



Gender diversity in municipal governmental bodies and budgetary solvency

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ABSTRACT

Diverse research has analysed the effects of gender in government on public budgetary outcomes using the gender bias approach – gender trait –; however, studies evaluating the gender effects of municipal governments on budgetary solvency using a gender balance approach – gender diversity – are scarce. Our objective was to determine whether gender diversity in Spanish municipal governments affects institutional budgetary solvency, taking into account that the mayor's gender and the ideology of the government could impede visualizing the effects of diversity because they create heterogeneity. Using both static and dynamic panel data models on a sample of Spanish municipalities with more than 20,000 inhabitants, we found that gender diversity has a positive effect on budgetary solvency when the municipality has a male mayor. However, the effect of gender diversity is negative if the mayor is a woman, which could be explained by the different arguments provided by social identity or social categorization theories.

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Diversidad de género en los órganos de gobierno municipal y solvencia presupuestaria

RESUMEN

Diversas investigaciones han analizado los efectos del género en el gobierno sobre los resultados presupuestarios públicos utilizando el enfoque de sesgo de género – rasgo de género –; sin embargo, los estudios que evalúan los efectos del género de los gobiernos municipales sobre la solvencia presupuestaria usando un enfoque de equilibrio de género – diversidad de género – son escasos. Nuestro objetivo es conocer si la diversidad de género en los gobiernos municipales españoles afecta a la solvencia presupuestaria institucional, teniendo en cuenta que el género del alcalde y la ideología del gobierno podrían impedir visualizar los efectos de la diversidad, porque generan heterogeneidad. Utilizando tanto un modelo estático como uno dinámico de datos de panel en una muestra de municipios españoles de más de 20.000 habitantes, nuestro principal hallazgo es que la diversidad de género tiene un efecto positivo en la solvencia presupuestaria cuando el municipio tiene un alcalde. Sin embargo, el efecto de la diversidad de género tiene un impacto negativo si el gobierno municipal está encabezado por una alcaldesa, lo que podría encontrar su explicación en diferentes argumentos aportados por las teorías de la identidad social o de la categorización social.

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1. Introduction

In recent decades, societies have undergone significant changes in the form of greater participation of women in decision-making bodies. The public sphere has not been oblivious to this process, and consequently, female representation is increasing in the political decision-making bodies (Interparliamentary Union, 2021). At the same time, based on possible differences in gender preferences, scientific literature has emerged (e.g., Bhalotra & Clots-Figueras, 2014; Cabaleiro-Casal & Buch-Gómez, 2020a; Chattopadhyay & Duflo, 2004; Park, 2014; Svaleryd, 2009) that investigates the effects of female presence in these arenas on different public policies. Most studies have used gender bias approaches (i.e., gender trait) with political decision-making bodies, which take into account the greater or lesser weight that members of the same gender have in relation to the total number of members of the decision-making group to justify possible differences on institutional outcomes (Bhalotra & Clots-Figueras, 2014; Cabaleiro-Casal & Buch-Gómez, 2020a; Cuadrado-Ballesteros et al., 2021; Meier & Funk, 2017; Smith, 2014). However, the effects of gender in decision-making bodies on outcomes can also be analysed from a gender balance (i.e., gender diversity) approach, because more gender-diverse groups are likely to have a broader perspective and provide greater social capital (Ely, 2004; Østergaard et al., 2011), with possible effects on the public outcome (Andrews, 2012; Borisova et al., 2018; Ennser-Jedenastik, 2017). Unlike the gender bias approach, which analyses the impact of greater gender representation, the assumptions underpinning the conceptualization of gender diversity as variety are that, within teams, members may differ from one another in terms of gender and consequently that differences between teams in terms of the extent of gender diversity will be associated with particular consequences (Harrison & Klein, 2007).

The link between the gender diversity of management boards and firm outcomes has been extensively analysed in the private sector (e.g., Adams & Ferreira, 2009; Campbell & Mínguez-Vera, 2008). In the public sector, although some studies of representative bureaucracy have analysed the effects of workforce gender diversity and gender diversity in top management teams on organisational performance (Andrews & Ashworth, 2015; Choi & Rainey, 2010; Moon, 2018; Nielsen & Madsen, 2019; Wegge et al., 2008) and on institutional financial outcome (Opstrup & Villadsen, 2015), to our knowledge, there is a dearth of research on the effects of gender diversity in the sphere of politically elected municipal governments on municipal budgetary solvency, in the sense that it refers to the ability of governments to generate enough revenue over its normal budgetary period to meet its expenditures and not incur deficits (Groves et al., 2003).

