuñado & Marta Gómez-Puig

José Antonio Carrasco Gallego

500/2010  The role of learning in firm R&D persistence
Juan A. Mañez, María E. Rochina-Barrachina, Amparo Sanchis-Llopis & Juan A. Sanchis-Llopis

501/2010  Is venture capital more than just money?
Marina Balboa, José Martí & Nina Zieling

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Javier González-Beníto

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Cristina Martínez-Sola, Pedro J. García-Teruel & Pedro Martínez-Solano

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Lourdes Jerez Barroso y Joaquín Texeira Quirós

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Jaime Gómez & Pilar Vargas
| 506/2010 | ¿Cómo ha afectado la fiscalidad a la rentabilidad de la inversión en vivienda en España? Un análisis para el periodo 1996 y 2007 | Jorge Onrubia Fernández y María del Carmen Rodado Ruiz |
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| 508/2010 | Export-led-growth hypothesis revisited. A balance of payments approach for Argentina, Brazil, Chile and Mexico | David Matesanz Gómez & Guadalupe Fugarolas Álvarez-Ude |
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| 512/2010 | Size & Regional Distribution of Financial Behavior Patterns in Spain | Juan Antonio Maroto Acín, Pablo García Estévez & Salvador Roji Ferrari |
| 513/2010 | The impact of public reforms on the productivity of the Spanish ports: a parametric distance function approach | Ramón Nuñez-Sánchez & Pablo Coto-Millán |
| 514/2010 | Trade policy versus institutional trade barriers: an application using “good old” ols | Laura Márquez-Ramos, Inmaculada Martínez-Zarzoso & Celestino Suárez-Burguet |
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| 517/2010 | Convergence in car prices among European countries | Simón Sosvilla-Rivero & Salvador Gil-Pareja |
| 518/2010 | Effects of process and product-oriented innovations on employee downsizing | José David Vicente-Lorente & José Ángel Zúñiga-Vicente |
| 519/2010 | Inequality, the politics of redistribution and the tax-mix | Jenny De Freitas |
| 521/2010 | Structual breaks and real convergence in opec countries | Juncal Cuñado |
| 522/2010 | Human Capital, Geographical location and Policy Implications: The case of Romania | Jesús López-Rodríguez, Andres Faiña y Bolea Cosmin-Gabriel |
| 523/2010 | Organizational unlearning context fostering learning for customer capital through time: lessons from SMEs in the telecommunications industry | Anthony K. P. Wensley, Antonio Leal-Millán, Gabriel Cepeda-Carrion & Juan Gabriel Cegarra-Navarro |
| 524/2010 | The governance threshold in international trade flows | Marta Felis-Rota |
| 525/2010 | The intensive and extensive margins of trade decomposing exports growth differences across Spanish regions |
Asier Minondo Uribe-Etxeberria & Francisco Requena Silvente

526/2010 Why do firms locate r&d outsourcing agreements offshore? the role of ownership, location, and externalization advantages
Andrea Martínez-Noya, Esteban García-Canal & Mauro f. Guillén

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Norman Gemmell, Richard Kneller, Ismael Sanz & José Félix Sanz-Sanz

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John Creedy & José Félix Sanz-Sanz

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Jesús López-Rodríguez & Daisuke Nakamura

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Antoni Zabalza y Julio López Laborda

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Lourdes Moreno & Diego Rodríguez

532/2010 The snp-dcc model: a new methodology for risk management and forecasting
Esther B. Del Brio, Trino-Manuel Ñíguez & Javier Perote

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David Naranjo Gil

534/2010 Análisis de la efectividad de las prácticas de trabajo de alta implicación en las fábricas españolas
Daniel Vázquez-Bustelo y Lucía Avella Camarero

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Alberte Martínez López

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Alberte Martínez López y Jesús Mirás Araujo

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Pedro Riera Sagrera

538/2010 The impact of oil shocks on the Spanish economy
Ana Gómez-Loscos, Antonio Montañés & María Dolores Gadea
539/2010 The efficiency of public and publicly-subsidized high schools in Spain. evidence from pisa-2006
Maria Jesús Mancebón, Jorge Calero, Álvaro Choi & Domingo P. Ximénez-de-Embún

540/2010 Regulation as a way to force innovation: the biodiesel case
Jordi Perdiguer & Juan Luis Jiménez

