

BEYOND TRANSPARENCY STATEMENTS: EXPLAINING THE IMPACT OF EFFICIENCY AND AUDITING ON THE DISCLOSURE OF PUBLIC INFORMATION*

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Abstract

Transparency has become a key element for public entities as a mechanism of reliability and accountability. In addition, the continuous auditing of these entities, as well as the efficient provision of public services, are important elements that can have an impact on a greater degree of transparency. In this paper, the aim is to measure how these factors influence the level of municipal transparency through an analysis of a sample of 143 Spanish municipalities with more than 50,000 inhabitants using the generalized model of moments. The results show that an efficient and highly audited municipality offers a higher level of public information and influences other political and socioeconomic factors.

Keywords: transparency, auditing, efficiency, local entities, public administration.

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1. Introduction

Recently, the need for public entities to provide information to citizens has increased significantly (Garrido-Rodríguez, López-Hernández and Zafra-Gómez, 2019). Increasing information disclosure has become a crucial research question for local entities because of their focus on accountability and transparency (Tejedo-Romero and Ferraz Esteves Araujo, 2023).

However, according to the theories of financial illusion and agency (Buchanan and Wagner, 1977; Campbell, 2004), there may be particular interests of managers to the detriment of those of citizens; thus, the information disclosed may vary, and citizens have increasingly demanded more information to break this asymmetry between public managers and citizens (Gandía and Archidona, 2008; Guillamón, Bastida and Benito, 2011; Alcaide-Muñoz, Rodríguez Bolívar and López Hernández, 2016).

To effectively justify their actions and meet societal expectations, local governments must disclose detailed, high-quality information, backed by stringent auditing systems (Haustein and Lorson, 2023; Brusca, Condor and Manes-Rosi, 2019). In this context, the relevance of having reliable public information to guarantee the transparency and reliability of information for improving public management evidences the special interest of performing an analysis of the audit level of local Spanish entities. Therefore, this paper proposes using the Local Entities Audit Index (LEAI), a methodology developed by Zafra-Gómez, Pérez-López and Plata-Díaz (2019) for the Spanish context to deepen the effect that this variable can exert on transparency.

On the other hand, a municipality's efficiency in delivering services is closely connected to its transparency in sharing timely and comprehensive information, which is crucial for enhancing accountability and effective governance (Guillamón and Ballesteros, 2021). The literature has explored the connection between transparency and efficiency to a restricted

extent (Guillamón and Cuadrado-Ballesteros, 2021). Benito, Guillamón and Ríos (2021) found that efficient local governance leads to increased transparency.

This research analyzes the impact of efficiency and the audit index, along with other factors, on municipal transparency. Transparency is recognized as an influential factor in both efficiency and audit (Sharp and Bull, 1992; Cifuentes-Faura *et al.*, 2023). Cifuentes-Faura *et al.* (2023) acknowledged the challenge of accurately measuring variables because of potential influences from other factors and the resulting endogeneity issues. Challenges are tackled using two-stage instrumental variable regression with the Generalized Model of Moments (GMM) (Hansen, 1982).

To our knowledge, this study is the first to empirically demonstrate the impact of efficiency in public service provision and local government auditing on municipal transparency in Spain. This approach not only broadens our comprehension of efficiency, auditing, and transparency's relationship, but also provides a crucial foundation for future studies. Our research illuminates both the motivations and role of auditing in the public disclosure of municipal information for effective public service management. These acts not only fulfill legal obligations but also proactively contribute to fostering transparency and openness in our relationship with citizens. Adopting a proactive stance on transparency transforms municipalities into perceived symbols of efficiency and accountability, as disclosing information serves not only as an external mandate but also as an essential internal mechanism to enhance management and cultivate citizen trust.

Our findings present a comprehensive view of the correlation between efficiency, audit, and transparency in local governance, which is beneficial for policymakers, scholars, and the public. The current situation and future strategies for enhancing efficiency, audits, and transparency in municipal-level public management in Spain are informed and founded on these findings.

Therefore, the paper is structured as follows: this study's theoretical framework is presented in the second part. Section 3 outlines the methodologies, sample, and data used in this study, which are presented and discussed in section 4. The conclusions and future research directions are presented at the end.