As the impact of gender in government bodies on budgetary solvency may not be displayed in heterogeneous municipal governments (van Knippenberg & Schippers, 2007), we take into account the gender of the mayor as well as government ideology (Holman, 2014; Potrafke, 2011) because they may impede the adequate visualization of gender diversity effects on municipal public policy (Holman, 2016; Konrad et al., 2010; Lloren & Rosset, 2017).

Our research was carried out between 2008 and 2017 on a sample of Spanish municipalities with more than 20,000 inhabitants. Our paper's main contribution to the literature is evidence that governmental gender diversity has a significant positive effect in municipalities with male mayors and, on the contrary, the effect is negative when the municipal

government is headed by a female mayor.

After this introduction, the remainder of the paper is structured as follows. In the second section, we review the existing literature on how gender diversity has an effect on different results of organizations, how the different preferences of male and female leaders can lead to the generation of budget deficits, and how the gender diversity of the government teams, insofar as it balances the effects of different gender positions, could have a positive effect on the budgetary solvency of the municipalities. Next, we expose how the gender of the mayor and the ideology of the government can generate heterogeneous groups, which could prevent us from visualizing the effects of the gender diversity of the government teams on municipal budget solvency. In the third part we describe the data set used, as well as the research methodology. In the fourth part we present and comment on the key results obtained from the analysis, and finally, in the last section, a summary is offered with the main conclusions.

2. Background

2.1. Gender diversity in municipal governments and budgetary solvency

A diversity study focuses on knowing the homogeneity or heterogeneity of the groups, because the difference is the important thing (Williams & Meân, 2004). Diversity assesses the degree of objective or subjective differences between elements within the group (van Knippenberg & Schippers, 2007). In a social environment, organizations have evolved by increasing their heterogeneity in relation to the gender, race, and the age of their members (van Knippenberg & Schippers, 2007).

Within the framework of decision-making theory, Østergaard et al. (2011) highlight that more heterogeneous groups have a wider range of social capital, which could lead to a better performance (Milliken & Martins, 1996) because the more diverse groups pose more alternatives to solve the problems raised (Carter et al., 2003). In relation to gender diversity, Myaskovsky et al. (2005) note that men are generally more opinionated and task-oriented than women, whereas women tend to act more friendly and be more process-oriented. The different qualities of each sex could generate a greater psychological commitment among members and positively affect institutional outcome (Ely, 2004). Ely (2004) notes that more gender-heterogeneous groups increase knowledge, perspectives, and skills. Also, the combination of individuals of different genders affects the group's performance. On the other hand, taking into account the social identity or the social categorisation theories (Hornsey, 2008; Turner et al., 1987), although gender diversity may be bad for interpersonal relations and could imply potential conflicts (Jackson et al., 2003; Ely, 2004), it could be good for institutional outcome (Triandis et al., 1994). A recent study by Park (2020) notes that there are many gender studies reporting a positive impact of having women or gender diversity on organizational outcomes-performance in the public sector. Drawing on tokenism theory, research carried out by Ennser-Jedenastik (2017) identifies gender diversity at the group level as an important factor to explain the social policy. However, to our knowledge, only the research by Opstrup & Villadsen (2015) analysed the impact of gender diversity on financial performance in local institutions. They explored how gender diversity in the top management teams in Danish municipalities affects financial performance, and they found a positive relationship between top management

teams' gender diversity and financial performance when it was moderated by management structure.

Gender diversity, in addition to being important in management teams, could also be an important factor in the decision-making of politically elected public governments. This is due to different political preferences of women and men in taxes and public expenditures (Alesina & Giuliano, 2011; Holman, 2014; Lott & Kenny, 1999).

Men and women tend to interpret reality differently, insofar as women boost the ideals of responsibility and caring more than males who prefer rules and individualism (Gilligan, 1982). The different socialisation patterns of each gender (Holman, 2014) have been found to lead women to support different preferences of taxes (D'Attoma et al., 2017; Fallan, 1999; Gërkhani, 2007; Kastlunger et al., 2010) and public spending (Funk & Gathmann, 2015; Lott & Kenny, 1999; Slegten et al., 2019), primarily on welfare and social service policies – an effect that was positively tested in diverse countries (Alesina & Giuliano, 2011; Funk & Gathmann, 2015; Lott & Kenny, 1999).

