Local government transparency index: determinants of municipalities' rankings

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Abstract

Purpose – Cases of corruption, embezzlement, theft and fraud, abuse of discretion, favoritism, nepotism, clientelism, and abuse of power in governments have led to a growing demand from society to access public information. In response to this demand, governments have been forced to be more transparent in the conduct of their activities. The information transparency index (TI) may be conditioned by economic and political characteristics of local governments affecting the information provided. What factors influenced the index of municipal transparency? Literature about transparency is largely based on the explanations of the agency theory and the legitimacy theory. Based on the postulates of both theories, the purpose of this paper is twofold. First, study the index transparency in Spanish municipalities, and, second, determine the main features that are affecting the index of transparency.

Design/methodology/approach – Data were collected from Transparency International Spain ranking and from official sources. Univariate and multivariate analysis are performed for the treatment of data.

Findings – The results shows that political factors like electoral turnout, political ideology, and political competition have a significant effect on the index of transparency. Gender has no significant effect on the index of transparency.

Originality/value – This study is a contribution to the growing body literature of transparency in order to understand what explains the variations of the TI among municipalities.

Keywords Local government, Municipalities, Transparency, Transparency index

Paper type Research paper

Introduction

Changes introduced in the last few decades in the public sector altered the public administration's traditional culture, opening organizations and increasing the mechanisms of accountability and transparency. Transparency is a mechanism used to improve good governance in public services (Piotrowski, 2007; Bauhr and Grimes, 2014) and increase the public's ability to access government information (Roberts, 2006a; Piotrowski and Van Ryzin, 2007). It is about increasing the effectiveness of its management, looking for ethical standards and government decisions (Cooper and Yoder, 2002). Focussing on the relationship between information disclosure (supply side of transparency) and the access and usability of information by citizens and stakeholders (demand side of transparency), it allows a better understanding of public policies and increases the public's trust (Park and Blenkinsopp, 2011). In addition, it holds officials accountable for their actions and outcomes, based on the accessibility and divulgence of information. Public administration transparency has increased

worldwide since the 1990s (United States Agency for International Development, 2011), and several international organizations have recommended governments to adopt socially responsible practices and to provide information about their activities (Organisation for Economic Cooperation and Development, 2006).

Most of the literature about transparency focusses on central government. Concerning municipal transparency, it would be beneficial to develop our understanding of it (Piotrowski and Bertelli, 2010; Greco *et al.*, 2012). Efficient use of scarce resources requires a more effective use of mechanisms of transparency in municipalities' decision-making process. Researchers demonstrate the importance of some factors to explain the level of transparency in municipalities (Piotrowski and Van Ryzin, 2007; Alt *et al.*, 2006; Albalate del Sol, 2013; Alcaraz-Quiles *et al.*, 2015). In Spanish municipalities, it is helpful to analyze the information of the transparency index (TI), and identify the main factors that are affecting the index of transparency. The choice to carry out our analysis in municipalities is due to problems with transparency, which are more frequent at local level (Guillamón *et al.*, 2011; Cuadrado-Ballesteros, 2014). Besides, the social pressure exerted by some citizens' movements, such as *los indignados* (Barreiro and Sanchez-Cuenca, 2012), and the influence of the crisis on Spanish municipalities compel the reduction of public debt through greater supervision of public deficit with new local financial regulations and legal control (López *et al.*, 2013). In this sense, the municipalities are under pressure to increase management efficiency and be more transparent with public resources management.

According to the literature, the exposure or withholding of information is inherently political and can be influenced by citizens and political factors. This paper contributes to this debate by empirically assessing local government transparency by incorporating in the analysis political explanatories factors. It also addresses the problem that results from the literature of probable endogeneity, created by the causality relationship between transparency and political variables (Su *et al.*, 2011; Arnold and Freier, 2015). We will explore, from the supply side of transparency, how political factors influenced the level of the TI constructed by Transparency International Spain (TI-Spain). The analysis is based on the scarce literature on transparency, which mainly focusses on the area of budget and fiscal transparency at central level. The interest in Spanish cases emerged because this is one of the few countries which did not have, at the time of this study, a transparency law in force. Further, it would be worthy to analyze if the social movements influenced the level of municipal transparency. We expect that social movements and the pressure from citizens had a positive influence on the level of municipal transparency. The TI constructed by TI-Spain, which focusses on other areas beside budget and fiscal transparency, opens opportunities to test the hypotheses on transparency.

The paper begins by looking into the index of transparency in Spanish municipalities, and then examines Spanish municipalities to analyze the factors determining the index of transparency. It aims to answer the following research question:

RQ1. What factors influenced the index of transparency on the Spanish municipalities until 2012?

We carried out a univariate and multivariate linear regression (OLS) analysis. Additionally, we used an instrumental variables (IV) regression analysis based on a two-stage least squares (2SLS) regression design, to control the problem of possible endogeneity.

Results show that the TI is associated with certain political factors in a sample of the 109 largest Spanish municipalities with a population of over 50,000 inhabitants.

The rest of the paper is organized as follows: in the next section, we review the literature on transparency, its definition and factors that affect the index of transparency, and then develop the hypotheses. In the third section, we explain the research methodology, and in section four, we provide data description, empirical analysis, and a discussion of our main findings. The paper presents the main conclusions in the fifth section.