2. Theoretical framework

The importance of transparency is widely acknowledged as essential for enhancing government outcomes and ensuring managerial effectiveness, both of which constitute fundamental aspects of good governance (Tejedo-Romero and Ferraz Esteves Araujo, 2023). This concept encompasses various components debated in the literature (Heald, 2006; Meijer, 2007). Cucciniello, Porumbescu and Grimmelikhuijsen (2017) established the necessity to analyze 'how transparency affects different aspects of government and government's relationships with citizens'. In this sense, transparency, as a public value, entails public entities disclosing information on their decision-making processes to their citizens, with the ultimate goal of reducing corruption risks (Vian, 2020). Kim and Lee (2019) argued

that preventing abuse of power is crucial for democracy. Other arguments claim that greater transparency leads to better policy outcomes (Lapsley and Rios, 2015). According to Schmidt and Wood (2019), accountability, citizen participation, and transparency are essential factors for restoring public managers' trust. Krahn and Mertens (2020) stated that transparency holds the utmost importance for a trustworthy and honest government.

In the case of the present work, we agree with the definition developed by Da Cruz *et al.* (2016), who established that transparency is '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'. The fact is that the development of transparency has traditionally been implemented through e-government, through the development of web portals that allow greater access to information (Meijer, 2009; Caba-Pérez, Rodríguez and López-Hernández, 2014), benefiting, in turn, from the various regulatory developments that have occurred through the widespread approval of laws regulating transparency and access to public information worldwide (Dragoş, 2006).

In this regard, one of the most questioned aspects in terms of transparency is how to measure the degree of information disclosure. Thus, the most commonly used instrument for this purpose is an index composed of different items, and, in this sense, different entities have developed indexes that measure the transparency of municipalities according to a series of indicators and create different transparency rankings (Garrido-Rodríguez, López-Hernández and Zafra-Gómez, 2019). Thus, a transparent local administration ensures easy access to complete information on its actions and use of resources (Meijer, 2009; Janssen *et al.*, 2017). This accessibility facilitates the work of control bodies, thus facilitating their access to relevant data for audits (Cerrillo-Martínez and Casadesús-de-Mingo, 2021).

Public auditing ensures good governance by ensuring transparency, accountability, and value for money (Pontones and Pérez, 2016). By fostering precise record-keeping, auditing improves transparency in local resource management (Heald, 2012). The audit will reveal potential misappropriations or misconduct in the management of public funds. The publication of audit results and disclosure of corrective measures enhance transparency and foster democratic accountability (Brusca, Condor and Manes-Rosi, 2019; Tillema and ter Bogt, 2010).

However, at the European level, there is a diverse landscape in the field of public sector auditing (Ernst and Young, 2012; Brusca, Condor and Manes-Rosi, 2019), with divergences in carrying out external control, particularly in the local public sector (Brusca, Condor and Manes-Rosi, 2019). In Europe, methods for auditing local governments vary from the mandatory use of private auditors for annual account audits (Denmark, Finland, UK, Switzerland) to public and institutional bodies' sole responsibility for auditing (Spain) (EUROSAI, 2018; Brusca, Condor and Manes-Rosi, 2019; Manes-Rosi, Brusca and Condor, 2020).

Auditing, as a systematic process of reviewing and evaluating the financial, operational and administrative information of public entities, acts as an essential mechanism to ensure

the correct use of public resources. When a municipality is audited with greater rigor and frequency, its officials tend to be more committed to accountability and clarity in their actions, since they know that their decisions and expenses will be reviewed in detail by external or internal control bodies. Consequently, it is expected that municipalities with a higher level of auditing present a higher level of transparency, since the former is considered a fundamental factor contributing to transparency and accountability (Tillema and ter Bogt, 2010; Pontones and Pérez, 2016). Thus, auditing and transparency go hand in hand, in a self-reinforcing cycle: more auditing generates more transparency, and more transparency fosters an environment of citizen control and oversight that puts pressure on municipalities to continue improving their accountability practices. In this regard, Brusca, Condor and Manes-Rosi (2019) point out the importance of implementing adequate public sector auditing systems, as they consider them to be a tool that should guarantee transparency and efficiency in public management.