In the field of political representation, although only substantive representation is true representation (Pitkin, 1967), the bulk of the literature presumes a link between the descriptive representation – that is, the number of female representatives in governments – and women's substantive representation (Celis et al., 2008; Dovi, 2002; Phillips, 1998). Smith (2014) suggests that political scientists should consider not only the presence of women but also the relative amount of power they have when the effects of substantive representation are assessed. A greater number of female political representatives would lead to higher attention given to policies of concern to women (Meier & Funk, 2017; Phillips, 1998; Smith, 2014). The literature, by and large, suggests that the different preferences of male vs female political leaders lead to differences of public policies on expenses and taxes (see Alozie & McNamara, 2010; Bhalotra & Clots-Figueras, 2014; Martínez-Córdoba et al., 2022; Cabaleiro-Casal & Buch-Gómez, 2018, 2020b; Ferreira & Gyourko, 2014; Fox & Schuhmann, 1999; Funk & Gathmann, 2015). Specifically, research has highlighted that female politicians have a greater preference for higher public expenditures, primarily on public policies oriented towards social welfare than do male leaders. Consequently, the research showed that when women are in government, public spending is affected (Benito et al., 2021b; Bhalotra & Clots-Figueras, 2014; Cabaleiro-Casal & Buch-Gómez, 2018, 2020a; Chattopadhyay & Duflo, 2004; Chen, 2010; Park, 2014; Svaleryd, 2009).

Analysing the local tax policy of Flemish municipalities, Geys and Revelli (2011) found that the females in the executive body have a significant direct effect on local revenues from taxes. These authors justify that women tend to be more egalitarian and think that basic local services should be free and consequently paid with revenues from income and property taxes. This implies a higher tax burden on high-income earners. A second research on Flemish municipalities by Slegten et al. (2019) analysed the gender differences about the way to correct the budgetary deficits, and they found evidence that female politicians express a relative preference for increasing public revenues in contrast to male politicians, who prefer to lower public expenditures. From another perspective, the study carried out by Alvarez & MacCaferry (2003) on gender differences in preferences in fiscal policy in situations of fiscal surplus in the United States also showed significant sex differences, highlighting that men were far more likely than women to support minimizing tax

cuts or paying down the national debt. Edlund (1999) analysed a less progressive tax reform in Sweden between 1991 and 1996, and he noted that the support for this tax reform was substantially stronger among men than women. Alesina & Ferrara (2005) investigated the sociological factors that could explain the individual positions in relation to whether the government should reduce income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor, and they found that women were generally more supportive of these redistributive policies.

Analysing the budgetary processes in a sample of 21 OECD countries, Hayo & Neumeier (2016) did not observe that having female or male leaders has effects on governmental primary deficits. This circumstance may be due to the fact that the political preferences of both male and female leaders can lead to the generation of budget deficits. The budget deficits in political institutions with female leaders could be justified in that their greater preference for public spending leads them to budget for overestimated revenues from taxes, which could be difficult to achieve. This effect of the participation of women in the decision-making process in political institutions on budgetary deviations has recently been verified in the research carried out on 140 Spanish municipalities by Cuadrado-Ballesteros et al. (2021). The explanation for the budget deficits in institutions headed by men could be due to the fact that their greater preference for a lower level of taxes leads to an amount of budgetary revenues that is insufficient to meet the level of public spending that arises as a result of citizen pressure.

Due to the consideration of multiple perspectives and decision-making by more deliberative groups (Lloyd et al., 2013; Post & Byron, 2015) and taking into account the arguments by Kristinsson (2011), Milliken & Martins (1996), and Carter et al. (2003) that the greater social capital of more diverse groups poses more alternatives to solve the problems, when gender diversity increases in politically elected public governments, the opposed preferences of each sex would act in a way that counteracts the causes generating these budget deficits and then improve budgetary solvency. Consequently, we propose the following hypothesis:

H1: A greater gender diversity in government improves institutional budgetary solvency.

2.2. Gender diversity in municipal governments in heterogeneous groups: the gender of the government leader and the ideology

The intergroup bias engendered by other dimensions could impede visualisation of the effects of gender diversity on the outcome of organisations (van Knippenberg et al., 2004; van Knippenberg & Schippers, 2007). Research on the impacts of gender underscores the convenience of considering other variables with the aim of obtaining a precise display of the effects of gender on the studied aspects (Mazei et al., 2015; Zell et al., 2015). In political institutions, the gender of the government leader as well as the dominant ideology may all impede visualizing the effects that gender diversity of the government has on institutional budgetary solvency.