Theoretical background and hypotheses development

Concept of transparency

Transparency is a broad concept which is related to the availability of information (supply side of transparency) and the access and usability of this information by citizens, and stakeholders (demand side of transparency). It refers to the availability of information about government organizations that allows citizens and other external actors to monitor and assess internal work and performance of public organizations (Meijer, 2013; Grimmelikhuijsen and Welch, 2012). This is a vast definition that encompasses both "active" disclosure activity, undertaken proactively by public organizations, and "passive" forms of transparency in which the same organizations respond reactively to external demands (e.g. through the right of information request). Transparency is a means to improve policy, administrative and managerial effectiveness (Hirsch and Osborne, 2000) by conducting public affairs openly and exposing them to public scrutiny (Birkinshaw, 2006). It goes beyond the mere access to information, it demands that information should be understandable to external stakeholders (Hood, 2006). Policy makers and scholars regard transparency as a facilitator of "good governance" (Heald, 2006) because it may encourage better performance and reduce corruption (Meijer, 2009). For the purpose of this study, transparency relates to the disclosure of information by municipalities about their decisions, processes, functioning and performance (supply side of transparency) (Grimmelikhuijsen, 2012; Bauhr and Grimes, 2014).

Explanatories theories of transparency

Research on transparency is largely based on the explanations provided by the agency and legitimacy theories (Zimmerman, 1977; Eisenhardt, 1989; Patten, 1992; Suchman, 1995; Shapiro, 2005).

Agency relation in public administration happens when agents (elected officials) act in the interest of the principal (citizens) (Lane, 2005). Citizens expect elected officials to do things which are in their interest. However, citizens are uncertain as to whether or not public organizations actually carry out their tasks the way they are entrusted to. According to the agency theory, some problems appear when there is asymmetry of information (Eisenhardt, 1989). Information asymmetry is an incentive for elected officials to act or behave inappropriately because citizens cannot completely monitor the agent, occurring the so-called "problem of moral hazard". This happens because the interests of elected officials are different from those of the citizens. Hence, elected officials must be held accountable for their actions to demonstrate that they acted according to their responsibilities (Lane, 2005; Shapiro, 2005). Transparency reduces these asymmetries and increases the degree of confidence and public trust in political actors, limiting agency conflicts (Laswad *et al.*, 2005) and making processes more

visible. Also, increasing the level of transparency in government decision making and activities reinforces the likelihood of democracy and citizen involvement.

The other vein of literature focusses on the Legitimacy theory to explain information disclosure and transparency (Deegan, 2002; Serrano-Cinca *et al.*, 2009; Rodríguez-Bolívar *et al.*, 2013). According to the theory, if organizational legitimacy is threatened, organizations will disclose information to promote organizational legitimacy (Deegan, 2002). Information disclosure about organizations' activities is a way to legitimate actions to their stakeholders (Archel *et al.*, 2009) and award legitimacy to organizations (Patten, 1992). Heald (2006) and Roberts (2006b) point out that transparency has a positive effect on public perceptions of political decisions and decision makers. Scholars found out "that transparency can indeed increase the legitimacy of representative decision-making" (De Fine Licht *et al.*, 2011, p. 5). Transparency may enhance citizens' sense of control by making politicians accountable for their actions and can increase their understanding of public decisions. Information diffusion may be used to regain the confidence of citizens and change their perceptions of the organizations, enhancing the legitimacy of elected public officials. In addition, offering an image of good governance in response to general pressure is a way to secure legitimacy and enhance municipalities' reputation (Pina *et al.*, 2010). For instances, the debate in the Spanish parliament about the Law on Transparency, Access to Public Information and Good Governance, which was approved in 2013, seems to be a response to the legitimacy crisis initiated with the social pressure exerted by the social movements "*los indignados*".

Local government in Spain and transparency
Spain is a decentralized state consisting of three levels of government: the central government, the autonomous governments (17), and the provinces (50), which are constituted by the municipalities (8,122). Municipalities are governed by the mayor and the municipal council, which is composed of municipal councilors who are elected for a four-year mandate. Citizens indirectly elect the mayor: the former elects the members of the cabinet (aldermen) every four years, and the aldermen elect the mayor. The mayor is usually the leader of the majority coalition and is elected by the municipal councilors. The number of council members depends on the municipality's size. Spanish local governments are responsible for their economic, financial, and budgetary decisions which put pressure on the issue of transparency. During the period under analysis, Spain did not have a transparency law in force[1]. The absence of compulsory information disclosure offers the opportunity to examine how political factors influence transparency. Spanish municipalities are adapting to society's demand for more transparency about their activities. Even more, there are international organizations evaluating the level of transparency in different countries including Spain. The construction of a TI by TI-Spain[2] opens an opportunity to test hypotheses on influential factors at municipal transparency level. In future research, it will be valuable to analyze the changes introduced by the transparency law that came into effect in municipalities in 2015.

The first edition of the TI[3] took place in 2008 and evaluated the 100 largest municipalities in Spain through an integrated set of 80 indicators, grouped into five areas of transparency: information about municipal corporations, relationship with citizens and society, economic and financial transparency, information about municipal service contracts bidding, and transparency about urban development/public works. In our study, we used the data available at the time, which was from TI-Spain, whose

last edition was published in 2012. This edition evaluates the 110 largest municipalities of Spain and incorporates a new area of assessment related to planning, contracts, civil servants, and high positions of economic and financial information.

This paper explores if there are certain factors or determinants that influence the level of transparency. Consequently, we expect the existence of internal factors in the municipalities that could reduce conflicts of interest between the principal (citizens) and the agent (political), by increasing the dissemination of information to citizens and society.

Municipal information disclosure has been a concern for scholars since the 1970s, particularly focussing on factors that promote more and better exposure of public financial information (Laswad *et al.*, 2005; Alt *et al.*, 2006; Cárcaba-García and García-García, 2010; Rodríguez-Bolívar *et al.*, 2013). We can differentiate the following factors that may influence this.