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Xavier Fageda, Juan Luis Jiménez & Jordi Perdiguer

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Oscar González-Benito y Mercedes Martos-Partal

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Ana I. Fernández, Francisco González & Nuria Suárez

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Nuria Gallego López, Carlos Llano Verduras y Julián Pérez García

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Miguel Suárez, Juan Luis Jiménez y Daniel Castillo

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Concepción Latorre & Antonio G. Gómez-Plana

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Antoni Rubí-Barceló

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Miguel González-Maestre & Luis M. Granero

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Ana Rosa Fonseca Díaz, Elena Fernández Rodríguez y Antonio Martínez Arias

550/2010 Analyzing an absorptive capacity: Unlearning context and Information System Capabilities as catalysts for innovativeness
Gabriel Cepeda-Carrión, Juan Gabriel Cegarra-Navarro & Daniel Jimenez-Jimenez

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Elena Cubillas, Ana Rosa Fonseca & Francisco González

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Lucio Fuentelsaz, Elisabet Garrido & Juan Pablo Maicas

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Alfonso Echazarra

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Vanessa Solís-Rodríguez & Manuel González-Díaz
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Javier González Benito

556/2010 Height and economic development in Spain, 1850-1958
Ramón María-Dolores & José Miguel Martínez-Carrión

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Manuel González-Díaz & Vanesa Solís-Rodríguez

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Francisco González-Gómez, Roberto Martínez-Espiñeira, Maria A. García-Valiñas & Miguel Á. García Rubio

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Carmen Pérez-Esparrells y José Mª Gómez-Sancho.

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Alejandro Esteller Moré y José Polo Otero

561/2010 Diversidad lingüística e inversión exterior: el papel de las barreras lingüísticas en los procesos de adquisición internacional
Cristina López Duarte y Marta Mª Vidal Suárez

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José Mª Cantos, Agustín García Rico, Mª Gabriela Lagos Rodríguez y Raquel Álamo Cerrillo

563/2010 Customer base management and profitability in information technology industries
Juan Pablo Maicas y Francisco Javier Sese

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Cristina López Duarte y Marta Mª Vidal Suárez

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Beatrix Tovar & Alan Wall

566/2010 Fiscalidad y elección entre renta vitalicia y capital único por los inversores en planes de pensiones: el caso de España
Félix Domínguez Barrero y Julio López Laborda

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Timothy W. Guinnan & Susana Martínez-Rodríguez

Félix J. López-Iturriaga, Óscar López-de-Foronda & Iván Pastor Sanz

569/2010 Financiación de los cuidados de larga duración en España
Raúl del Pozo Rubio y Francisco Escribano Sotos
570/2010  Is the Border Effect an Artefact of Geographic Aggregation?  
Carlos Llano-Verduras, Asier Minondo-Uribe & Francisco Requena-Silvente

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Carlos Vidal-Melí & María del Carmen Boado-Penas

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Ana I. Fernández, Francisco González & Nuria Suárez Carlos

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Ricardo Flores-Fillol & Rafael Moner-Colonques

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Antonio M. Jaime-Castillo & Jose L. Saez-Lozano

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Javier Moreno Lázaro

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Julio López Laborda y Antoni Zabalza

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Sandra Nieto y Raúl Ramos

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David Cantarero-Prieto y Patricia Moreno-Mencia

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Juncal Cuñado & Fernando Pérez de Gracia

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Nuria Calvo & Paolo Rungo

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Amado Peiró, Jorge Belaire-Franch, & Maria Teresa Gonzalo

Ana Viñuela Jiménez & Fernando Rubiera Morollón

583/2011  The Efficiency of Performance-based-fee Funds  
Ana C. Díaz-Mendoza, Germán López-Espinosa & Miguel A. Martínez-Sedano

584/2011  Green and good?. The investment performance of US environmental mutual funds  
Francisco J. Climent-Diranzo & Pilar Soriano-Felipe

585/2011  El fracaso de Copenhague desde la teoría de juegos.  
Yolanda Fernández Fernández, Mª Ángeles Fernández López y Blanca Olmedillas Blanco