2.2.1. The gender of the government leader: The female mayor

In the framework of the Coasian theory (Coase, 1960) and with support in the citizen candidate model (Besley & Coate, 1997), the different preferences associated with

each gender determine leaders' decision making, and consequently gender has an effect on policy outcomes. [Avelaneda \(2009\)](#) and [Freier & Thomasius \(2016\)](#) remark that the characteristics of the mayor, as leader of the local government, are of special relevance in explaining municipal public policies. [Weikart et al. \(2007\)](#) studied whether female mayors established different policy issues than male mayors. Also, they looked at whether female mayors created alternative decision-making processes in the allocation of resources. These authors found that they were more disposed to admitting the presence of fiscal problems, attempting to change budgetary processes, and to achieving broader participation than their male counterparts.

In this framework, the literature reports diverse theoretical arguments of gender differences for running fiscal imbalances. [Krogstrup & Wälti \(2011\)](#) and [Wilson & Daly \(2004\)](#) exposed reasons for intergenerational redistribution and smoothing consumption for preventive savings. Arguments supporting gender differences in risk aversion ([Croson & Gneezy, 2009](#)) have been used in the literature to justify the idea that having female leaders would lead to different fiscal deficits ([Jochimsen & Thomasius, 2014](#); [Krogstrup & Wälti, 2011](#)). Another line of reasoning is based on the idea of the superior performance required for women leaders compared to their male colleagues ([Eagly et al., 1995](#)) when they assume a leadership position in societies with female underrepresentation in high-level positions ([Foschi, 2000](#)).

Some empirical research has analysed the effects of the gender of the mayor on budgetary policies in diverse geographical environments with diverse results. [Holman \(2014\)](#) and [Cabaleiro-Casal & Buch-Gómez \(2020a\)](#) found that mayors' gender influenced the level of social spending in U.S. cities and Spanish municipalities. [Cabaleiro-Casal & Buch-Gómez \(2018\)](#) also show evidence that female mayors did not affect the size of public spending, but they are associated with lower levels of tax revenues, and this could be affecting municipal fiscal imbalances. In the context of U.S. cities, [Ferreira & Gyourko \(2014\)](#) found no effect of the gender of the mayor on policy outcomes related to the size of local government, although they indicated that the total taxes per capita were smaller if the mayor is a woman, which supposes a potential effect on fiscal deficits. The study by [Cabaleiro-Casal & Buch-Gómez \(2018\)](#) showed different behaviours of female and male mayors in relation to adjusting the municipal budgetary deficits in Spain.

When more than one decision maker participates in the decision-making processes, a conflict may arise because each one of them has their own interests ([Kilgour & Eden, 2010](#)). Then, when there are male and female participants in a government, the decision processes could still be more conflictive than in the case of governments with participants of only one gender ([Ely, 2004](#)).

In research on the decision making of groups, as women are typically socialised to be more generous and to work for the benefit of other people while men are more dominant, assertive and independent ([Myaskovsky et al., 2005](#)), there are gender differences in how men and women handle conflicts ([Dildar & Amjad, 2017](#); [Holt & DeVore, 2005](#)).

According to social identity and self-categorization theories ([Tajfel, 1974](#); [Turner et al., 1987](#)), in the study of relational demography the gender of individuals is a remarkable element for categorization and for constructing social identities, and has diverse effects on the behaviour of individuals in groups, as well as between leaders and their teams, which affects organizations.

Some research has highlighted that gender similarity

between leaders and their teams can have negative consequences. Using the label "queen bee phenomenon", many scholars reason that some female leaders (Queen Bees) in organizations where executive positions are typically held by men, rather than favouring the positive effects of group diversity, tend to reproduce rather than challenge the existing male gender hierarchy ([Arvate et al., 2018](#); [Derks et al., 2016](#); [Staines et al., 1974](#)) and distance themselves from other women ([Kanter, 1977](#)). [Derks et al. \(2016\)](#) note that Queen Bees tend to agree with negative stereotypes about women, and could consequently hinder the possible positive effects that gender diversity could have on institutional performance.