Electoral turnout
This factor serves as a proxy for citizens' concern in politics, and consequently it is a proxy for the demand of transparency (Albalate del Sol, 2013; Guillamón *et al.*, 2011). Researchers claim that higher voter turnout may indicate that citizens have greater access to information (municipalities are more transparent) and a growing interest in local government activities (Hollyer *et al.*, 2011; Esteller-Moré and Polo-Otero, 2012; Caamaño-Alegre *et al.*, 2013). Transparency reduces information asymmetry and agency conflicts, increasing confidence and public trust in political actors (Laswad *et al.*, 2005). Additionally, it is expected that lower levels of electoral turnout might indicate that citizens have less interest in local government's activities and less access to information. For that reason, in order to increase electoral turnout, local governments are under pressure to be more transparent in order to promote political interest and involvement of citizens. Similarly, and according to the legitimacy theory, threatening organizations' legitimacy leads to an effort from organizations to promote legitimacy through more transparency (Patten, 1992; Roberts, 2006b). In the case of lower electoral turnout, increased transparency can be used to win back citizens' trust and change their perceptions about public organizations' functioning. Having an image of good governance is a way to hold legitimacy and enhance local government reputation (Pina *et al.*, 2010; Fung, 2013). We then establish the following hypothesis:

H1. There is a relation between the electoral turnout of municipalities and the index of transparency.

Political ideology
Researchers see a strong relationship between political ideology and transparency (Piotrowski and Van Ryzin, 2007). The governing party's ideology influences information disclosure and transparency (Albalate del Sol, 2013), with left-wing political parties being more prone to higher transparency than right-wing political parties (García-Sánchez *et al.*, 2013). In spite of this, some scholars (Piotrowski and Van Ryzin, 2007; Vila i Vila, 2013) claim this relation is ambiguous because left-wing parties and right-wing parties are both interested in transparency. According to Grimmelikhuijsen and Welch (2012), there is an ambiguous relationship between politics and transparency because of conflict of interests in the design of information disclosure systems. We established the following hypothesis:

H2. There is a relationship between political ideology and the index of transparency.

Political competition
Political competition is related to inter-party scrutiny of activities and pressures for more transparency. When political competition is low, politicians have high expectations of remaining in power and tend to be less transparent (Gandía and Archidona, 2008; Piotrowski and Bertelli, 2010) ignoring their electoral promises (Cárcaba-García and García-García, 2010). Higher levels of political competition are an incentive to show good actions and management carried out by the political party in power (Caba-Pérez *et al.*, 2014), thus increasing the level of transparency. On the other hand, "greater political competition may mean that the group in control perceives a greater risk to divulging information; greater transparency could weaken its position or reduce its ability to control its message. Alternatively, in situations of low competition, dominant parties may be more confident of their position of power and, as a result, be more likely to divulge information" (Grimmelikhuijsen and Welch, 2012, p. 565). Disclosure of information is inherently political and is influenced by politics and political competition (Wehner and de Renzio, 2013). According to Berliner and Erlich (2015), political competition has an important role in the adoption of institutional reform by improving access to information, and therefore to higher transparency. So, we establish the following hypothesis:

H3. There is a relationship between the level of political competition and the index of transparency.

Gender
Representative democracies seek to improve their legitimacy by opening opportunities to increase women's political representation. To establish an effective equality between women and men in Spanish electoral processes, a recent amendment on Electoral Law established quotas for women (Article 44, *Ley Orgánica* 5/1985, of 19 July amended by the *Ley Orgánica* 3/2007, of 22 March). According to literature, men are more politically active and politically engaged than women (Verba *et al.*, 1978; Piotrowski and Van Ryzin, 2007). But, Fox and Schuhmann (1999) point out that female mayors encourage, more than men in that position, citizens' participation, communication, and input (Rodríguez-Garcia, 2015). We explore if gender influences the index of transparency, reducing the problem of existing agency between the principal (citizens) and the agent (politicians). In the same way, we established the following hypothesis:

H4. There is a relationship between the mayor's gender and the index of transparency.

Research methodology
This section presents the sample used and justifies the variables selected to test the hypothesis of the empirical study.

Sample
The Spanish public sector is divided into three levels: the central government, 17 regional government, and 8,112 municipalities, grouped into 50 provinces. To analyze transparency, we will focus on municipalities, which are the lowest level of territorial organization of the State. Local government reform in Spain, initiated by Law 57/2003 on Measures for the Modernization of Municipalities, emphasizes the necessity of information technologies in order to contribute to the transparency of government

information (Serrano-Cinca *et al.*, 2009; Guillamón *et al.*, 2011; García-Sánchez *et al.*, 2013). It was only in 2013 that the Law on Transparency, Access to Public Information and Good Governance was approved (Law 19/2013 of 9 December) and it has been in effect since December 2014 (for local government, it will only be effective in two years). The adherence of the open government partnership in April 2012 was an important step for the discussion and approval of this law.

The initial sample employed to test hypotheses was comprised of the 110 largest Spanish municipalities in 2012. The municipalities studied correspond to those for which data was published by the Organization of TI-Spain in 2012[4]. There are two municipalities which are provincial capitals and have less than 50,000 inhabitants. The other municipalities have more than 50,000 inhabitants. These municipalities are considered "large municipalities" according to the definition contained in Article 121 of Law 7/1985 for the Regulation of Local Municipalities, modified by Law 57/2003 on Measures for the Modernization of Local Government. To detect multivariate outliers, we used the Hadi's (1992) method[5] and found one significant outlier that was eliminated from the analysis. As a result, the final sample was reduced to 109 observations.

Variables and data collection
Dependent variable. To explore the level of local governments' public transparency, the chosen dependent variable was the Spanish municipalities TI, published by TI-Spain[6]. This index is a tool to measure the level of transparency of the Spanish municipalities from the supply side. It was used in some previous studies (Albalate del Sol, 2013) and qis based on the collection of information and questionnaires sent to municipalities by TI-Spain.

The last edition of the index integrated a set of 80 indicators which were grouped into six areas of transparency: information about municipal corporations; relationship with citizens and society; economic and financial transparency; information about municipal service contracts bidding; transparency about urban development/public works; and information about planning, contracts, higher civil servants positions, and economic and financial information. Each indicator had two possible scores: 1 point, if the information was posted on the municipal website (thus being consistent with the methodology used in the above index); 0 points, if the information was not published on the municipal website.

