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Explaining the transparency of local government websites through a political market framework

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ABSTRACT

This paper contributes to the literature on government transparency by addressing the question of what drives the differences in local government levels of transparency. Our main objective is to ascertain whether transparency is mainly driven by the leadership, capacity and other political traits of the local governments themselves – “supply-side determinants” – or, rather, if it hinges on social, cultural and/or other local community factors (“demand-side” determinants). We test the hypotheses derived from this theoretical framework using the results of the Municipal Transparency Index which is based on the information disclosed in the local governments' official websites and was applied to all Portuguese municipalities for the first time in 2013. Our findings indicate that municipalities with less financial autonomy, run by male mayors, with a larger number of consecutive terms in office, and smaller margins of victory in local elections display lower levels of transparency. On the demand-side, the unemployment rate and the average age of the municipal population emerge as the best predictors and are both negatively associated with transparency.

1. Introduction

Transparency is generally regarded as a key element of good governance (TI., 2015). The topic has been widely discussed in recent literature and relates to many other concepts such as open government and freedom of information. For the purpose of this research, we adopt a simple – and perhaps slightly more constrained than usual – operational definition of transparency: it corresponds to “the online publicity of all the acts of government and their representatives to provide civil society with relevant information in a complete, timely, and accessible manner” (i.e. in the municipalities' official websites) (da Cruz, Tavares, Marques, Jorge, & De Sousa, 2016).

Our definition draws on the Digital Government literature highlighting the role of information and communication technologies (ICTs) in promoting equal and sustained public access to government information (Jaeger & Bertot, 2010; Meijer, 2003), enhancing accountability and trust in government (Pina, Torres, & Royo, 2007), and discouraging maladministration and corruption (Bertot, Jaeger, & Grimes, 2010). The focus on local government official websites to assess transparency can be justified by the fact that they are arguably the most easily accessible, credible and durable form of internet-enabled technology to provide government information in a timely manner.

Transparency enables accountability by empowering citizens, the media, monitoring bodies and other stakeholders to find, process, and reuse government data to generate meaningful information and knowledge (Murillo, 2015; Robinson, Yu, Zeller, & Felten, 2009). For this reason, it is desirable that timely information on political representatives, decision-making processes and outcomes is made available to citizens. Yet, transparency levels are often substandard in public or governmental bodies. Depending on the particular contexts and jurisdictions, sharing information about the decision-making processes (and the decision-makers themselves) may be a longstanding tradition or a brand new concern. Particularly, at the local level, transparency practices vary substantially from one municipality to another (e.g. see TpC, 2010; TIE, 2014; TIS, 2014).

In spite of the latest efforts, current empirical research still does not provide decisive answers on the reasons behind these fluctuations in levels of transparency. To a great extent, this gap in the literature has persisted due to the lack of reliable and operational measures of transparency (Hollyer, Rosendorff, & Vreeland, 2014; Piotrowski & Bertelli, 2010). However, several attempts to develop assessment models have been deployed in recent years. Most notably, many of Transparency International's (TI) national chapters have been trying to develop local government transparency indexes for their own countries (some more successfully than others).

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In this paper we contribute to the literature by attempting to provide an answer to the following research question: “what drives transparency in local government?” Evidently, this main interrogation leads to many others that we will address in a structured way. Our main objective is to discern whether transparency is mainly driven by the leadership, capacity and/or other political traits of the local leaders and local governments themselves (“supply-side determinants”) or, rather, contingent upon social, cultural and/or other local community/population features (“demand-side” determinants). To accomplish this we use the results of the recently developed Municipal Transparency Index (MTI) which was applied to all 308 Portuguese municipalities for the first time in 2013.

It should be noted at the outset that the MTI adopts (and measures) the abovementioned definition of transparency, not a more comprehensive notion of “local government transparency” that may go beyond the simple disclosure of information online (Meijer, 't Hart, & Worthy, 2015). The selection of indicators and their respective weights followed a participatory approach that can be universally replicated. But the MTI model and scores used in this research are unique to the Portuguese local government context and reflect the intrinsic legitimacy of the modelling process. In more general terms, a similar process could be developed in other countries to produce different sets of indicators and weights that would be regarded as relevant by the country's legitimate stakeholders.

The empirical findings indicate that (in Portugal) transparency seems to be primarily driven by endogenous factors of local governments and not so much the result of societal calls for increased openness or more information. The number of consecutive terms served by an incumbent mayor and the lower levels of municipal financial autonomy appear consistently as the most detrimental factors to transparency. The gender of the mayor also depicts a significant and robust association, with municipalities led by women displaying significantly higher levels of transparency. Societal factors seem to be less important drivers of transparency, although municipalities with higher unemployment levels and proportion of elderly population are consistently associated with lower levels of transparency.

The following section presents a brief overview of the literature on the determinants of transparency at the local government level. In the third and fourth sections we illustrate the theoretical arguments behind the “supply” and “demand” types of determinants, respectively. The fifth section comprises the data, methods and research findings. Finally, the sixth section concludes the paper.

2. Brief review of the literature

Access to information is now accepted as a fundamental right protected by national Constitutions in many democratic countries, an ethical value and priority for Public Administration (Cooper, 2004), and a precondition for public participation, scrutiny, and accountability (Piotrowski & Van Ryzin, 2007). Indeed, as TI puts it, “[t]ransparency empowers citizens to participate in and follow up on local governments' activities. If the actors of the local governance system are open in the clear disclosure of information, rules, plans, budgets, processes, actions and results, corruption is harder to hide. Transparency is a precondition for integrity and accountability” (TI, 2015). Together with other key principles and values, transparency is currently seen as a crucial pillar of good governance.

Part of the challenge to open government policies involves matching data and information requirements and needs of citizens and businesses to data made available by public organizations. From a supply-side perspective, Wong and Welch (2004) define the concept of open government as the extent to which public organizations reveal information about their operations, procedures, and decision-making processes. From the demand side, Armstrong (2005) describes transparency as the ‘unfettered access by the public to timely and reliable information on decisions and performance in the public sector’. Open government

initiatives should therefore adopt a citizen-centered or user's perspective in order to generate public value (Harrison et al., 2012; Janssen, Charalabidis, & Zuiderwijk, 2012). No less important is the role played by elected officials and public managers in the implementation of measures to promote transparency at all levels of government. The prevalence of a culture of transparency in the public sector is largely dependent on the responsiveness of these actors to the demand for information by citizens and businesses as well as their affirmative steps to make information about government affairs public without waiting for specific requests, for example, through the use of ICTs (i.e. proactive disclosure). Matching supply and demand transforms the basic tenets of open government policies – transparency, participation and collaboration – into means to achieve desirable ends by contributing to the (co-) creation of public value by public and private actors. Harrison et al. (2012) show how this can be accomplished through a public value assessment tool employed to evaluate the substantive benefits of open government initiatives.

Due to the aforementioned absence of suitable tools to assess the wider transparency practices of (local) governments, the few studies on the determinants of transparency focus mainly on financial issues. The reason behind this bias is fairly straightforward: it is easier to operationalize the concept of financial transparency. Bolívar, Muñoz, and Hernández (2013) carried out a meta-analysis of this literature and concluded that factors such as the “financial condition” of governments systematically affect financial transparency levels. Nevertheless, these authors point out that the context in which the research is carried out also influences the findings considerably.

More recently, an increasing number of authors have been using the indexes developed by the TI movement to analyze the associations with several socio-economic variables and thus explore the determinants of transparency (especially for the case of Spain). Some studies employ partial indexes (focusing on specific dimensions of transparency, usually, financial transparency) as the dependent variables of their multivariate regression models (e.g. Guillamón, Bastida, & Benito, 2011; Vicente, Benito, & Bastida, 2013). Despite the theoretical limitations of the existing assessment models (for a critical discussion, see da Cruz & Marques, 2013, 2014 and da Cruz et al., 2016), other authors use the overall transparency indexes which aggregate the scores obtained for each dimension of transparency (e.g. Albalade del Sol, 2013).