In this sense, the efficiency of local entities in providing public services is a widely studied topic in academic research. Several studies on service efficiency and its impact have been conducted, including analyses of socioeconomic, financial, and political influences (Pérez-López, Prior and Zafra-Gómez, 2018).

Guillamón and Cuadrado-Ballesteros (2021) found that transparent local governments are more efficient. The results of this study considerably influence the ongoing debate regarding the interconnectedness and bidirectional relationship of these variables (Cifuentes-Faura *et al.*, 2023). The intricate relationship between service efficiency and transparency requires further examination. A higher level of municipal efficiency, as measured by the ratio of output (public services) to input (cost of the services) (Guillamón and Cuadrado-Ballesteros, 2021), correlates with a stronger culture of transparency. This commitment not only fulfills legal responsibilities but also fosters transparency and openness in our relationship with citizens (Brunner, Robbins and Simonsen, 2022). Effective municipalities acknowledge the significance of transparency in bolstering internal management and gaining citizen trust (Porumbescu, 2015).

The relationship between efficiency and transparency is grounded on the belief that effective management requires knowledgeable and tactical decision-making (Andrews, Beynon and Genc, 2017). Effective municipalities both optimize resource use and maintain superior information control (Benito, Guillamón and Ríos, 2021).

Efficiency and accountability are inextricably linked. An efficient municipality, facilitated by transparency, is better positioned to reach its goals and address citizen demands (Cifuentes-Faura *et al.*, 2023; Ruijter *et al.*, 2020). The relationship between transparency and efficiency significantly influences citizen perception and institutional legitimacy (Ruijter *et al.*, 2020; Benito, Guillamón and Ríos, 2021; Cifuentes-Faura *et al.*, 2023). An efficient and transparent government builds trust with its citizens, leading to a stronger and more positive community-government relationship (Hood, 2006; Frías-Aceituno, García-Sánchez and Rodríguez-Dominguez, 2014; Porumbescu, 2015).

Regarding the relationship between cost efficiency in the provision of public services and the level of auditing of local administrations, a bilateral relationship could also be established, i.e., auditing can identify areas of inefficiency because there is a higher level of control, thus detecting inefficiencies that lead to higher costs of services, since knowing that efficiency will be evaluated can motivate decision makers to seek continuous improvements, as well as in the opposite direction, efficiency can also reduce the probability of finding significant irregularities during audits, since an efficient municipality tends to be more aligned with best practices and regulations (Caba-Pérez, Rodríguez and López-Hernández, 2014).

2.1. The Spanish context

2.1.1. Transparency situation in Spain

In recent years, the transparency principle has seen significant development through international regulations such as the Council of Europe Convention 205 (signed in 2008) and EU Regulation 1049/2001, as well as over one hundred state laws promoting transparency and access to public information (Guillamón, Bastida and Benito, 2011). Focusing on Spain, it was not until the end of 2013 that the law that specifically regulates the principle of transparency was published, Law no. 19/2013 from December 9, 2013, on transparency and access to public information and good governance, which increases the imposition of active disclosure obligations for all public administrations and entities, recognizes access to information as a right, establishes the obligations of good governance to be fulfilled by public officials and the legal consequences of non-compliance, becoming a requirement of responsibility for all those who carry out activities of public relevance and changing the scenario to assume a proactive role from a dynamic perspective (Meijer, 2013; Garrido-Rodríguez, López-Hernández and Zafra-Gómez, 2019).

In this context, the transparency indexes developed so far have certain limitations, such as the impossibility of analyzing the characteristics of the content disclosed (Alonso and García-García, 2014; Garrido-Rodríguez, López-Hernández and Zafra-Gómez, 2019); the bias of the responses as the evaluations are made by municipal managers themselves (Da Cruz *et al.*, 2016); and finally, prior knowledge of the indicators to be evaluated, allowing to focus the efforts on publishing information related to these aspects (Alonso and García-García, 2014).

In this sense, taking into account these limitations and the Spanish regulation, Garrido-Rodríguez, López-Hernández and Zafra-Gómez (2019) presented the 'Bidimensional Transparency Index (BTI)', with the aim of obtaining an evaluation of the information disclosed on the websites of municipalities, but considering two aspects not previously considered, and which can be seen in Figure 1: the development of specific indicators that measure each of the aspects necessary to meet the objective of transparency, referred to as Breadth; and, second, knowing how complete the information disclosed is, referred to as Depth. The index is composed of 20 indicators, each of which configures the dimensions of Breadth and Depth.