Finally, depending on the total value obtained by each municipality (the sum of its scores on the 80 indicators), TI-Spain developed a classification or ranking of transparency of these municipalities that takes values between 0 and 100, with 0 meaning the lowest TI and 100 meaning the highest. For purposes of analysis, we used the index of transparency on a scale of 0-1.

The information needed to create the dependent variable was taken from the website of the TI-Spain (see: http://transparencia.org.es/indice-de-los-ayuntamientos-ita/).

Independent variables. Based on previous studies of determinants that may influence transparency, we selected the following variables that could contribute to increase information disclosure in municipalities, and therefore the index of transparency.

Electoral turnout. This is a numerical variable representing the percentage of participation in the last local elections in the municipality (Guillamón *et al.*, 2011).

Political ideology. It is a dummy variable that is given the value of 1 if the municipal ruling leader belongs to a left-wing party, and 0 otherwise (Albalate del Sol, 2013).

Political competition. This variable is calculated with the difference between the percentages of votes obtained by the parties coming in first and second place (Cuadrado-Ballesteros, 2014). The lowest is the difference between the percentages of votes according to higher political competence.

Gender. We define mayors using an indicator variable equal to 1 when the mayor is female, 0 otherwise (De Witte and Geys, 2011).

The data were collected from the Spanish National Statistics Institute, Ministry of the Economy and Home Affairs.

Control variables. We introduced the following control variables that could influence the TI of municipalities.

Population size. Research has concluded that the population exerts a positive and statistically significant influence on the index of transparency (Styles and Tennyson, 2007; Guillamón *et al.*, 2011). Therefore, a larger population size would imply more public services users (Alcaraz-Quiles *et al.*, 2014) and the management of higher amounts of public funds. Hence, according to the agency theory, we expect municipalities to be interested in disclosing information that allows citizens and other entities to monitor actions of elected officials (Laswad *et al.*, 2005; Benito *et al.*, 2010; González *et al.*, 2011). This numerical variable represents the number of inhabitants of the municipality (Serrano-Cinca *et al.*, 2009; García-Sánchez *et al.*, 2013; Alcaraz-Quiles *et al.*, 2014). The information was collected from the Spanish National Statistics Institute.

Unemployment. This variable has been used as a proxy variable to analyze the relationship between municipalities' economic status and transparency (García-Sánchez *et al.*, 2013; Cuadrado-Ballesteros, 2014). Research shows a positive relationship between economic status and transparency in public administration (Piotrowski and Van Ryzin, 2007). It is plausible to expect that, in periods of economic depression, the level of unemployment should increase. As a consequence, the municipal economic status will decrease and with it the level of transparency. Therefore, as Caamaño-Alegre *et al.* (2013) and Albalate del Sol (2013) believe, high employment rates are significantly related to low index of transparency. This numerical variable represents the unemployed who are registered in a municipality and is measured by the percentage of potentially active population (Albalate del Sol, 2013; Cuadrado-Ballesteros, 2014).

Investment. According to Cárcaba-García and García-García's (2010) research, there is a more positive attitude from citizens toward public projects requiring important investment efforts, as long as they understand that their living conditions will improve. Disclosing information about municipal investments is a way for politicians to improve their popularity and gather citizens' support. Municipal budgets during election years show an increase in the interest of politicians to start ambitious projects to gain the interest of electors. So, according to the legitimacy theory, it is plausible to expect that politicians who engage in projects requiring important public investment efforts will be interested in disseminating this information. This is the numerical variable which represents capital investment per capita (Cárcaba-García and García-García, 2010).

Debt. Disclosing financial information is a way to improve transparency and show creditors a low level of financial risk, which can significantly reduce the cost of funding from outside sources for municipalities. According to the agency theory, this reduces information asymmetry and increases the degree of confidence (Eisenhardt, 1989; Laswad *et al.*, 2005; Cárcaba-García and García-García, 2010). Research shows that lower levels of debt are related to transparent budget procedures and institutions

(Marcel and Tokman, 2002; Alt and Lassen, 2006; Gavazza and Lizzeri, 2009) and to fiscal transparency (Alt *et al.*, 2006; Albalate del Sol, 2013). Hence, lower levels of debt are related to a higher index of municipal transparency (Cuadrado-Ballesteros, 2014). It is a numerical variable that represents the level of public debt per capita of the municipality (Cuadrado-Ballesteros, 2014).

Research model
The main objective of this work was to analyze the factors that affected the TI during the year 2012, so we adopted a lineal regression method. This was empirically tested using the following econometric model:

$$Transparency\ Index_i = \beta_0 + \beta_1 Electoral\ Turnout_i + \beta_2 Political\ Ideology_i$$
$$+ \beta_3 Political\ Competition_i + \beta_4 Gender_i$$
$$+ \beta_5 Size\ Population_i + \beta_6 Unemployment_i$$
$$+ \beta_7 Investment_i + \beta_8 Debt_{i+} \varepsilon_i \quad (1)$$

where:
Transparency Index is the index provided by TI-Spain. This is the dependent variable. *Electoral Turnout*, *Political Ideology*, *Political Competition*, and *Gender* are independent variables that represent political factors. *Size Population*, *Unemployment*, *Investment*, and *Debt* are the control variables. i represents the municipality. β represents the parameters to be estimated. ε represents the error term.

The data were processed using the econometric SPSS 19 and STATA 12.1, justified by its robustness.

Results and discussion
This section provides empirical results of our study by using three analyses. First, the descriptive analysis, will present the main characteristics of the Spanish municipalities included in the sample. Then, we will do a bivariate analysis to show the bivariate correlation between the dependent and independent variables. Finally, we will do a multivariate analysis to have evidence about the relationship among the proposed variables in the econometric model.