Using a different measure of transparency based on perceptions (survey data), Piotrowski and Van Ryzin (2007) and Piotrowski and Bertelli (2010) also attempt to uncover the determinants of local government transparency. Variables connected with civic engagement emerge from this research as being quite relevant for greater governmental transparency. Closely related to the definition of transparency adopted in the current paper and to the MTI assessment (please see Section 4.1.), Gallego-Álvarez, Rodríguez-Domínguez, and García-Sánchez (2010) address the determining factors of municipal E-government. These authors conclude that issues such as administrative and financial capacity, ideology and the size of the municipality may affect the development and dynamism of E-government.

Recent work by Yavuz and Welch (2014) employs data from a national survey of 850 managers from planning, finance, and police departments in 500 cities to examine the determinants of transparency and interactivity features of government websites. The authors find that website openness defined as a function of transparency and interactivity is positively related to increased frequency of citizen participation in agency decision-making, technical capacity, lower organizational control, and higher perceived usefulness of website technology.

Our operational definition of transparency as “the online publicity of all the acts of government and their representatives to provide civil society with relevant information in a complete, timely, and accessible manner” entails some limitations. First, the definition focuses on information available online, therefore potentially discriminating against digitally disadvantaged citizens. Second, despite the focus on “complete, timely, and easily accessible” information, the data collected for

the MTI does not allow us to control for levels of accessibility. In other words, and similarly to other indexes present in the literature, the MTI model can only guarantee that the information included in its calculation is present on the official websites and not that it is easily accessible and/or of high quality. Despite these limitations, we are confident that this type of information has the potential to disclose private interests which can conflict with the collective interest and make actors accountable for decisions and actions taken or omitted, and the facts that informed them (da Cruz et al., 2016).

The following section expands this initial approach to the empirical literature to analyze specific determinants of local government transparency. The empirical evidence collected from these references is used to formulate our research hypotheses.

3. A political market framework for transparency

We develop and apply a political market framework to examine how levels of transparency are shaped by the profile of the mayors and local government executives on the supply-side and the attributes of local organizations, interests and preferences in a community on the demand-side. The political market framework has been applied to the study of environmental policies (Keohane, Revesz, & Stavins, 1998) and land use management decisions (Feiock, Tavares, & Lubell, 2008; Lubell, Feiock, & Ramirez de la Cruz, 2009), but it is the first time it is used to analyze local government transparency. The framework argues that not only local government officials and institutions “choose” to provide a specific level of transparency in each jurisdiction, but also that the influence of citizens and interest groups affects the varying levels of transparency displayed across local governments. In other words, understanding the determinants of local government transparency requires not only hypotheses concerning the supply of transparency by local officials, but also hypotheses concerning the demand pressures by societal actors.

3.1. Supply-side determinants

The mayor's personal traits and the composition of the elected executive may determine the preferences of local officials regarding transparency issues and ultimately affect the decision and/or processes of providing online information to local constituencies. This section discusses the supply-side hypotheses regarding the determinants of local government transparency.

3.1.1. Profile of the head of the executive

The profile of the municipal executive (elected representatives in the executive branch of local government) has a direct bearing on transparency. Depending on the actual political system – for example, strong mayor or weak mayor, mayor-council or council-manager, among many other possible configurations – the profile of the mayor, in particular, may be especially relevant for the overall attitude of the local government towards transparency. Therefore, the political profile argument captures the level of commitment and willingness of mayors to support transparency based on personal characteristics. Mayors that value citizen voice and display concerns for the public interest, participation and social equity are also expected to devote more time and efforts into making transparency one of their priorities (Handley & Howell-Moroney, 2010; Yang & Callahan, 2007).

Political leadership is crucial in the modernization of local governance (Bochel & Bochel, 2010). Piotrowski and Van Ryzin (2007) find that older persons are more likely to support transparency practices, even if their results show that they are less likely to obtain government documents, perhaps due to the fact that these are increasingly being made available online. In this respect, higher level officials of a younger age may be more willing to embrace technology-based transparency as a local government policy. Since our measure of transparency relies on digital information disclosure, we expected that younger mayors will be more supportive of higher levels of transparency. In a similar vein,

Dreher, Lamla, Lein, and Somogyi (2009) contend that education and professional experience are important factors in the enactment of political initiatives. Based on a theoretical argument developed by Robert Putnam (1977), it is possible that the level of formal education and the type of training background frames the individual approach to participation. This argument about political participation can be extended to suggest that a higher level of formal education may also drive the demand for higher levels of transparency.

Finally, more open and cooperative leadership styles may also be related to gender. Eagly and Johnson (1990) find that women are more inclined to adopt a participatory type of leadership. The argument is that their approach and/or social skills may influence their attitude as managers and point to a leadership style that is both more democratic and more acceptant of suggestions by their peers and collaborators. In contrast, men tend to be more prone to choose a direct, autocratic type of leadership and will be less willing to accept participation. The only empirical work that tests the relationship between the mayor's gender and local government transparency is Sjöberg's, 2010 study of 349 Chilean municipalities (Sjöberg, 2010). The author only finds weak evidence to support the hypothesis that female mayors are more committed to transparency than their male counterparts. Piotrowski and Van Ryzin (2007) draw similar findings regarding “safety information”. Based on these arguments, we develop a set of hypotheses related to the profile of the mayor:

- H1.** Municipalities headed by younger mayors are more likely to present higher levels of transparency.
- H2.** Municipalities led by mayors with higher education display higher levels of transparency.
- H3.** Municipalities with female mayors display higher levels of transparency.

3.1.2. Profile of the municipal executive

Intense electoral competition stimulates citizen involvement and political debate that contribute to pluralism and the vitality of democracy. Comparative empirical work conducted at the national level indicates free and fair elections have a positive effect on budgetary transparency (Harrison & Sayogo, 2014; Wehner & De Renzio, 2013). When political competition is absent or diminished in any way, transparency is likely to be thwarted due to the lack of internal political pressure to introduce changes in the status quo.

If the local executive has a comfortable majority, there will be less pressure to interact with citizen voters, search for legitimacy or seek “the consent of the governed” (Thomas, 2010). More homogeneous communities characterized by lower levels of political conflict will demand less commitment to democratic governance (Oliver, 2001). Gandía and Archidona (2008) test the political competition hypothesis on website information disclosure by 130 municipalities in Spain. In order to quantify the information on city council web sites, the authors design a Disclosure Index (DI) which takes into account the content, navigability and presentation of the web sites. They find a positive relationship between the degree of competition and the levels of information disclosure measured by their DI. A similar study by Esteller-Moré and Polo Otero (2012) finds the same effect for the levels of budget transparency.

In cities with competitive political environments the local executive may feel the need to support transparency in order to increase credibility, foster mobilization, understand and address citizen concerns, and engage the community in the executive's policy proposals. Nevertheless, John and Cole (1999) argue that executive majorities allow local officials to experiment with participatory tools, something that executives facing tough electoral competition may wish to avoid due to the lack of stability and the added uncertainty that engaging with new tools brings about.

Political ideology may also be related to transparency issues.

Piotrowski and Van Ryzin (2007) find that individuals self-identifying as liberals are more likely to support higher government transparency than individuals of a more conservative political ideology. Grimmelikhuijsen and Welch (2012) analyze transparency in Dutch municipalities and find that decision-making transparency is connected with political influence and that a stronger presence of left-wing parties in the local council is associated with more transparent local government. In his study of municipal transparency in Spain, Albalade del Sol (2013) finds a negative association between partisanship and transparency for both left-wing and right-wing executive majorities as opposed to coalition executives. However, the author also finds a positive relationship between left-wing mayors and higher levels of transparency.