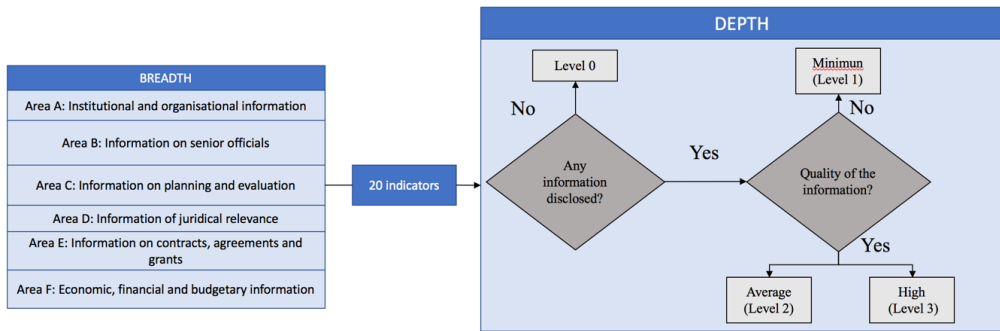


Figure 1: The BTI

Source: Garrido-Rodríguez, López-Hernández and Zafra-Gómez (2019)

2.1.2. Public auditing situation in Spain

As for the external control of the economic-financial activity of the local public sector, in Spain it falls to the Spanish Court of Audit and to the external control bodies (EXCBO) of the Autonomous Communities, with a total of 13 regional audit institutions out of a total of 17 Autonomous Communities (EUROSAI, 2018; Vela *et al.*, 2019). EUROSAI (2018) acknowledges that private auditors do contribute to local government audits, but their involvement is limited primarily to financial audits of enterprises, foundations, and other entities established by local authorities. Furthermore, as previously noted, audit obligations for local entities may differ in different regions, with these differences occurring to a greater extent in countries with high levels of decentralization (Manes-Rosi, Brusca and Condor, 2020), as is the case in the present research.

In this case, the field of auditing has a wide dispersion of existing data, mainly because of the lack of publication in many cases, or the non-existence of data at this level, so in this study, this information has been collected from a survey addressed to all these local administrations to analyze the degree of implementation of auditing, which was sent by email to the different heads of local councils (auditors), with the support of the Institute of Chartered Accountants of Spain and General Counsel of Secretaries, Controllers and Treasurers of Local Government. In addition, to check the adequacy of the questionnaire, it was previously sent to a panel of academic experts in accounting and auditing in the local sector. The survey addressed 143 municipalities with more than 50,000 inhabitants, which absorbed 54.3% of municipal spending, collecting information of full financial audits of annual accounts and also of audits in certain areas of activity, also known as partial audits.

Based on the information obtained from the survey, a synthetic index was developed to summarize the audit activity of local councils, called the Local Entities Audit Index (LEAI), a methodology previously used in the study by Zafra-Gómez, Pérez-Lópe and Plata-Díaz (2019) for the Institute of Chartered Accountants of Spain (ICAS). Table 1 shows the criteria for elaborating the index. This index is based on a classification from 0 to

10 points, with the following levels:

- 0: no effort to gather information for auditing activities;
- 1-2: negligible audit activity;
- 3-6: inclusion of partial or instrumental audits;
- 7-10: inclusion of full and partial audits.

Table 1: Criteria to elaborate the LEAI

Element	Points
Annual financial audit of the accounts.	4 points
Conduct a Compliance or Legal Audit.	2 points
Additional qualitative information about the financial audit of annual accounts includes the auditor's report and the supervisory body.	0.5 points
Provides comprehensive and complete financial auditing information for instrumental entities.	1.5 points
Provides incomplete financial audit information for instrumental entities.	0.75 points
Provides information on partial audits. (Complete)	1.5 points
Provides information on partial audits. (Incomplete)	0.5 points
Provides information about auditing the accounting consolidation process.	0.5 points
It does not provide any information.	0 points

Source: The authors, based on Zafra-Gómez, Pérez-López and Plata-Díaz (2019)