Descriptive analysis
The descriptive indicators reported were the average, maximum and minimum values, and the testing of normality was done via both skewness and kurtosis coefficients (see Tables I and II). According to the standard statistical recommendation (Gujarati, 1995; Hair *et al.*, 2006; Longest, 2015), we applied the log transformation to *Population Size*[7] and *Investment* variables, and square root transformations to measure *Debt*.

Table I summarizes the main descriptive statistics for the dependent variable *Transparency Index* in the Spanish municipalities.

Transparency index	n	Mean	Min	Max	Skewness	Kurtosis
	109	0.707	0.150	1	−0.644	2.247
Source: Author's own elaboration						

Panel A: continuous variables						
	n	Mean	Min	Max	Skewness	Kurtosis
Electoral Turnout	109	61.877	46.420	75.170	−0.343	2.099
Political Competition	109	19.018	0.050	53.140	0.321	2.458
Population Size	109	11.804	10.600	13.589	0.796	3.335
Unemployment	109	14.996	6.200	23.700	0.202	3.152
Investment	109	4.024	1.452	5.746	−0.687	3.781
Debt	109	0.820	0.1	1.597	0.625	3.520
Panel B: dummies variables						
	n	1	0		Skewness	Kurtosis
Political Ideology	109	27	82		1.169	2.366
Gender	109	27	82		1.169	2.366

Source: Author's own elaboration

Table I shows an index whose average value is 0.707. A significant value that could be motivated by the probable effect of the public discussion of the draft law on transparency and access of citizens to public administration information. The discussion of the law and social movements may have led many municipalities to try to be more transparent before the publication of the law, so we believe this has influenced the index of transparency.

Table II shows the descriptive statistics for independent and control variables. Panel A refers to the continuous variables, while Panel B presents information on the dummies variables.

Panel A shows that the *Electoral Turnout* obtains an average value of 61.877 and there is a large difference in this variable between the maximum (75.170) and minimum (46.420) values. Similarly, we found these large differences between the maximum and the minimum values for the rest of variables. On the other hand, the result of the last elections held in 2011 show that in most municipalities the political ideology of the ruling party is right-wing (75 percent). Only 25 percent of the mayors in the municipalities are women, which is a very low percentage. Moreover, the coefficient of skewness is between the values of −1 and 1, which are acceptable, and the Kurtosis[8] coefficient is between 2 and 4, corresponding to normal distributions (Longest, 2015).

Bivariate analysis
Table III shows the Pearson correlation coefficients between variables above the diagonal, and Spearman correlations coefficients below the diagonal. *Transparency Index* is positively correlated at a 1 percent level with *Unemployment* and a 5 percent level with *Investment*.

These bivariate relationships are consistent with the theoretical framework developed in section 2.2 and with the results obtained in previous studies (Guillamón *et al.*, 2011; Albalate del Sol, 2013; Caamaño-Alegre *et al.*, 2013). However, it was not possible to confirm, at a 1 and 5 percent level of signification, a relevant pair-wise correlation between the TI and the following variables: *Debt, Electoral Turnout, Political Ideology, Political Competition, Gender, and Population Size*.

Moreover, the values do not indicate collinearity. A collinearity problem is considered severe if a pair-wise correlation coefficient is greater than 0.80 (Gujarati, 1995). Furthermore, to analyze the presence or absence of multicollinearity,

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	VIF
(1) *Transparency*										
Index	1	−0.109	0.078	−0.106	0.004	0.115	−0.309**	0.264**	−0.077	
(2) *Electoral*										
Turnout	−0.061	1	−0.179	0.012	0.036	−0.044	−0.283**	−0.028	−0.031	1.17
(3) *Political*										
Ideology	0.045	−0.163	1	−0419**	0.015	−0.125	−0.109	0.070	−0.143	1.37
(4) *Political*										
Competition	−0.121	−0.010	−0.426**	1	0.119	0.110	−0.090	0.083	0.072	1.31
(5) *Gender*	0.027	0.068	0.015	0.122	1	−0.002	0.038	−0.007	0.021	1.03
(6) *Population Size*	0.093	−0.105	−0.113	0.100	−0.036	1	0.129	−0.041	0.081	1.04
(7) *Unemployment*	−0.261**	−0.312**	−0.125	−0.003	0.059	0.109	1	−0.186	0.176	1.26
(8) *Investment*	0.229*	0.001	0.086	0.027	−0.052	−0.088	−0.234*	1	0.119	1.08
(9) *Debt*	−0.038	−0.116	−0.139	0.088	−0.014	0.070	0.133	0.090	1	1.08
Mean VIF										*1.17*

Notes: Pearson's correlation coefficients are above the diagonal. Spearman's correlation coefficients are below the diagonal. *,**Significant at the 0.05 and 0.01 levels, respectively (two-tailed)
Source: Author's own elaboration

Table III.
Correlations
(Pearson/Spearman)

the variance-inflation factors (VIF) were also analyzed. The values obtained in the VIF had to be low, thereby indicating the absence of multicollinearity. Thus, values VIF below 5 are acceptable (Hair *et al.*, 2006).

Multivariate analysis
We wanted to estimate the effect of the variables on the global TI published by TI-Spain, so Table IV shows the results using ordinary least squares (OLS) regression.

For the validation of the model, we used a specification test to check for violations of the OLS model assumptions: Breusch-Pagan/Cook-Weisberg test for heterocedasticity, Ramsey Reset test for omitted variables, Durbin-Watson test to detect the presence of autocorrelation in the residuals, and multicollinearity test (Table III). The overall significance of the model was tested through F-test.

Column 3 of Table IV shows the results of the OLS regression. So, the Breusch-Pagan/Cook-Weisberg test revealed heteskedastic results $(X)^2_{(1)} = 10.39$; p-value $= 0.0013$). Moreover, the Ramsey reset test was performed for model specification and the results show the model has no omitted variables ($F_{(3,97)} = 0.60$; p-value $= 0.6182$). The Durbin-Watson statistic was 2.163, indicating that autocorrelation was not a problem. It was globally significant at the 1 percent level (F-test $= 3.9675$; p-value $= 0.0004$).