In addition to political will, administrative capacity can also be influential in the implementation of transparency initiatives. Prior work has found that the perceived technical capacity of the organization and having a designated person responsible for website management are both predicting factors of website openness (Yavuz & Welch, 2014). The reasoning is that more capacity associated with a more professional organization and staff in the IT areas will result in better performance (also) in transparency matters. Closely related to administrative capacity is local government financial autonomy. Having a larger proportion of the local budget derived from own sources enhances local government ability to exercise transparency policy choices and is likely to stimulate accountability towards local taxpayers. In contrast, local governments heavily reliant on intergovernmental transfers will experience less flexibility to deploy transparency procedures and less pressure to be transparent (Geys, Heinemann, & Kalb, 2010).

Based on these empirical findings and theoretical stances, we derive another set of hypotheses related to the context of supply-side features that impact on transparency:

H4. Higher electoral competition at the local level increases transparency.

H5. The number of consecutive terms in power is negatively associated with the level of transparency.

H6. Minority executives display higher levels of transparency.

H7. Left or center-left municipal executives are associated with higher levels of transparency.

H8. The degree of financial autonomy of the municipality is positively associated with the level of transparency.

H9. IT capacity is positively associated with the level of transparency.

The characteristics of the municipal executive and the mayor's profile influence the adoption of transparency measures, but this is not a one-way process. The members of the community itself play a role as stakeholders in lobbying for transparency in local government. The next section explores the demand-side hypotheses.

3.2. Demand-side determinants

In their study, Yavuz and Welch (2014) find that the influence of civil society and the willingness of citizens to participate in agency decision-making are both positive predictors of increased openness of government websites. Our work begins to unpack these concepts by looking at the influence of the socioeconomic and demographic profile of the communities as determinants of transparency. The expected positive effects of transparency, such as improved accountability, increased trust in government, and the reduction of risks of corruption, can only be captured if citizens are able to acquire and process information (Murillo, 2015). This effect is known as the publicity condition (Kolstad & Wiig, 2009) and its effectiveness is largely dependent on the socioeconomic status (SES) of the community.

Rosenstone and Hansen (1993) suggest that individuals of higher

SES are more politically active. Education, income and occupation are crucial descriptors of a community's SES. Yang and Callahan (2007) find that communities with higher education levels are also more likely to get involved in strategic decision making in local government. Self-selection is an important mechanism to induce an active demand for transparency and wealth, education, and special interests and preferences are likely to operate as drivers of information disclosure (Fiorina, 1999; Fung, 2006). Akin to education, higher levels of wealth and employment in the municipality should be associated with higher levels of local government transparency. Indeed, recent work by Caamaño-Alegre, Lago-Peñas, Reyes-Santias, and Santiago-Boubeta (2013) analyzes the determinants of budget transparency in 33 municipalities in the Spanish province of Galicia and finds a negative relationship between unemployment and budget transparency. Lowatcharin and Menifield (2015) investigate the role of geographic, demographic, socioeconomic, and institutional factors on governmental transparency in 816 out of 1055 counties in the twelve Midwestern U.S. states find that education attainment and per capita income levels are associated with higher levels of county government transparency.

Piotrowski and Bertelli (2010) developed a municipal transparency index using item response theory and tested the determinants using data from questionnaires administered to all 566 municipal clerks in New Jersey (67% response rate). They find that local governments with younger, college educated respondents display higher levels of transparency. In contrast, earlier empirical work conducted by Piotrowski and Van Ryzin (2007) finds a positive relationship between age and support for higher levels of transparency, although this relationship is reversed for documents obtained from the administration. Because our measure of transparency relies on information disclosed on municipal websites, we should expect similar results to the ones obtained by Piotrowski and Bertelli (2010).

Population size is also expected to have a positive effect on the levels of transparency. First, all else being equal, the total number of people interested in government transparency should naturally increase with the total population. Second, with size also comes relevance and prominence in the national and international settings which, among other effects, should increase scrutiny (by the media and citizens in general). Styles and Tennyson (2007) investigate and find a positive effect of the size of 300 American municipalities on the availability and accessibility of local government financial reports on the internet. Christiaens (1999) finds a similar relationship in a study of the level of compliance with regulation requiring information disclosure of accounting practices by municipalities in Flanders. In their comparative study of municipalities in Portugal and Italy, Jorge, Moura e Sá, Pattaro, and Lourenço (2011) also find a positive relationship between population size and fiscal transparency. Serrano-Cinca, Rueda-Tomás, and Portillo-Tarragona (2009) reach a similar conclusion for the relationship between size and voluntary internet financial reporting (e-disclosure). Finally, a recent study by Albalade del Sol (2013) reports a positive association between a jurisdiction size and his estimate of local government transparency in Spain.

The Political Science literature suggests that voter turnout levels, the frequency of contacts between citizens and local officials, and participation in political meetings can all be regarded as indicators of citizen involvement and commitment to participation in political matters (Oliver, 2001; Piotrowski & Van Ryzin, 2007). In line with this, the study by Albalade del Sol (2013) tests and confirms a positive association between voter turnout and levels of transparency.

Based on these “demand-side” considerations, we formulate the final set of hypotheses regarding the local community context and the levels of transparency attained by the various municipalities:

H10. Communities with higher socioeconomic status display higher levels of transparency.

H11. Municipalities where the average age of the population is higher display lower levels of transparency.

Table 1
Summary of research hypotheses and supporting literature.

Hypothesis	References
H1: Municipalities headed by younger mayors are more likely to present higher levels of transparency	Piotrowski and Van Ryzin (2007)
H2: Municipalities led by mayors with higher education display higher levels of transparency	Dreher et al. (2009)
H3: Municipalities with female mayors display higher levels of transparency	Eagly and Johnson (1990), Piotrowski and Van Ryzin (2007), Sjöberg (2010)
H4: Higher electoral competition at the local level increases transparency; H5: The number of consecutive terms in power is negatively associated with the level of transparency; and H6: Minority executives display higher levels of transparency	Oliver (2001), Gandía and Archidona (2008), Thomas (2010), Esteller-Moré and Polo Otero (2012), Grimmelikhuijsen and Welch (2012), Wehner and De Renzio (2013), Berliner (2014), Harrison and Sayogo (2014)
H7: Left or center-left municipal executives are associated with higher levels of transparency	Piotrowski and Van Ryzin (2007), Albalade del Sol (2013)
H8: The degree of financial autonomy of the municipality is positively associated with the level of transparency	Geys et al. (2010)
H9: IT capacity is positively associated with the level of transparency	Yavuz and Welch (2014)
H10: Communities with higher socioeconomic status display higher levels of transparency	Rosenstone and Hansen (1993), Fiorina (1999), Fung (2006), Yang and Callahan (2007), Caamaño-Alegre et al. (2013), Lowatcharin and Menifield (2015)
H11: Municipalities where the average age of the population is higher display lower levels of transparency	Piotrowski and Bertelli (2010)
H12: Population size is positively associated with the level of transparency	Christiaens (1999), Styles and Tennyson (2007), Serrano-Cinca et al. (2009), Jorge et al. (2011), Albalade del Sol (2013)
H13: Higher voter turnout in mayoral elections is positively associated with higher levels of transparency	Oliver (2001), Piotrowski and Van Ryzin (2007), Albalade del Sol (2013)

H12. Population size is positively associated with the level of transparency.

H13. Higher voter turnout in mayoral elections is positively associated with higher levels of transparency.