2.2. Efficiency evaluations

The third principal factor considered is the global cost efficiency of the municipality. Numerous research studies tackle efficiency in the literature, as seen above, but for the purposes of this study, we follow the proposal of Guillamón and Cuadrado-Ballesteros (2021), which estimates the global efficiency using Data Envelopment Analysis (DEA), a nonparametric and deterministic method that uses linear programming techniques to compare the efficiency of a set of homogeneous entities that produce similar outputs from a set of inputs (Prior, Verges and Vilardell, 1993). As its name suggests, this technique finds an enveloping equation, or production frontier, that includes all efficient observations, which we call an efficient frontier, and all observations will be located at or below the frontier, with the latter being the inefficient ones. The formulation of the model in terms of minimizing the input is as follows:

$$\text{Min}_{\lambda, \theta} \theta$$

Subject to:

$$-y_i + Y\lambda \geq C$$

$$\theta x_i - X\lambda \geq C$$

$$N1'\lambda = 1 \text{ (to consider de convexity restriction)}$$

Where θ is the factor that weights the inputs of the entity being evaluated, thereby giving the efficiency value. If θ_i is equal to one, the entity is efficient; however, if, on the

contrary, it is less than unity, the entity behaves inefficiently. X is the matrix of inputs of order $(m \times n)$ and Y is the matrix of outputs of order $(s \times n)$ for the virtual producer. x_i and y_j represent the vectors of the inputs and outputs of entity i under analysis. λ is a vector $(n \times 1)$ describing the percentages of the other producers to construct the virtual producer. When λ is greater than or equal to 0, constant returns are considered, whereas, if it is equal to 1, then variable returns exist.

In this sense, to obtain efficiency coefficients from DEA, we have used as input the Effective Cost of Local Services (obtained through the Ministry of Finance) and as outputs, we considered the population of the municipality, surface area of the municipality, and population density (Cuadrado-Ballesteros, 2014).

2.3. The analysis of factors that influence transparency

After highlighting the need to know the relationship between municipal transparency, audit and efficiency, different external factors may influence this relationship, both politically and socioeconomically. In this regard, in the previous literature, a complete set of variables has been considered. In particular, some studies have analyzed financial factors (Justice, Melitski and Smith, 2006; Guillamón, Bastida and Benito, 2011; Albalate, 2013; Caamaño-Alegre *et al.*, 2013; Rodríguez, Alcaide and López, 2013; Alcaide-Muñoz, Rodríguez Bolívar and López Hernández, 2016; Benito, Guillamón and Ríos, 2021), political factors (Gandía and Archidona, 2008; Serrano-Cinca, Rueda-Tomás and Portillo-Tarragona, 2009; Albalate, 2013; Romolini, Fissi and Gori, 2015; Sáez-Martín, Caba-Pérez and Lopez-Hernandez, 2017; Benito, Guillamón and Ríos, 2021), and factors related to regulation, education level, and internet accessibility (Caba-Pérez, Rodríguez and López-Hernández, 2014; García-Tabuyo, Sáez-Martín and Caba-Pérez, 2015).

In our case, a relevant factor to consider in relation to the degree of information published in a municipality is the ideology of the party in government, which can influence the information disclosure policies of the municipality (Serrano-Cinca, Rueda-Tomás and Portillo-Tarragona, 2009), as pointed out in previous studies, where progressive governments disseminate more information (Albalate, 2013; García-Sánchez, Frías-Aceituno and Rodríguez-Domínguez, 2013). In addition, it is important to know whether the gender of a municipality's mayor favors the disclosure of public information because it has been shown that this factor affects decision-making by public managers (De la Higuera-Molina *et al.*, 2020).

On the other hand, in this study, we are going to consider the financial condition of a municipality in a disaggregated way (López-Hernández *et al.*, 2018), traditionally associated to an improvement of transparency (Geys, Heinemann and Kalb, 2010; Alcaide-Muñoz, Rodríguez Bolívar and López Hernández, 2016), through their various dimensions: short-term solvency, understood as the ability to generate the necessary liquidity to satisfy the short-term debts (Groves, Godsey and Shulman, 2003); budgetary sustainability, which is the capability of maintaining the welfare state of the citizens (Hendrick, 2011); and the financial dependence of a municipality, which develops the level of transfers

received by other institutions (Alcaide-Muñoz, Rodríguez Bolívar and López Hernández, 2016), factors already analyzed and defined in Garrido-Rodríguez, López-Hernández and Zafra-Gómez (2019).