The R^2 showed that the model explains 24.1 percent of the variability in *Transparency Index* for municipalities in Spain.

To address the possibility of heteroskedasticity in our model and have more robust results, we applied the Huber/White/sandwich correction to adjust standard errors of regression coefficients and corresponding t-statistics. We ran both regressions and the results are shown in Column 4 of Table IV. These results show that the *Electoral Turnout* has a negative relationship for a significance level of 5 percent ($\beta_1 = -0.0077$). Regarding the *Political Competition,* there is a positive relationship for a significance level of 5 percent ($\beta_3 = -0.0044$). Also, *Unemployment* is significant at the 1 percent level and negatively associated with our dependent variable ($\beta_6 = -0.0255$). Finally,

Independent and control variables	Hypothesis	Dependent variable: IT		IV/2SLS estimation (robust)
		OLS	OLS (robust)	
Electoral Turnout	H1	−0.0077 (0.0033)**	−0.0077 (0.0030)**	−0.0194 (0.0080)**
Political Ideology	H2	−0.0547 (0.0577)	−0.0547 (0.0461)	−0.1061 (0.0570)*
Political Competition	H3	−0.0044 (0.0020)**	−0.0044 (0.0020)**	−0.0053 (0.0021)**
Gender	H4	0.0319 (0.0500)	0.0319 (0.0564)	0.0448 (0.0559)
Population Size		0.0694 (0.0343)**	0.0694 (0.0381)*	0.0664 (0.0364)*
Unemployment		−0.0255 (0.0067)***	−0.0255 (0.0068)***	−0.0333 (0.0091)***
Investment		0.0709 (0.0282)**	0.0709 (0.0359)*	0.0644 (0.0365)*
Debt		−0.0516 (0.0791)	−0.0516 (0.0779)	−0.0494 (0.0771)
(Constant)		0.5912 (0.4997)	0.5912 (0.5533)	1.5211 (0.7712)**
Observations		109	109	109
R^2		0.2409	0.2409	0.1444
F-test		3.9675***	5.4991***	3.7926***
Breusch-Pagan/Cook-Weisberg test, p-value		$X_{(1)}^2 = 10.39$; 0.0013		
Ramsey reset test, p-value		$F_{(3,97)} = 0.60$; 0.6182		
Durbin-Watson		2.163		
Endogeneity test, p-value				0.0218
Underidentification test, p-value				0.0004
Weak identification test				9.994
Hansen J statistic				0.1719

Table IV.
Results of
regression model

Notes: Figures in parentheses are standard errors. Reported R^2 is the centered R^2 for IV/2SLS model.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$
Source: Author's own elaboration

we detected that the *Population Size* and *Investment* are positively correlated with the TI at the 10 percent level ($\beta_5 = 0.0694$; $\beta_7 = 0.0709$, respectively). The other variables were not found significant *(Political Ideology, Gender,* and *Debt).*

A problem that arises from literature is the probable endogeneity of the *Electoral Turnout* variable (Hansford and Gomez, 2010; Guillamón *et al.*, 2011; Su *et al.*, 2011; Arnold and Freier, 2015). Endogeneity can emerge when the *Electoral Turnout* variable has a causal impact on *Transparency Index*[9] (i.e. reverse causality or simultaneity) (Greene, 2003; Wooldridge, 2010; Baltagi, 2011). According to Wooldridge (2010), simultaneity arises when at least one of the explanatory variables is determined simultaneously along with the dependent variable. If the problem of endogeneity is not solved then the parameters obtained in our first estimation (OLS) will be biased and inconsistent. IV estimation is a powerful tool that, when used correctly, may generate consistent estimates in the presence of endogeneity (Wooldridge, 2010; Baltagi, 2011). Formally, a variable z is called an instrument or IV for the regressor x in the scalar regression model $y = x+u$, if z is uncorrelated with the error u and z is correlated with the regressor x.

Therefore, IV estimation was developed for situations in which an independent variable is potentially endogenous. It begins by identifying the variable or variables that will serve as an instrument for the endogenous variable. The endogenous independent variable is then regressed on the instrument, and the results of this regression are used to predict values of the endogenous variable. These predicted

values are then included as an independent variable in the main model (Wooldridge, 2010; Baltagi, 2011). The most commonly used IV estimation method is the approach using the 2SLS estimators, which first tests the relation between the instrument and explanatory variable, and on the second stage, the effect of the explanatory variable on the dependent variable (Grimmelikhuijsen and Klijn, 2015).

However, one should exercise caution when selecting the final estimation technique because the instrument variables-two-stage least squares (IV/2SLS) estimator is less efficient than simple OLS when a variable is exogenous. Thus, it is useful and recommended first to test whether the *Electoral Turnout* variable is endogenous in our model. So, to check the possible endogeneity the endogeneity test will be used (equivalent to the Durbin-Hausman-Wu test). The null hypothesis for this is that the OLS estimator would yield consistent estimates, that is, any endogeneity among the regressors would not have deleterious effects on the OLS estimates. A rejection of the null indicates that the endogenous regressors' effects on the estimates are meaningful, and IV-2SLS estimates are required.

The validity and reliability of IV/2SLS estimation depends crucially upon the selection of the instruments. A good instrument needs to satisfy two important conditions: relevant and valid/exogenous (Angrist and Krueger, 2001; Wooldridge, 2010; Baltagi, 2011):

- To be relevant, the instruments should be highly correlated with endogenous variable. Two tests allow to determine the relevance of the instruments: the underidentification test (Kleibergen-Paap rk Lagrange Multiplier (LM) statistic) is a LM test of whether or not the equation is identified (i.e. that the excluded instruments are relevant, meaning correlated with the endogenous regressors), under the null hypothesis that the equation is underidentified; and the weak identification test, based on the Kleibergen-Paap rk Wald F-statistic (Kleibergen and Paap, 2006), refers to low correlation between the instruments and the endogenous variables.