For a summary of all supply-side and demand-side hypotheses included in the current research and the corresponding supporting literature, please see [Table 1](#). Again, the limited empirical work conducted to this date due to the unavailability of effective ‘transparency measures’ is fairly evident (given the lack of empirical evidence for a few of the hypotheses, some of the references correspond to theoretical arguments).

4. Research context

Local governments in Portugal have a long tradition dating back to the Middle Ages, but local democracy is recent, since mayoral elections with party lists and universal suffrage occurred for the first time in 1976, two years after democracy was reinstated. Many local governments in Portugal have undergone significant modernization changes over the past decade that promoted extensive New Public Management-type reforms, particularly in more urban areas ([Tavares & Camões, 2007, 2010](#)). Local executives are headed by elected, professional, full-time mayors ([Guérin & Kerrouche, 2008](#)). The literature is unanimous in indicating that Portugal accompanies Greece, Austria, France, Spain, Italy, and Poland in the group of countries following a strong mayor tradition ([Heinelt & Hlepas, 2006; Magre & Bertrana, 2007](#)), where the mayor represents the interests of the community in face of higher levels of government ([Heinelt & Hlepas, 2006](#)).

Mayors in Portugal are elected as heads of their party's or civic/independent movement's list and the members of the municipal executive are divided up using the d'Hondt proportional formula ([Magre & Bertrana, 2007](#)). As a result of proportional representation, local executives can be minority executives, meaning that the winning party (and the mayor in office) does not hold the majority of seats in the cabinet. As argued above, this is likely to create political pressure and increased demands by the opposition and contribute to a higher level of commitment to transparency by the local executive. Mayors heading minority executives face more situations where negotiation skills and ability to compromise are required to convince members of the executive from other parties to support the policies proposed by the mayor. A stronger opposition and a weakened legitimacy of the Mayor's

list may require the government to adhere to more transparent practices.

4.1. The Portuguese municipal transparency index

The MTI was developed in 2013 by Transparência e Integridade, Associação Cívica (TIAC), the national representative of TI, in cooperation with four Portuguese academic institutions. The objective was to assess the level of transparency of local governments through the scrutiny of the information that is disclosed online in the official websites of the municipalities. The index does not take into account the accessibility, intelligibility, reliability, and quality of the information. It merely accounts for the disclosure/non-disclosure of a set of information items, where the impact of disclosure/non-disclosure in the overall score depends of the type of information item. Therefore, the above-mentioned definition that construes transparency as the online publicity of all the acts of government and their representatives is compatible with the MTI model. The Portuguese MTI was modelled through a Multicriteria Decision Analysis approach ([Munda, 2004](#)). The process and methods used to develop this index are thoroughly described in [da Cruz et al. \(2016\)](#). Nevertheless, the main features of the MTI – which makes it one of the most robust transparency assessment tools available to date – are summarized below.

The index includes 76 indicators consisting of dummy variables that take the value of ‘1’ when a certain information item is available in the municipality official website (and ‘0’ otherwise). These indicators are grouped in seven dimensions: A) Organizational information, social composition, and operation of the municipality (executive and deliberative bodies) (18 indicators); B) Plans and planning (13 indicators); C) Local taxes, rates, service charges, and regulations (5 indicators); D) Relationship with citizens as customers (8 indicators); E) Public procurement (10 indicators); F) Economic and financial transparency (12 indicators); and G) Urban planning and land use management (10 indicators). All indicators and dimensions were selected/designated through face-to-face participatory processes involving public administration practitioners, academics, and civic activists (for a full list of indicators, see the [Appendix A](#)).

The rules for scoring in each dimension and the respective weights were also established in a participatory workshop. During this session the group of stakeholders decided to use the same system to score the level of transparency in each dimension. This fairly simple scoring mechanism is presented in [Table 2](#). As can easily be seen in the table

Table 2
Rules for scoring in each dimension of the MTI.
Source: da Cruz et al. (2016).

Performance level	Scoring rule	Score
Level I	All information is disclosed.	100
Level II	All 'Determinant' information and more than 50% of the 'Important' information.	93
Level III	All 'Determinant' information and between 25% and 50% of the 'Important' information.	86
Level IV	All 'Determinant' information and less than 25% of the 'Important' information.	79
Level V	More than 50% of the 'Determinant' information and more than 50% of the 'Important' information.	71
Level VI	More than 50% of the 'Determinant' information and between 25% and 50% of the 'Important' information.	64
Level VII	More than 50% of the 'Determinant' information and less than 25% of the 'Important' information.	57
Level VIII	Between 25% and 50% of the 'Determinant' information and more than 50% of the 'Important' information.	50
Level IX	Between 25% and 50% of the 'Determinant' information and between 25% and 50% of the 'Important' information.	43
Level X	Between 25% and 50% of the 'Determinant' information and less than 25% of the 'Important' information.	36
Level XI	Less than 25% of the 'Determinant' information and more than 50% of the 'Important' information.	29
Level XII	Less than 25% of the 'Determinant' information and between 25% and 50% of the 'Important' information.	21
Level XIII	Less than 25% of the 'Determinant' information and between 10% and 25% of the 'Important' information.	14
Level XIV	Less than 25% of the 'Determinant' information and less than 10% of the 'Important' information (but at least one item is disclosed).	7
Level XV	No information is disclosed.	0

below, the scheme is based on the share of “determinant” and “important” information items available online. Therefore, the group of experts was asked to identify the “determinant” indicators in each dimension (up to a quarter of the total, approximately). This allows for a more meticulous assessment since the scoring system for the MTI dimensions gives an extra reward to the disclosure of these items of information (i.e. not all indicators are valued the same, emphasis is given to some – ‘determinant’ indicators).

After reaching an agreement on the system to assess performance in each dimension of transparency, it was necessary to determine the weighting coefficients that would allow to estimate the ‘overall transparency’. The weights were computed through an iterative process where several questions were posed to the group of stakeholders. In simple terms, the participants had to express their preferences when comparing different “transparency profiles”, that is, fictitious municipalities with different scores in the various transparency dimensions (for methodological detail on weighting, please refer to da Cruz et al., 2016). The results of this procedure are presented in Fig. 1. The weighting coefficients were then used to aggregate the scores achieved by the municipalities in each dimension (i.e. to compute the overall MTI score) according to the following formula:

$$MTI(m_i) = \sum_{j=1}^n w_j \times D_j(m_i) \quad \text{with} \quad \sum_{j=1}^n w_j = 1 \quad \text{and} \quad w_j > 0 \quad (1)$$

where $MTI(m_i)$ is the MTI score of municipality m_i , $D_j(m_i)$ is the score of the municipality in dimension j , and w_j is the weighting coefficient of dimension j . Obviously, by design, both the overall MTI and the scores of the dimensions will range from “0” (totally opaque) to “100” (totally transparent).¹

4.2. Data and methods

Data for the MTI was collected during the first half of 2013. A group of students was selected by TIAC and given specific instructions on how to code each of the 76 indicators included in the MTI. All members of the coding team could contact the lead researcher of the project with questions and doubts regarding the coding and these instructions were compiled into a list of Frequently Asked Questions (FAQs) to provide guidance for future replications of the MTI. After data collection, the preliminary results were sent to all municipalities in August 2013 (local governments were given 10 days to send back their suggestions/corrections).

Ordinary least squares (OLS) regression is employed to estimate the

¹ Note that the “0” to “100” range was arbitrarily chosen by the decision-making group during the workshop. Any other numerical scale could have been adopted instead with no implications for the robustness of the assessment model.

models using the 2013 MTI as the dependent variable. The full model specification employs two sets of variables: supply-side determinants (the mayor's profile and institutional and political factors) and demand-side determinants (socioeconomic factors).