Finally, other factors of socioeconomic origin will be considered, such as the net savings index, outstanding debt of the municipality, and level of citizen participation (Meijer, 2013; Cucciniello, Porumbescu and Grimmeli khuijsen, 2017), which are also likely to influence levels of municipal transparency.

3. Methodology and data

3.1. Methodology

In this research, we intend to analyze the influence of efficiency and the audit index on transparency. However, certain theoretical aspects, as demonstrated in Guillamón and Cuadrado-Ballesteros (2021), may lead us to think that transparency influences both efficiency and audit variables, as well as the fact that these variables are difficult to measure and may be influenced by other variables, causing endogeneity problems (Wooldridge, 2010). In this sense, to alleviate these problems, two-stage instrumental variable regression is used through the generalized model of moments (Hansen, 1982).

The generalized model of moments (GMM) estimates parameters through relationships with moments in the distribution. Thus, it allows the estimation of the population moment with its sample equivalent and the estimation of the corresponding parameter. In this way, the possible endogeneity of the variables can be eliminated, and consistent coefficients can be estimated. In particular, the two-step system estimator of Arellano and Bover (1995) has been used, as it raises the initial difference estimator (Arellano and Bond, 1991), and the proliferation of instruments that may occur has been tested through the Arellano–Bond test for AR(2) in first differences, whose null hypothesis is that there is no serial correlation between the error terms; and the Hansen test, to verify the over-identifying restrictions, which its null hypothesis is that the over-identifying restrictions are valid.

In this context, to achieve the objectives proposed in this work, the following model is proposed:

$$Xi = \alpha + \beta \cdot Fi + \gamma \cdot Ji + \eta \cdot Ri + \theta i + \epsilon i$$

where:

Xi = Transparency measures

Fi = Efficiency coefficients (DEA)

Ji = LEAI measures

Ri = Political ideology, genre, solvency, transfers, net savings items, Ln livedebt, Financial Sustainability, Width, Depth and Participation

θi = Unobservable heterogeneity

ϵi = Disturbance term

To carry out the analysis, this study uses the variables listed in Table 2.

Table 2: Variables

Variable	Description	Source
BTI	Bidimensional Transparency Index	Garrido-Rodríguez <i>et al.</i> (2019),
LEAI	Local Entities Auditing Index	Zafra-Gómez <i>et al.</i> (2019)
Efficiency	Efficiency values obtained through DEA	The authors
Political ideology	Dummy variable that takes the value of 0 for conservative parties (Partido Popular (PP); Coalición Canaria (CC); Euzko Alderdi Jeltzalea-Partido Nacionalista Vasco (EAJ-PNV); Partido Regionalista de Cantabria (PRC); etc.) and 1 for progressive parties (Partido Socialista Obrero Español (PSOE); Izquierda Unida (IU); PODEMOS; etc.)	Ministry of Interior and the authors, based on Pérez-López <i>et al.</i> (2014)
Genre	Dummy variable that takes the value of 0 if the mayor is male and 1 if the mayor is female	Ministry of Interior
Transfers	Index of transfers made by other agencies: budgetary payables divided by budgetary receivables except grants	Budget of the local governments – Ministry of Finance
Solvency	Cash Surplus Index: Treasury cash divided by payment commitments (in %)	Budget of the local governments – Ministry of Finance
Net Savings Index	Index of Net savings: Revenues – payments commitments (loan amortization adjusted)	Budget of the local governments – Ministry of Finance
Live debt (LN)	Outstanding Municipality Debt in Natural Logarithm	Budget of the local governments – Ministry of Finance
Financial Sustainability	Non-Financial Budget Result Index: nonfinancial current budgetary receivables and nonfinancial capital budgetary receivables divided by current budgetary payables and nonfinancial capital budgetary payables	Budget of the local governments – Ministry of Finance
Participation	Dummy variable that takes the value one if mechanisms exist for citizen participation (any kind of participation where citizens could take part of the decisions of the government, e.g., participative budgets, suggestions boxes, periods of public information of any regulation in process, etc.) and 0 if not	Garrido-Rodríguez <i>et al.</i> (2019)