However, the mainstream of the literature notes that gender similarity favours communication and interpersonal attraction, while dissimilarity is related with infrequent cooperation ([Chattopadhyay et al., 2004](#)). [Zheng et al. \(2021\)](#) remark that gender similarity between leaders and their teams due to social categorization will affect the interaction between leaders and their teams. Similarity of demographic characteristics among individuals, including gender, can generate a sense of attraction and favours communication between individuals ([Georgakakis et al., 2017](#)). In this sense, [Holman \(2014\)](#) has shown that gender differences in a city council had no effect on institutional performance if the city did not have a female mayor. [Konrad et al. \(2010\)](#) notes that women leaders in organizations reinforce mechanisms to capture the added value of gender effects, but this is based on the assumption that women consider other women to be their natural allies ([Arvate et al., 2018](#); [Gagliarducci & Paserman, 2012](#)).

Furthermore, [Hamidullah et al. \(2015\)](#) remark that women are usually more collaborative than men, which has consequences on institutional policy outcomes. Studies carried out at the level of local governments by [Holman \(2016, 2017\)](#) and [Weikart et al. \(2007\)](#) showed that female leaders use more inclusive approaches and negotiate budgets in a more flexible manner than male leaders. Consequently, the following hypothesis could be raised:

H2: The gender diversity of the government in municipalities governed by female mayors has a greater positive effect on budget solvency than in those municipalities governed by male mayors.

2.2.2. The ideology of the government

There is extensive literature, based on the partisan approach ([Bräuninger, 2005](#)), indicating that political parties with a leftist ideology have a preference for larger governments than right-wing parties ([Eslava, 2011](#); [Herwartz & Theilen, 2017](#); [Solé-Ollé, 2006](#)). These preferences of size government could translate into deficits or surpluses, although the empirical evidence is weak ([Eslava, 2011](#); [Rose, 2006](#)). Likewise, the strategic use of deficit and debt theory ([Tabellini & Alesina, 1990](#); [Alt & Lassen, 2006](#); [Persson & Svensson, 1989](#)) shows diverse arguments that explain how the leftist and right-wing governments affect governmental budgetary balance.

Within the framework of the partisan model, a strategy of right-wing parties is to underestimate the tax resources with the aim of achieving smaller governments ([Couture & Imbeau, 2009](#)), which could lead to a situation of lesser budgetary deficits. However, when right-wing parties think they may lose power, the literature notes that they sometimes strategically raise budget deficits and debt in order to condition the fiscal behaviour of the successor government ([Persson &](#)

Svensson, 1989). Benito et al. (2015) point out that political theory generally attributes greater fiscal laxity to leftist governments, which could lead to larger fiscal deficits.

Beyond the possible effects that ideology may have on budgetary solvency based on the various previous arguments, it should be emphasized that ideology has an imprint on political representatives and, consequently gender diversity in governments could have different effects on municipal budgetary solvency in leftist and right-wing governments. The ideological differences generate heterogeneous groups, which may distort the effects of gender diversity.

Some research analysing the behaviour of politicians based on their ideology has revealed differences between men and women within their own political parties. Farrell & Titcombe (2016) point out that women typically are more concerned with social problems while men try to apply policies more in line with their ideological positioning. Although most of this research highlights that there are greater gender differences in parties with right-wing ideology (Dodson et al., 1995; Lloren & Rosset, 2017; Norris, 1996), Erikson (1997) exceptionally arrived at opposite conclusions. In view of the majority of evidence that the literature shows about greater gender differences in the ideological sector of right-wing governments, we propose the following hypothesis:

H3: The gender diversity of the government in municipalities with right-wing governments has a greater positive effect on budget solvency than in those municipalities with leftist governments.

3. Data and method

To evaluate the effects of gender diversity in municipal governments on their budgetary solvency, in this study we used 233 Spanish municipalities in the time interval 2008–2017 for which we had all of the necessary information. Because we needed municipalities with a relevant budget size and also a sufficient field of budgetary action (Law 7/1985, of 2 April), we chose a sample of municipalities with more than 20,000 inhabitants. The Spanish municipalities had important population changes in the time interval studied. Population flows meant that many municipalities had more than 20,000 inhabitants in some years of the interval, while in the other years they were below this limit. To eliminate the heterogeneity of competences linked to this change in population level, our sample only included municipalities that had more than 20,000 inhabitants in all years considered; the sample does not include any municipality that had less than 20,000 inhabitants in any year of the time interval analysed.