To gauge the effects of using a multicriteria model defined through a participatory and iterative process, we also estimate the regression models using equal weights for the seven dimensions of transparency (instead of the weights shown in Fig. 1), and equal weights for the 76 underlying indicators (i.e. 1/76 or approximately 0.013). In practical terms, assuming equal weights for all dimensions means that the same score in two different dimensions will have exactly the same contribution for the overall transparency score. This will be the case irrespective of number of indicators contained by each dimension and the actual “relevance” of those indicators for overall municipal transparency (e.g. achieving a Level II in dimension G “Urban planning and land use management” is exactly the same as achieving a Level II in, say, dimension D “Relationship with citizens as customers”).

Similarly, adopting equal weights for all indicators bears the assumption that disclosing/non-disclosing an information item has always the same impact on overall transparency, irrespective of the content or type of information in question. This would mean, for example, that disclosing the “annual budget” (a determinant indicator of dimension F “Economic and financial transparency”) has the same value of disclosing “links to active social networks” (an indicator of dimension D “Relationship with citizens as customers”) which, again, may be a strong assumption to impose to such an assessment model.

Both simplifications (equal weights for dimensions or equal weights for indicators) have obvious problems.² In fact, these theoretical limitations were the main reason that led the MTI research team to adopt a Multicriteria Decision Analysis modelling approach. What we are trying to unveil by using these two additional municipal transparency estimators is whether the extra complexity and time-consuming efforts involved with this type of modelling are worth it when the ultimate objective is to study the determinants of local government transparency.³ Testing these different estimators also allow us to perform some sort of robustness analysis.

Table 3 presents the descriptive statistics of all the variables

² Note that adopting equal weights is just one among an infinite number of possible cases that can be the result of “arbitrary weighting”. Any attempt to reflect the “importance” of a dimension/indicator without considering the range of possible impacts for the remaining dimensions/indicators is theoretically incorrect.

³ However, the “worth” of this type of modelling is quite evident if the objective is instead to carry out advocacy, raise the awareness of citizens and local governments and promote reforms or more transparent practices. An assessment model with embedded problems and theoretical limitations can be easily discredited by the subjects being evaluated and/or lead to unfair or perverse results.

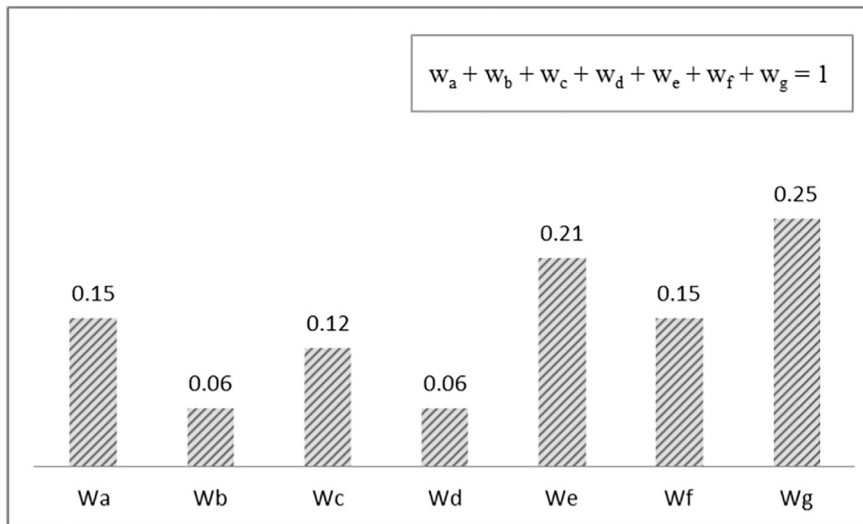


Fig. 1. Weights of MTT's dimensions.
Source: da Cruz et al. (2016).

Table 3
Descriptive statistics.

Variable	Indicator	Mean	Standard dev.	Min.	Max.	Obs.
Dependent						
Transparency	MTI 2013	32.31	10.41	0.00	60.99	278
Transparency	All transparency dimensions valued the same (i.e. dimensions with equal weights) (2013)	32.48	10.23	0.00	61.22	278
Transparency	All indicators valued the same (i.e. indicators with equal weights) (2013)	29.44	10.75	0.00	57.89	278
Supply-side						
Minority executive	1 = Minority executive; 0 = otherwise (2009)	0.09	0.29	0.00	1.00	278
Consecutive terms	Number of consecutive terms by the incumbent (2009)	3.07	1.96	1.00	10.00	278
Margin of victory	Difference in percentage points between 1st and 2nd place parties (2009)	20.02	10.98	0.95	56.64	278
Partisanship	Left = 1; 0 = otherwise (2009)	0.54	0.50	0.00	1.00	278
Financial autonomy	Proportion of own revenues	0.34	0.19	0.04	0.87	278
IT employees	Natural log of IT employees in City Hall	1.30	0.86	0.00	4.93	236
Gender	Mayor's gender (1 = female)	0.08	0.26	0.00	1.00	278
Mayor's age	Mayor's age	52.02	8.61	27.00	74.00	270
Mayor's education	(0 = 6 years or less; 1 = 9 years; 2 = high school; 3 = graduate; 4 = postgraduate)	1.97	0.68	0.00	4.00	220
Demand-side						
Education	Proportion of individuals w/ a bachelor's degree	0.08	0.04	0.03	0.27	278
Unemployment	Percent unemployed	12.50	2.83	5.09	22.85	278
Age	Average age of municipal population	41.55	3.89	32.5	52.71	278
Purchase power	Index (100 = country average)	76.03	24.26	47.36	232.54	278
Turnout	Turnout in mayoral elections (2009)	65.06	7.37	45.91	80.61	278
Municipal population	Natural log	9.83	1.10	7.48	13.14	278

Note: All variables are measured in 2011, except where mentioned otherwise.

employed in the regression models. As can be noted, the average value of the MTI for the mainland municipalities is quite low (the municipalities from the islands were excluded from the analysis due to lack of data for the independent variables). This was somewhat expected because the 2013 MTI was the first ever large-scale and widely disseminated assessment of local government transparency in Portugal. In fact, there was an agreement among all the stakeholders involved in the modelling procedure that the current transparency practices are below acceptable levels in most municipalities (a score of 36 was set as the “acceptable” threshold for the MTI, which, for example, corresponds to achieving Level X in all dimensions; the threshold for a “good” level of transparency correspond to a score of 64).

We include three variables describing the mayor's profile on the right-hand side of the regression equation: a dummy variable of the mayor's gender (1 = Female), the mayor's age, and the mayor's education. This variable uses a scale where 0 = 6 years of formal education or less, 1 = 9 years of formal education, 2 = complete high school, 3 = complete undergraduate degree, and 4 = postgraduate degree. These variables were obtained via a telephone survey of the mayors of all 278 municipalities of Continental Portugal conducted between

October and December 2011 by the Center for Research in Public Policy and Administration.

We employ the margin of victory to account for the level of electoral competition. This measure is the difference in percentage points between the winner and the runner up in each mayoral election race in 2009. The number of consecutive terms by the incumbent in 2009 is used to test the hypothesis that lengthier stays in office depress transparency levels. A dummy variable controls for the presence of a minority executive. Partisanship is a dummy variable that equals 1 when the mayor belongs to a party on the left of the Portuguese political spectrum (Socialist Party, Communist Party or Left Bloc) and equals 0 otherwise. These variables are available at the National Election Commission (*Comissão Nacional de Eleições*) (<http://eleicoes.cne.pt>).

Financial autonomy is gauged by the proportion of total revenues generated within each community (local taxes, fees, and other municipal charges) and was made available by the General Directorate of Local Governments (*Direcção Geral das Autarquias Locais*). Administrative capacity is assessed by the number of Information Technology employees in the City Hall. This variable was obtained via the telephone survey mentioned above and is used in natural log form

to uphold the normality assumption.