586/2011  Tie me up, tie me down! the interplay of the unemployment compensation system, fixed-term contracts and rehirings  
José M. Arranz & Carlos García-Serrano
<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>605/2011</td>
<td>The Effects of Remoteness in Japanese Educational Levels</td>
<td>Jesús López-Rodríguez &amp; Daisuke Nakamura</td>
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<tr>
<td>606/2011</td>
<td>The money market under information asymmetries and imperfectly competitive loan and deposit</td>
<td>Aday Hernández</td>
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<td>607/2011</td>
<td>The effects of airline and high speed train integration</td>
<td>M. Pilar Socorro &amp; M. Fernanda Vicens</td>
</tr>
<tr>
<td>608/2011</td>
<td>Consecuencias de la imbricación de los clientes en la dirección medioambiental: un análisis</td>
<td>Jesús Ángel del Brío González, Esteban Fernández Sánchez y Beatriz Junquera Cimadevilla</td>
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<td>decentralisation in Spain</td>
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</tr>
<tr>
<td>610/2011</td>
<td>The accessibility to employment offices in the Spanish labor market: Implications in terms of</td>
<td>Patricia Suárez, Matías Mayor &amp; Begoña Cueto</td>
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<tr>
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<td>registered unemployment</td>
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<tr>
<td>611/2011</td>
<td>Time-varying integration in European government bond markets</td>
<td>Pilar Abad, Helena Chuliá &amp; Marta Gómez-Puig</td>
</tr>
<tr>
<td>612/2011</td>
<td>Production networks and EU enlargement: is there room for everyone in the automotive industry?</td>
<td>Leticia Blázquez, Carmen Díaz-Mora &amp; Rosario Gandoy</td>
</tr>
<tr>
<td>613/2011</td>
<td>Los factores pronóstico económico, estructura productiva y capacidad de innovar en la</td>
<td>Mª Begoña Font Belaire y Alfredo Juan Grau Grau</td>
</tr>
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<td></td>
<td>valoración de activos españoles</td>
<td></td>
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<tr>
<td>614/2011</td>
<td>Capital structure adjustment process in firms accessing venture funding</td>
<td>Marina Balboa, José Martí &amp; Álvaro Tresierra</td>
</tr>
<tr>
<td>615/2011</td>
<td>Flexibilidad Contable en la Valoración de Instrumentos Financieros Hibridos</td>
<td>Jacinto Marabel-Romo, Andrés Guiral-Contreras &amp; José Luis Crespo-Espert</td>
</tr>
<tr>
<td>616/2011</td>
<td>Why are (or were) Spanish banks so profitable?</td>
<td>Antonio Trujillo-Ponce</td>
</tr>
<tr>
<td>617/2011</td>
<td>Extreme value theory versus traditional garch approaches applied to financial data: a</td>
<td>Dolores Furió &amp; Francisco J. Climent</td>
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<td>comparative evaluation</td>
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<tr>
<td>618/2011</td>
<td>La restricción de balanza de pagos en la España del euro. Un enfoque comparativo.</td>
<td>David Matesanz Gómez, Guadalupe Fugarolas Álvarez-Ude y Roberto Bande Ramudo</td>
</tr>
<tr>
<td>619/2011</td>
<td>Is inefficiency under control in the justice administration?</td>
<td>Marta Espasa &amp; Alejandro Esteller-Moré</td>
</tr>
<tr>
<td>620/2011</td>
<td>The evolving patterns of competition after deregulation</td>
<td>Jaime Gómez Villascuernua, Raquel Orcos Sánchez &amp; Sergio Palomas Doña</td>
</tr>
<tr>
<td>621/2011</td>
<td>Análisis pre y post-fusiones del sector compuesto por las cajas de ahorros españolas: el</td>
<td>Antonio A. Golpe, Jesús Iglesias y Juan Manuel Martín</td>
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<tr>
<td>623/2011</td>
<td>Valoración del Mercado de los Activos Éticos en España: una Aplicación del Método de los</td>
<td>Celia Bilbao-Terol y Verónica Cañal-Fernández</td>
</tr>
<tr>
<td></td>
<td>Precios Hedónicos</td>
<td></td>
</tr>
</tbody>
</table>
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Jorge Guardiola, Francisco González-Gómez & Miguel A. García-Rubio

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Santiago Carbó-Valverde, Francisco Rodríguez-Fernández & Gregory F. Udell

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<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
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<tr>
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