3.1. Data

3.1.1. Dependent variables

To carry out our research, we followed the concept of budgetary solvency from the Financial Trend Monitoring System [FTMS] (Groves et al., 2003). The FTMS defines budgetary solvency as the municipality's ability to generate sufficient revenues over its normal budgetary period to meet its expenditure obligations and not incur deficits. Groves et al. (2003) note that the main indicator to assess budgetary solvency must be based on the institutional operating position, which refers to the local government's ability to balance its budget on a current basis, and this indicator should not include capital revenues and expenditures. In accordance with

this focus, we developed an indicator representing the difference, in per capita terms, between current revenues and the sum of current expenditures and debt amortization. This relationship is based on the assumption that the municipality's ordinary and systematic resources must be sufficient for the payment of current expenses and also meet the scheduled payments from the financing of past investments. These data were extracted from the Settlement of Local Budgets database of the Spanish Ministry of Finance [MF] (2019).

3.1.2. Independent variables

Aim variable. The effect of gender in municipal governments on institutional outcome has been frequently analysed through a trait approach, and its usual measurement is based on considering the percentage of women in the group. Theoretically, we justify that the improvements that can be produced in municipal budgetary solvency could come from decision-making based on the multiple perspectives and interests of leaders of both genders. Consequently, our main variable is gender diversity in the municipal government. Although there are several alternatives for measuring diversity (Williams & Meân, 2004), we used a standardised Blau index. The choice of this quadratic index is based on the fact that, as the number of individuals of the same gender in the group increases, the effect of incorporating an additional member of the same gender is smaller. This standardised index of diversity is calculated by $2 \times (1 - \sum p_i^2)$, where p_i is the proportion of the corresponding gender in municipal government (i.e., male and female), which takes values between 0 and 1. The value '0' implies a total gender homogeneity in municipal government – all men or all women in the government – and the value 1 notes maximum diversity, that is, the same number of women and men in government. Data were taken from the Database of Electoral Results of the Ministry of the Interior [MI] (2019), corresponding to the electoral processes of the years 2005–2017.

Group identification variables. As we have already pointed out, we use the variables of the gender of the mayor and the ideology of municipal governments to know the effects of gender diversity in the decision-making processes of the groups. To do this, dummy variables were used, coded as '1' for the municipalities with female mayors and with right-wing governments. Data were taken from the same Database of Electoral Results of the MI (2019).

Control variables. In addition to the group identification variables previously mentioned, other diverse control variables that, as suggested by the scientific literature, can affect the budgetary solvency of governments are considered in our study. We incorporated the revenues from transfers because, in accordance with the fiscal illusion theory (Oates, 1985), grants skew the voters' assessment of the true cost of government activities and distort the expenditure-tax link. Based on this argument, the literature associates grants with budget deficits (Buettner & Wildasin, 2006; Guillamón et al., 2011; Olmo & Brusca, 2021). Data for grants were taken from the previously noted database (MF, 2019) database. The literature suggests that demographic determinants lead to conflicts over the allocation of public goods and the tax level, transferring their effects to government deficits (Alesina et al., 1999). Consequently, following the research by Benito & Bastida (2008), Gnimassoun et al. (2021), Rowthorn (2008), Krogstrup & Wälti (2011) and Woo (2003), we took into account the demographic variables of population, the ratio of women, ageing structure, immigration and population density, and their data were taken from the Demography and Pop-

ulation database of the National Statistical Institute [NSI] (2019a).

Battaglini & Coate (2016) describe how unemployment affects public budgets through modifications in tax and social spending policies, which generally tend to alter fiscal balances. As the economic level of the environment rises, governments' fiscal bases and levels of tax collection increase, but they are also subject to greater spending pressure (Morrison, 1982). As the interaction between the two alters budget balances, the literature usually incorporates the level of economic development as an explanatory factor for budgetary policies (Breunig & Busemeyer, 2012; Cabaleiro & Buch, 2015; Shelton, 2007; Woo, 2003). Data for the economic variables unemployment and economic level were taken from the Statistics by Municipalities (Registered Unemployment and Employment Contracts) database of the Ministry of Labour and Social Economy (2020) and from the Spanish Regional Accounts (GDP and GDP per person) database of the NSI (2019b), respectively.