- To be valid or exogenous, the instruments should be uncorrelated with the error term in the equation of interest (our model). An overidentification test can be conducted when two or more variables are used as instrument for an endogenous regressor. The Sargan-Hansen test is a test to over-identify restrictions where the null hypothesis is that the instruments are valid (all instruments are uncorrelated with the error).

These criteria imply that any changes in the dependent variable that may result from changes in the values of an instrument must be attributed to the endogenous variable and must be unrelated to the reciprocal relationship between the dependent variable and the endogenous variable. Empirical analysis deals with a possible endogeneity problem between *Electoral Turnout* and *Transparency Index*. So, to check the possible endogeneity, we ran the IV-2SLS regression using the Schaffer ivreg2 module (Baum *et al.*, 2007) with option robust in Stata. This approach required us to choose the appropriate set of IV for the first stage regression. The selected IV must be exogenous, highly correlated with the *Electoral Turnout*, but uncorrelated with the error term (u). A valid instrument must meet two criteria: first, a strong correlation with the instrumented regressors, and second, an orthogonality with the error term. In light of the possible endogeneity between *Electoral Turnout* and *Transparency Index*, we used two instruments for *Electoral Turnout* which satisfy both the relevance and validity

criteria: *Citizens' Level of Education* and *Fiscal Pressure*[10]. The suitability of our instruments will be confirmed by various identification tests.

Column 5 of Table IV shows the results of the IV/2SLS regression. First, the endogeneity test of the endogenous regressor (*Electoral Turnout* variable) has a value of 5.263 with a *p*-value of 0.0218; therefore, we accept the existence de endogeneity of *Electoral Turnout* variable for a significance level of 5 percent. Hence, the IV/2SLS estimation is more robust and efficient than the OLS estimation. Second, the underidentification test of Kleibergen-Paap shows a value of 15.709 and is significant with a *p*-value of 0.0004; therefore, the instruments (*Citizens' Level of Education* and *Fiscal Pressure*) used are relevant because they are correlated with the endogenous variable (*Electoral Turnout)*. This result is also confirmed with the weak identification test where the Kleibergen-Paap rk Wald *F*-statistic takes the value of 9.994. Finally, the overidentification test of Hansen *J*-statistic has a value of 1.867 for a *p*-value of 0.1719; it does not corroborate the existence of correlation between the instruments and the error term (*u*), and, therefore, the instruments (*Citizens' Level of Education* and *Fiscal Pressure*) used are valid. After verifying the endogeneity of *Electoral Turnout* variable, we assume that the IV/2SLS approach is more efficient than OLS (Baum *et al.*, 2007).

Our final results show that lower levels of *Electoral Turnout* lead to increased levels of transparency in municipalities ($\beta_1 = -0.0194$). Low levels of *Electoral Turnout* pressure municipalities to promote organizational legitimacy through information disclosure and more transparency (Pina *et al.*, 2010; Fung, 2013), and regain citizens' confidence changing their perceptions about public organizations' functioning. This result supports the *H1*.

We observed that the *Political Ideology* is negatively correlated with the TI at 10 percent level ($\beta_2 = -0.1061$). So, municipalities governed by right-wing parties are more transparent than those municipalities ruled by left-wing parties. Our results are not consistent with previous works (Albalate del Sol, 2013; Caamaño-Alegre *et al.*, 2013) that identified a positive relationship with the index of transparency in municipalities governed by left-wing parties. However, we must accept the *H2*.

We found a negative and significant relationship at 5 percent between the difference from the first to the second most voted party, and the index of transparency ($\beta_3 = -0.0053$). The lowest difference between the first and the second most voted party means greater political competition. According to literature, greater levels of political competition and power sharing are related to a greater index of transparency (Alt *et al.*, 2006). Competition has a positive influence on the index of transparency because, in such context, political parties in power try to show citizens the good management and activities carried out during their mandates. In the same way, in a context of lower competition, when the ruling party has higher expectations to stay in power, it tends to be less transparent. In such context, retaining the information gives advantages to the ruling party. Hence, there is a positive relationship between *Political Competition* and the index of transparency. So, we accept the *H3*. This result is in line with other studies (see Solé-Ollé, 2006; Piotrowski and Bertelli, 2010; Cuadrado-Ballesteros, 2014; Berliner and Erlich, 2015).

Concerning the *Gender* variable, we did not find a significant relationship ($\beta_4 = 0.0448$) and we were not able to confirm the *H4*. Perhaps the short life of the electoral law amendment on women's participation in elections has not produced, until now, the expected effect.

Regarding the variable of control *Population Size,* we found a positive and significant relationship for a significance level of 10 percent. Municipalities

with larger populations are more transparent. This positive relationship is supported by the agency theory, which considers that larger municipalities are interested in disseminating information to enable citizens and others to monitor their activity. This is consistent with the work of Serrano-Cinca *et al.* (2009), Cárcaba-García and García-García (2010), Guillamón *et al.* (2011), and Albalate del Sol (2013), who found a positive relationship between the size and the level of information disclosure.

We observed that *Unemployment* is significant at the 1 percent level and negatively associated with the TI ($\beta_6 = -0.0333$). It shows that municipalities with low unemployment rates are more transparent, since it is a way to legitimate political action concerning society. This is consistent with the findings of Guillamón *et al.* (2011), Albalate del Sol (2013), and Caamaño-Alegre *et al.* (2013).