Lastly, we include six demand-side variables: the proportion of individuals with a Bachelor's degree or higher, purchasing power index, unemployment rate per municipality in 2011, average age of municipal population, voter turnout in the 2009 mayoral elections, and population size (in natural log form). Three of these variables are employed to assess the positive association between socioeconomic status and transparency (**hypothesis 10**): Education, Employment and Purchase Power. All variables are reported in the 2011 Census with the exception of the purchasing power index elaborated by PORDATA (<http://www.pordata.pt>), and voter turnout obtained at the National Election Commission.

4.3. Findings

Tables 4, 5 and 6 report the findings for several specifications of Ordinary Least Squares regressions (using as dependent variable the MTI 2013, the score obtained when all dimensions have the same weight, and the score obtained when all indicators have the same weight, respectively). The first model (1) includes only the supply-side variables (except IT employees and the mayor's characteristics), the second (2) includes only the demand-side variables, and model (3) is the full specification (except IT employees and the mayor's characteristics). These three specifications use data for all 278 municipalities of Continental Portugal. For the remaining four models, each one includes the full specification plus additional variables for which we do not have data for all the municipalities, namely: IT employees (4), the mayor's gender (5), the mayor's gender and age (6), and the mayor's gender and education (7). With very few exceptions, the results are basically the same in all models. Globally, the signs of the coefficients are almost always as theoretically expected (but there are exceptions) and their magnitudes and standard errors are consistent between specifications.

Curiously, the "dimensions with equal weights" models present slightly more statistically significant coefficients than the MTI 2013 ones, whereas the "indicators with equal weights" depict slightly less.

However, and more importantly, the regression results are consistent across the three dependent variables tested (i.e. coefficients have the same sign and even similar magnitudes in all specifications), which is indicative of the robustness of the results attained. In the end, it seems that capturing the perceptions of a group of experts to model the scoring systems and weights of the criteria (be it "dimensions" or "indicators") is not crucial if the sole objective is to explore the determinants of local government transparency. However, if resources are available, it is preferable to frame the findings around the more theoretically-sound scores that have embedded the preferences of a legitimate group of experts (in our case, the MTI). Although all models are imperfect representations of the reality, the MTI should still be closer to that unattainable reality than any arbitrary assessment model.

The profile of the mayor contributes to explain the varying levels of transparency found on the websites of Portuguese municipalities. The three variables included to account for the mayor's profile display the expected signs, but only one – the mayor's gender – is statistically significant at conventional levels. Municipalities run by female mayors have, on average, MTI scores five points above their male counterparts. This is a substantive impact.

The results indicate that there is a negative effect of the number of consecutive terms on the level of local government transparency. Each additional term is associated with a drop in about 0.9 percentage points (for the full model) in the level of transparency. Lengthier stays in power are detrimental to the adoption of information disclosure and open government principles.

Also on the "supply side", larger margins of victory are an indication of lower levels of competition in local elections and, according to our findings, municipalities where the difference between the winner and runner-up are larger also display higher scores in the MTI. This result fails to support the argument that competitive elections provide additional pressure to increase transparency and accountability towards citizens. Instead, this finding seems to indicate that, all else being equal, more comfortable margins of victory allow municipal executives to adopt transparency practices without too much concern over electoral

Table 4
Ordinary least squares estimations (dependent variable: MTI 2103).

	Supply-side model (1)	Demand-side model (2)	Full model (3)	Full model (w/ IT employees) (4)	Full model (w/ mayor's gender) (5)	Full model (w/ mayor's gender & age) (6)	Full model (w/ mayor's gender & education) (7)
Supply-side							
Minority executive	1.02 (1.56)	–	0.41 (1.62)	– 0.02 (1.75)	– 0.13 (1.69)	0.37 (1.7)	0.8 (1.94)
Consecutive terms	– 0.87 (0.32)***	–	– 0.96 (0.31)***	– 0.82 (0.31)***	– 0.93 (0.31)***	– 0.90 (0.37)**	– 0.64 (0.35)*
Margin of victory	0.13 (0.06)**	–	0.12 (0.06)**	0.10 (0.06)	0.13 (0.06)**	0.13 (0.06)**	0.11 (0.07)
Partisanship	0.78 (1.14)	–	1.19 (1.14)	1.14 (1.17)	1.07 (1.13)	0.87 (1.14)	0.1 (1.27)
Financial autonomy	22.18 (3.20)***	–	10.61 (5.18)**	8.86 (5.34)*	9.9 (5.16)*	9.21 (5.13)*	11.89 (5.07)**
IT employees	–	–	–	0.5 (1.13)	–	–	–
Gender	–	–	–	–	4.78 (2.48)*	5.12 (2.5)**	5.77 (2.66)**
Mayor's age	–	–	–	–	–	0.01 (0.09)	–
Mayor's education	–	–	–	–	–	–	1.11 (1.04)
Demand-side							
Education	–	18.73 (33.41)	35.18 (33.84)	57.89 (37.77)	40.38 (34.15)	30.11 (36.57)	4.51 (41.89)
Unemployment	–	– 0.48 (0.22)**	– 0.46 (0.21)**	– 0.33 (0.2)	– 0.46 (0.21)**	– 0.42 (0.21)*	– 0.43 (0.24)*
Age	–	– 0.41 (0.24)*	– 0.33 (0.23)	– 0.39 (0.25)	– 0.39 (0.23)*	– 0.4 (0.24)*	– 0.43 (0.26)
Purchasing power	–	0.07 (0.05)	0.01 (0.06)	– 0.03 (0.06)	0.01 (0.06)	0.01 (0.06)	0.03 (0.06)
Turnout	–	– 0.08 (0.10)	– 0.02 (0.11)	– 0.03 (0.11)	– 0.02 (0.11)	– 0.02 (0.11)	– 0.04 (0.12)
Municipal population	–	0.81 (0.98)	0.6 (0.97)	0.6 (1.18)	0.49 (0.96)	0.48 (1)	0.07 (1.13)
Constant	24.33 (1.97)***	45.79 (20.91)**	39.67 (21.16)*	43.12 (23.34)*	42.63 (20.48)**	42.43 (21.38)**	47.4 (22.84)**
F	11.76***	10.66	7.56***	6.54***	7.73***	6.26***	5.14***
R ²	0.18	0.18	0.23	0.24	0.24	0.22	0.22
N. Obs.	278	278	278	236	278	270	220

*p < 0.1; **p < 0.05; ***p < 0.01; Two-tailed tests. Robust standard errors (RSE).

Table 5
Ordinary least squares estimations (dependent variable: dimensions with equal weights).