Source: The authors

3.2. Data

The level of implementation of various types of audits depends on the population brackets of Spanish municipalities, based on their required local public services. Article 26 of the Spanish Local Regime Law establishes the determination of municipal competence levels based on population. Municipalities can be categorized into different levels based on their population size: less than 5,000, between 5,000 and 20,000, between 20,000 and 50,000, or more than 50,000 inhabitants. This research will focus on municipalities with more than 50,000 inhabitants due to their substantial public expenditures and the expertise of this type of administration in this field. Thus, to carry out this study, the sample composed of the 143 Spanish municipalities with more than 50,000 inhabitants used by Zafra-Gómez, Pérez-López and Plata-Díaz (2019) was chosen to compare the LEAI index

with the transparency index. It represents 96.62% of the total of municipalities of the same size and, as mentioned before, they absorb more than 50% of municipal spending. In addition, the data used in the present study were from 2019, with the purpose of being able to make the analysis of the different factors compatible with those of the LEAI index. Table 3 presents the descriptive statistics.

Table 3: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
BTI	143	59.303	13.640	18.056	86.389
LEAI	143	2.750	1.827	0	8
Efficiency	143	0.186	0.027	0	1
Political ideology	143	0.710	0.455	0	1
Genre	143	0.228	0.421	0	1
Transfers	143	0.387	0.708	0.075	8.146
Solvency	143	3.836	3.281	0.230	24.744
Net Savings Index	143	0.059	0.123	-0.468	0.449
Live debt (LN)	143	17.775	1.272	13.616	22.285
Financial Sustainability	143	1.134	0.115	0.840	1.519
Participation	143	0.690	0.464	0	1

Source: The authors

4. Results

Table 4 presents the results obtained by applying the proposed methodology. As observed, after applying the GMM methodology, the results show that the LEAI has a positive and significant influence on the level of transparency, which leads us to affirm that municipalities that are more supervised and have stricter control tend to show a higher level of information, validating the affirmations of Tillema and ter Bogt (2010) and Brusca, Condor and Manes-Rosi (2019).

Similarly, we observe that efficiency in service provision also positively influences the level of information disclosed, as stated by Guillamón and Cuadrado-Ballesteros (2021), providing a new perspective where cost-efficient municipalities are more likely to improve both the quantity and quality of their disclosures (Cucciniello, Porumbescu and Grimmelhuisen, 2017). This is reinforced by Benito, Guillamón and Ríos (2021), who demonstrate that efficient local governments tend to disclose more information across a broad range of management practices. This relationship suggests that efficiency not only enhances operational performance but also drives transparency as a key component of good governance. The motivation for increased transparency may arise from a desire to legitimize political actions, as efficient management is often linked to better resource allocation, greater public satisfaction, and a stronger emphasis on accountability.

Table 4: Results of model GMM

Variable	Coefficient
LEAI	1.4843***
Efficiency	4.8419***
Political ideology	1.2794*
Genre	3.1603**
Solvency	0.7708
Transfers	0.3743*
Net saving index	-1.9543
Live debt (LN)	-0.1273
Financial Sustainability	7.9264
Participation	2.069**
_cons	3.1169
N	143
r2	0.2357
Arellano-Bond test for AR (2)	Prob > Z = 0.189
Hansen Test	Prob > chi2 = 0.341

Note: Instruments are first-order lags (t to $t - 1$) of independent and control variables, except Political ideology and Participation which are exogenous.
Significance: *** 0.01, ** 0.05, * 0.1.

Source: The authors

Focusing on the rest of the variables analyzed, in terms of political ideology, our results indicate that progressive governments are more likely to disclose public information, as pointed out by García-Sánchez, Frías-Aceituno and Rodríguez-Domínguez (2013). This result supports the idea that certain values inherent to progressive parties, such as accountability and transparency, are prioritized in their governance agendas. However, it is worth noting that this finding differs from Garrido-Rodríguez, López-Hernández and Zafra-Gómez (2019), where political ideology was not a significant factor. This discrepancy may be attributed to the inclusion of larger municipalities in the current sample, which operate under different political and administrative dynamics, as suggested by Meijer (2013) when analyzing the complex dynamics of transparency in varying contexts.