Furthermore, the *Investment* variable has a positive and significant effect for a significance level of 10 percent ($\beta_7 = 0.0644$). Hence, based on the postulates of the theory of legitimacy, the greater the investment in municipalities, the more transparent they will be, as a strategy of legitimizing the actions of politicians. Cárcaba-García and García-García (2010) discovered a positive and significant relationship between investment and the provision of information on-line. On the other hand, we found a negative, but not significant, relationship between the level of public *Debt* and the *Transparency Index* ($\beta_8 = -0.0494$). Our results show that debt level is non-significant. This is consistent with results obtained by Alt and Lassen (2006) on fiscal transparency.

Conclusions

The main objective of this paper was to do an analysis of the index of transparency in Spanish municipalities from the supply side perspective and to determine which political factors affected the index of transparency, under the framework of the agency and legitimacy theories. The sample was composed of 109 municipalities, using data from the TI published by the Organization of TI-Spain in 2012.

The study used two regressions, the OLS regression and the IV/2SLS regression design, to control the problem of possible endogeneity. The final estimation approach adopted was the IV/2SLS to cater for endogeneity biases present in OLS estimators, because our results show that *Electoral Turnout* was an endogenous variable. Instead of the OLS regression, the IV/2SLS regression shows that *Political Ideology* is a significant variable. Thus, by controlling the endogeneity of our model we improved the significance of variables.

Our results show that political power has an important role concerning opacity/ transparency in local government. Data show that *Electoral Turnout* is determinant on the level of transparency. The lower the *Electoral Turnout* is the more pressure local politician feel to disclose information about municipalities' decisions, processes and functioning in order to increase public trust (Laswad *et al.*, 2005), promote their legitimacy (Roberts, 2006b), and increase citizen's support for future elections. Hence, *Electoral Turnout* contributes to limit agency conflicts (Laswad *et al.*, 2005) through information disclosure and potentiate the likelihood of democracy and citizen involvement. Additionally, results show that *Political Ideology* influences the level of transparency. The discussion of the Transparency Law proposed by the Rajoy' right-wing government in the Spanish Parliament seems to have had a positive influence on municipalities' level of transparency. According to the results, this effect was particularly important in those municipalities governed by right-wing political parties,

perhaps to demonstrate their support to central government initiative. A response to the legitimacy crisis that emerged from the pressure exerted by the social movements *los indignados*. This is supported by the legitimacy theory which claims the positive effect of transparency on public perceptions about political decisions and decision makers and citizen's sense of control (de Fine Licht *et al.*, 2011).

Concerning *Political Competition*, our results show that, with strong competition, municipalities disclose more information to demonstrate their governing competence and effectiveness of current policies. It confirms that in such cases, political competition can work as an incentive to show the good work and management of the political party in power (Caba-Pérez *et al.*, 2014) and, according to the theory of agency, how the municipality (the agent) is responding to the interests of citizens (the principals) (Lane, 2005).

The last political factor analyzed, the *Gender* variable, did not influence the municipal level of transparency. This suggests that the amendment on Electoral Law, which established quotas for women, had little impact on the level of transparency.

Economic and social municipal development have an important and decisive role concerning the use of the supply side of transparency. The results show the importance of transparency in promoting the good governance image in those municipalities where unemployment rate is low. This is a demonstration of good management of available resources and a way to legitimize municipality's activities toward citizens. This is particularly relevant in large municipalities whose ability to generate and get more resources is superior and pressures from citizens require greater control through higher level of transparency. Data show that greater levels of *Investment* correspond to higher levels of municipal transparency. This way, they ensure that public resources are used efficiently and effectively, preventing power abuse and political corruption.

This study is a contribution to the literature of transparency in order to understand the variations of the TI among the municipalities. It shows the influence of political factors at municipal transparency level, and the endogenous nature of the *Electoral Turnout* variable. It demonstrates the importance of explanations provided by the agency and legitimacy theories about transparency. A practical implication of this study is that transparency and the exchange of information between municipalities and citizens is partly determined by political factors. Citizens should be aware and understand the role of political factors on information disclosure and transparency. Because the relationship between transparency and political variables is a dynamic process, it is worth to analyze the coming years after the implementation of the Law 19/2013, of 9 December and compare it to previous years. To understand the evolution of TI, it is worth to do longitudinal analysis and comparative studies increasing the size of the sample to include smaller municipalities.

The measure of transparency used in the study focusses on the supply side of transparency. Since the measurement of transparency can also be done from the demand side of transparency, this is a limitation of the analysis. There are several veins that were not considered in the transparency level such as open meetings, access to records, proactive posting of information. On the other hand, the study does not analyze how citizens and stakeholder perceive the information. These are issues which would increase our understanding of transparency. The conclusions highlight the value of undertaking further research about the influence of political factors in other government levels.

Notes

1. The Transparency Law (Ley 19/2013) was approved on December 9, 2013. However, for local government, it would only be effective two years later.

2. Data are available on this website: http://transparencia.org.es/en/ita-2012/

3. Data about the TI were published in 2008 and 2009. Since 2010 the TI is bi-annual.

4. These are the data available at the time of the writing of this paper in the end of 2014.

5. Using the *hadimvo* command in STATA. This method iteratively orders observations according to their distance from the multivariate center of the data set to determine whether a set of data points reliably falls more than a criterion distance from the center.

6. Information about the methodology for index construction, see www.transparencia.org.es/

7. To avoid the influence of univariate outliers, we winsorized the continuous variable *Population Size* at the 1 percent top and bottom percentiles of its distribution.

8. In STATA, the Kurtosis value corresponding to a normal distribution is 3, so values between 2 and 4 are acceptable.

9. See Wooldridge (2010, chapter 4) for a useful overview of endogeneity.

10. Level of education is the average citizens' level of education of the municipality, it takes values in the range of 0-4 and is collected by the *La Caixa*. *Fiscal Pressure* is a numerical variable which represents the total of direct and indirect taxes per capita (we applied the log transformation to fiscal pressure).

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