	Supply-side model (1)	Demand-side model (2)	Full model (3)	Full model (w/ IT employees) (4)	Full model (w/ mayor's gender) (5)	Full model (w/ mayor's gender & age) (6)	Full model (w/ mayor's gender & education) (7)
Supply-side							
Minority executive	0.98 (1.54)	–	0.32 (1.58)	– 0.07 (1.74)	– 0.17 (1.63)	0.24 (1.64)	0.87 (1.88)
Consecutive terms	– 0.80 (0.28)***	–	– 0.9 (0.27)***	– 0.78 (0.28)***	– 0.88 (0.27)***	– 0.86 (0.33)**	– 0.7 (0.31)**
Margin of victory	0.13 (0.06)**	–	0.12 (0.06)**	0.1 (0.06)*	0.12 (0.06)**	0.13 (0.06)**	0.12 (0.07)*
Partisanship	0.63 (1.09)	–	1.09 (1.07)	0.73 (1.09)	0.98 (1.06)	0.75 (1.07)	– 0.07 (1.19)
Financial autonomy	24.16 (3.05)***	–	11.31 (5)**	9.81 (5.1)*	10.65 (4.99)**	9.83 (4.99)*	11.46 (5.09)**
IT employees	–	–	–	1.1 (1.03)	–	–	–
Gender	–	–	–	–	4.39 (2.2)**	4.74 (2.21)**	5.68 (2.34)**
Mayor's age	–	–	–	–	–	0.01 (0.09)	–
Mayor's education	–	–	–	–	–	–	0.74 (0.96)
Demand-side							
Education	–	25.84 (33.47)	42.17 (33.42)	70.77 (36.98)*	46.94 (33.74)	41.03 (36.76)	19.7 (41.32)
Unemployment	–	– 0.46 (0.21)**	– 0.44 (0.2)**	– 0.33 (0.19)*	– 0.44 (0.2)**	– 0.4 (0.2)**	– 0.41 (0.23)*
Age	–	– 0.48 (0.22)**	– 0.39 (0.21)*	– 0.46 (0.23)**	– 0.44 (0.21)**	– 0.47 (0.22)**	– 0.49 (0.24)**
Purchasing power	–	0.06 (0.05)	0.00 (0.05)	– 0.06 (0.06)	0.00 (0.05)	0.00 (0.05)	0.02 (0.06)
Turnout	–	– 0.84 (0.09)	– 0.02 (0.1)	– 0.02 (0.1)	– 0.01 (0.09)	– 0.02 (0.1)	– 0.05 (0.11)
Municipal population	–	1.07 (0.93)	0.85 (0.92)	0.61 (1.08)	0.74 (0.92)	0.64 (0.96)	0.22 (1.08)
Constant	23.78 (1.85)***	46.26 (19.14)**	39.4 (18.91)**	45.09 (20.6)**	42.12 (18.4)**	43.87 (19.32)**	49.81 (20.64)**
F	14.20***	15.13***	9.56***	8.65***	9.70***	7.96***	6.45***
R ²	0.21	0.22	0.27	0.29	0.28	0.26	0.26
N. Obs.	278	278	278	236	278	270	220

*p < 0.1; **p < 0.05; ***p < 0.01; Two-tailed tests. Robust standard errors (RSE).

Table 6
Ordinary least squares estimations (dependent variable: indicators with equal weights).

	Supply-side model (1)	Demand-side model (2)	Full model (3)	Full model (w/ IT employees) (4)	Full model (w/ mayor's gender) (5)	Full model (w/ mayor's gender & age) (6)	Full model (w/ mayor's gender & education) (7)
Supply-side							
Minority executive	2.50 (1.72)	–	1.79 (1.74)	1.16 (1.9)	1.38 (1.76)	1.61 (1.78)	2.77 (2.07)
Consecutive terms	– 0.77 (0.29)***	–	– 0.88 (0.29)***	– 0.75 (0.29)**	– 0.86 (0.28)***	– 0.88 (0.34)**	– 0.6 (0.31)*
Margin of victory	0.10 (0.06)*	–	0.09 (0.06)	0.08 (0.06)	0.09 (0.06)	0.09 (0.06)	0.09 (0.07)
Partisanship	1.15 (1.17)	–	1.54 (1.14)	1.4 (1.16)	1.45 (1.14)	1.37 (1.16)	0.69 (1.28)
Financial autonomy	24.84 (3.14)***	–	10.39 (5.45)*	8.32 (5.5)	9.84 (5.42)*	9.44 (5.44)*	11.09 (5.38)**
IT employees	–	–	–	0.72 (1.14)	–	–	–
Gender	–	–	–	–	3.67 (2.35)	3.97 (2.35)*	4.79 (2.55)*
Mayor's age	–	–	–	–	–	0.03 (0.09)	–
Mayor's education	–	–	–	–	–	–	0.51 (0.97)
Demand-side							
Education	–	8.65 (34.68)	24.01 (34.52)	42.8 (38.21)	27.99 (34.97)	26.67 (38.09)	– 1.35 (42.37)
Unemployment	–	– 0.37 (0.22)*	– 0.38 (0.21)*	– 0.27 (0.21)	– 0.38 (0.22)*	– 0.35 (0.22)	– 0.32 (0.25)
Age	–	– 0.41 (0.22)*	– 0.35 (0.21)	– 0.41 (0.23)*	– 0.39 (0.21)*	– 0.42 (0.22)*	– 0.40 (0.24)*
Purchasing power	–	0.07 (0.05)	0.01 (0.06)	– 0.03 (0.06)	0.01 (0.06)	0.00 (0.06)	0.04 (0.06)
Turnout	–	– 0.07 (0.10)	– 0.02 (0.1)	– 0.05 (0.1)	– 0.02 (0.1)	– 0.03 (0.1)	– 0.05 (0.12)
Municipal population	–	1.87 (0.98)*	1.58 (0.98)	1.63 (1.14)	1.50 (0.98)	1.36 (1.01)	1.07 (1.16)
Constant	20.66 (1.99)***	31.06 (20)	28.09 (20.58)	32.36 (21.81)	30.37 (20.34)	32.1 (21.26)	34.78 (22.97)
F	14.43***	15.65	9.69***	9.00***	9.59***	7.94***	6.26***
R ²	0.21	0.22	0.26	0.29	0.27	0.25	0.25
N. Obs.	278	278	278	236	278	270	220

*p < 0.1; **p < 0.05; ***p < 0.01; Two-tailed tests. Robust standard errors (RSE).

outcomes. Unlike financial autonomy, which seems to be a key requirement for higher levels of transparency, political ideology and the existence of minority executives have an undetermined association (or perhaps no association at all) with local government transparency practices.

Finally, several results on the demand-side deserve mention. Previously, we argued that higher unemployment rates and lower economic development at the local level have been associated with lower civic engagement and demand for opportunities to participate in local government decisions. Indeed, we find that municipalities with higher unemployment rates have lower transparency scores: on average, a one-percentage point increase in the unemployment rate drops the MTI by around 0.3 points. The average age of municipal population is also negatively associated with transparency. As expected, the coefficient for our education variable is positive throughout all specifications (with the single exception of the full model with mayor's gender and education, using indicators with equal weights as the dependent variable), but fails to reach statistical significance at conventional levels in all models. Surprisingly, our analysis was not able to capture any significant associations between population size, purchasing power and voter turnout – all expected to bestow a positive influence – and transparency scores.

Overall, variables on the demand-side perform significantly worse in explaining municipal transparency than the supply-side ones. Our results suggest that local government transparency in Portugal is primarily associated to characteristics of the local governments and elected leaders themselves rather than by pressures associated with the socioeconomic and demographic profiles of citizens and communities. This pattern of results seems to be consistent with the strong mayor model characterizing the Portuguese local government system and suggests the possibility of extending these conclusions to other countries where a similar model prevails. The notional lack of interest of the Portuguese population on (local) public/political matters seems to find some empirical support in this study.

5. Conclusions and future research

This paper contributes to this body of knowledge by investigating the determinants of local government transparency. We test a series of hypotheses derived from a (supply and demand) political market framework using data from the websites of all 278 municipalities of Continental Portugal. Our findings concur with empirical work by [Ruano de la Fuente \(2014\)](#) suggesting an uneven use of ICTs by local governments to enhance transparency. The single most relevant individual factor contributing to higher levels of transparency is gender. We were able to confirm our third hypothesis that female mayors are associated with higher levels of transparency when compared to their male counterparts. Given that the overwhelming majority of Portuguese mayors are male, this finding also helps explaining the overall low levels of municipal transparency. The findings concerning other individual characteristics of the mayors are slightly disappointing. Our first two hypotheses did not receive support in this analysis: the age and level of education of Portuguese mayors do not appear to predict the variation in the levels of local government transparency.