On the other hand, the gender in the mayor's office significantly influences the level of transparency, with local governments in which the head is a woman tending to disclose a higher level of public information, coinciding with De la Higuera-Molina *et al.* (2020), where women tend to promote honest government, with lower levels of corruption, and also in Benito, Guillamón and Ríos (2021), who found that municipalities governed by women display greater transparency.

From the perspective of financial factors, only financial dependence emerges as a positive significant factor which means that governments with a high dependence on transfers from superior institutions are willing to make more efforts in transparency, possibly as a

mechanism of control and accountability (Geys, Heinemann and Kalb, 2010). This result contrasts with that obtained by Garrido-Rodríguez, López-Hernández and Zafra-Gómez (2019), possibly for the same reason as in the case of the political ideology variable. With respect to solvency and financial sustainability, both are not significant, the first one coinciding with Garrido-Rodríguez, López-Hernández and Zafra-Gómez (2019) but not the second, showing again that the analysis of the largest municipalities changes the behavior of certain factors.

Finally, citizen participation mechanisms are positively linked to a higher level of transparency, reinforcing the role of the citizens in the decision-making processes and contributing to more open and accountable governance, as pointed out by Cucciniello, Porumbescu and Grimmelikhuijsen (2017) and Garrido-Rodríguez, López-Hernández and Zafra-Gómez (2019). Thus, the inclusion of participatory mechanisms not only enhances public perception of transparency but also strengthens the relationship between citizens and government, promoting greater trust in public institutions (Meijer, 2013).

In addition, to test the endogeneity condition between the BTI, efficiency, and LEAI variables, an endogeneity analysis was performed using the Durbin and Wu-Hausman tests, resulting in both cases being significant (p -value = 0.000), thus considering both variables as endogenous with respect to transparency.

5. Conclusions

Effective public management requires addressing the growing demand for information from citizens and stakeholders. Due to the rising demand for transparency, public administrations and local governments have had to adjust. Regulations on transparency have created methods for measuring the information disclosure levels of local entities. The BTI index (Garrido-Rodríguez, López-Hernández and Zafra-Gómez, 2019), which measures both the quantity and quality of information, was used in this study.

By examining the correlation between transparency and the level of municipal auditing using the LEAI metric (Zafra-Gómez, Pérez-López and Plata-Díaz, 2019), municipal efficiency in service delivery (Guillamón and Cuadrado-Ballesteros, 2021), and other political and socioeconomic factors in this study, our objective was to investigate the significance of this relationship. Considering the interconnectedness of efficiency, level of auditing, and municipal transparency as theoretically argued (Guillamón and Cuadrado-Ballesteros, 2021; Cifuentes-Faura *et al.*, 2021), we applied a two-stage regression using the generalized method of moments to assess the mutual relationship between these variables.

The study offers notable advancements to public sector transparency, efficiency, and auditing research. This research refines our comprehension of how efficiency and auditing practices shape the disclosure of public information beyond standard transparency declarations and fills a crucial literature gap by demonstrating a link between the effectiveness of auditing mechanisms and enhanced transparency practices. In addition, this research illustrates that robust auditing frameworks are essential for ensuring that efficiency gains

translate into meaningful transparency. This insight emphasizes the importance of integrated governance strategies, encompassing both auditing and transparency initiatives, to challenge siloed approaches.

In conclusion, this study contributes to the growing body of literature on public sector transparency by elucidating the critical roles of efficiency and auditing. Our findings underscore the interconnectedness of these elements and their collective impact on the quality and extent of public information disclosure. By integrating these dimensions into a cohesive framework, we offer a valuable perspective for both academic inquiry and practical application. We hope that this research sparks further exploration and dialogue, ultimately advancing the field towards more effective and accountable governance practices.

Our study offers a complete perspective on the link between auditing, efficiency, and transparency in local government in Spain. Understanding the intrinsic interconnections of these variables is essential for promoting efficient, transparent and accountable governance. These insights are valuable for both academia and policymakers and local leaders in enhancing transparency and accountability.

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