A crucial conclusion of this research is that the extended stay in power of municipal executives is a key factor undermining local government transparency. The number of consecutive terms served by an incumbent reduces the pressure to disclose information and compromises transparency. This finding confirms [H5](#) and is consistent with prior findings indicating that turnover in the executive office is associated with increased transparency expressed by the adoption of Freedom of Information laws ([Berliner, 2014](#)). However, our analysis fails to support [H4](#) and the idea that strong and credible opposition is likely to increase levels of transparency (due to increased political pressure over the local executive). In fact, we find the exact opposite: controlling for the number of consecutive terms served by an incumbent, larger margins of victory are associated

with higher levels of transparency. This points to the idea previously expressed by [John and Cole \(1999\)](#) that lower competition allows local officials to engage in experimentation without risking reelection bids. Furthermore, if local executives have to spend less time and energy in dealing with opposition, they may be more willing to produce and disclose useful government information.

The results also confirm [H8](#). Substantively, financial autonomy is the most important driver of transparency, with more autonomous local governments capable of delivering higher levels of transparency online and more concerned with accountability to their citizens. In contrast, the expected positive effects of minority executives ([H6](#)), left-wing partisanship ([H7](#)), and IT capacity ([H9](#)) are not confirmed in our empirical analysis.

In general, the supply-side factors seem to fare much better than the demand-side predictors. The results seem to suggest that the low levels of transparency found across the board in Portuguese local governments may also be due to insufficient demand driven by cultural and educational motives. Only two hypotheses receive some empirical support on the demand-side. [H10](#) is partially supported, as municipalities with higher unemployment rates display lower levels of transparency. However, the other indicators of SES (education and purchase power) fail to achieve statistical significance, despite the expected positive coefficients. Municipalities with higher proportions of elderly citizens also display lower levels of transparency, therefore providing empirical support for [H11](#). Debates about information disclosure and transparency requirements are fairly recent in the national and local media settings and highly popular in social media platforms, so perhaps older populations are less informed about these discussions and less inclined to follow them. The positive influence of the size of the municipality ([H12](#)) and voter turnout rates ([H13](#)) do not receive empirical support. Overall, our findings suggest that a stronger emphasis should be placed in communities with ageing population and where citizens have lower SES, particularly in terms of employment, in order to foster government transparency practices, if this is indeed a societal objective. This policy recommendation follows prior contributions to the literature with similar orientations in different contexts ([Bertot et al., 2010](#); [Murillo, 2015](#)).

This research has some limitations that should be taken into consideration when drawing conclusions. First, the findings are based in the analysis of cross-sectional data that does not allow for definitive statements of causality. Second, missing data for some of the variables – e.g. IT employees and the mayors' education – creates possible biases in the results. Despite these problems, we opted to use these variables in several specifications because their inclusion is theoretically sound and supported by prior findings in the literature ([Yavuz & Welch, 2014](#)). Finally, the MTI itself may be subject to criticism as it measures the presence/absence of indicators in official websites, but fails to assess the quality of this information. Faced with time and resource constraints, the MTI project (and, consequently, our analysis) values geographical coverage and thematic comprehensiveness over depth and detail.

Overall, the work follows recent trends in the Digital Government literature calling for a contextualization of policy-driven electronic governance ([Janowski, 2015](#)). The stakeholder-based participatory approach to select and weight the MTI indicators can be universally replicated, but the results are intrinsic to each country (or region, municipality or groups of municipalities that engage in a similar exercise). As a result, the MTI has the potential to serve as a tool to empower stakeholders in monitoring local government activities and, ultimately, to improve accountability and responsiveness of local officials ([Janssen & Estevez, 2013](#); [Ruano de la Fuente, 2014](#)).

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Appendix A. Dimensions and indicators of the MTI

Dimensions	Indicators
Organizational information, social composition and operation of the municipality	<ul style="list-style-type: none"> • Role and responsibilities of each member of the local council (executive body) • Biographical note/CV of each member of the local council • Email of each member of the local council • Asset declaration of each member of the local council • Register of interests of each member of the local council – (“Determinant”) • Representation expenses for each member of the local council • List of members of the Mayor's cabinet and full time aldermen and respective remuneration – (“Determinant”) • Employees annual report (“social balance sheet”) • List of employees authorized to accumulate public and private duties (including the term and respective entities) – (“Determinant”) • Job vacancies and recruitment notices • Outsourcing and consulting service contracts (types and amounts) • Recruitment process documents (jury, list of accepted and rejected applicants, evaluation criteria) – (“Determinant”) • General information about the competences of the local council and municipal assembly (deliberative body) • Code of ethics for municipal officers • Schedule of both local council and municipal assembly meetings • Minutes of local council and municipal assembly meetings for the past two years – (“Determinant”) • List of local council and municipal assembly decisions/resolutions • General email addresses of the local council, municipal assembly and civil parishes
Plans and planning	<ul style="list-style-type: none"> • Annual report • Sustainability report • Compliance report of the Statute governing the Right of Opposition • Report on service standards and complaints – (“Determinant”) • Strategic plan • Local Agenda 21 strategy • Municipal public works plan – (“Determinant”) • Local environment plan • Local waste management plan • Local education plan • Local emergency plan (civil protection) • Local plan for cultural activities • Local corruption risk assessment and prevention plan – (“Determinant”)
Local taxes, rates, service charges, and regulations	<ul style="list-style-type: none"> • Municipal regulations • Information on the Quality Management System of municipal services • Information on the Local Council Property and Assets – (“Determinant”) • Local council newsletter • Information on local taxes, fees, tariffs and service charges – (“Determinant”)
Relationship with citizens	<ul style="list-style-type: none"> • Search engine of the municipality's website • Links to active social networks • Citizen information concerning the interruption and suspension of local services • Online Citizen Request and Tracking system – (“Determinant”) • Email or contact details of the municipality's ombudsman • Information about the municipality's opening hours • Information on protocols and decisions/resolutions on subsidies, concessions, and use of local public assets – (“Determinant”)
Public procurement	<ul style="list-style-type: none"> • Municipality's Complaints Management System • Public procurement through non-competitive procedures (suppliers, amounts and justification) – (“Determinant”) • Public Procurement documents • Report of the evaluation of the bids for each public tender

Economic and financial transparency	<ul style="list-style-type: none"> • Publication of the names of the winning and losing bidders (or consulted entities for other procedures) for each contract • Publication of the winning bids • Contracts signed with the contractors or suppliers – (“Determinant”) • Monitoring and/or performance evaluation reports of the supplier/contractor/service provider • Number of contracts awarded per supplier/contractor/service provider • Amounts of extra works done for each contract • Expert opinions, seal of approval and audit reports – (“Determinant”) • Annual Budget – (“Determinant”) • Balance Sheet • Income statement – (“Determinant”) • Management report • Cash flow statement • Budget execution maps (revenue and expenditure) • Execution of the multi-year investment plan • Public investment per civil parish • Annual budget amendments and rectifications • List of amounts payable to suppliers and respective maturities – (“Determinant”) • List of bank loans and respective maturities • List of debt factoring and other debts to third parties
Urban planning and land use management	<ul style="list-style-type: none"> • Section with contents on urban planning and land use management in the main page of the website • Municipal master development plan and final report– (“Determinant”) • Geographic information system (GIS) on land use • Urbanization and detailed zoning area plans • Results of the public consultation on the municipal territorial plans • Status of urban planning report • Summary of the opinions of the municipal urban planning services on all real estate and/or changes to previously approved or built projects – (“Determinant”) • List of land exchanges and sales of the municipality, respective locations and amounts involved • Alienable lands previously of public domain, respective values and buyers – (“Determinant”) • List of concessions of surface or urban development rights

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