In addition to government ideology, the arguments about which have already been mentioned, other political variables are usually taken into account by the scientific literature to explain fiscal imbalances. In relation to political fragmentation and weakness of government, using the pork-barrel approach (Weingast et al., 1981) or the common-pool prob-

lem (Velasco, 1999), deficits arises because policymakers fail to estimate the full cost of their own spending financed through common tax revenues. On the other hand, under the government inaction approach (Alesina & Drazen 1991), political parties' struggles in fragmented governments affect fiscal deficits, because they may delay the necessary fiscal adjustments to correct previous deficits. Based on principal-agent theory, Alt & Lassen (2006) link turnout and budgetary transparency, and Benito & Bastida (2009) and Benito et al. (2021a) argue that the public economy literature suggests this transparency may affect fiscal performance. Rogoff (1990) discusses how political budget cycles arise through signalling processes, in which leaders try to convince voters of their excellent work during election periods, cutting taxes and increasing public spending, which alter budget balances. Consequently, the political variables of political weakness, political fragmentation, turnout, and electoral year (Ashworth & Heyndels, 2005; Bastida et al., 2009; Benito et al., 2012; Hagen & Vabo, 2005; Klein & Sakurai, 2015; Ricciuti, 2004; Rogoff, 1990; Roubini & Sachs, 1989; Woo, 2003) were included as control variables and their data were taken from Electoral Results database of the MI (2019).

Descriptions of all variables and their descriptive statistics are shown in Table 1.

Table 1. Description of variables and descriptive statistics. Total Sample

Variables	Description	Mean	S. D.	Min	Max
Budgetary solvency	Difference in per capita terms between current revenues and the sum of current expenditures and debt amortization (€).	21.595	250.603	-2033.474	1013.754
Aim variable					
Gender diversity	Standardized Blau index of diversity. It is calculated by $2(1 - \sum p_i^2)$, p_i being the proportion of the corresponding gender (male and female) in municipal government.	.950	.069	0	1
Control variables					
<i>Segmentation variables</i>					
Female mayor	The mayor of the municipality is a woman (1); The mayor of the municipality is a man (0).	.196	.397	0	1
Government with right-wing ideology	The municipality has a government with a right-wing ideology (1); The municipality has a government with a leftist or not defined ideology (0).	.477	.499	0	1
<i>Other control variables</i>					
Transfer revenues per capita	Revenue from current transfers per inhabitant (€).	283.868	71.791	11.894	712.037
Tax level	Relationship between the current property tax rate and the maximum tax rate that the law allows to be applied to the municipality	.578	.162	.232	1
Demographic structure					
Population	Number of inhabitants registered in the municipality.	116016.5	254360.6	25818	3273049
Female population	Female population in relation to the total municipal population.	.507	.012	.437	.546
Youth population	Population aged less than 25 years in relation to the total municipal population.	.266	.030	.153	.349
Elderly	Population aged over 65 years in relation to the total municipal population.	.152	.038	.039	.271
Immigrants	Number of non-Spanish inhabitants registered in the municipality in relation to the total municipal population.	.126	.093	.010	.544
Density	Thousands of inhabitants in the municipality per km ² (Thousands).	1.980	3.124	.038	21.9
Economic activity					
Economic level	Gross Domestic Product per capita in the province to which the municipality belongs (Thousands of €).	22.228	4.774	14.878	33.809
Unemployment	Unemployed registered in Public Employment Service in relation to the potentially active population (16-64 years).	.133	.043	.029	.303
Other political variables					
Electoral year	Electoral year (1), other year (0).	.1969	.397	0	1
Turnout	Number of voters in relation to the census of the municipality in local elections.	.609	.076	.354	.788
Weak government	The municipal government has no absolute majority (1); The municipal government has absolute majority (0).	.525	.499	0	1
Fragmentation - Herfindhal index	Political fragmentation of municipal council. It is calculated with the Herfindhal index: $1 - \sum_{i=1}^n \left[\frac{\text{Councillors of party } i}{\text{Total councillors}} \right]^2$.628	.094	.332	.848

(*) Overall Statistics observations: N = 2244; Municipalities: n = 233; T-bar = 13.592

3.2. Method

To evaluate the effects of gender diversity on budgetary municipal solvency, we initially used a model with panel data based on the fact that the outcome variable is affected by the aim variable, the variables that define groups, and the remaining control variables (hypothesis 1). The economic volatility of the study period caused by the economic crisis – as well as legislative measures related to it (i.e. Organic Law 2/2012, of April 27, on Budgetary Stability and Financial Sustainability), which can have important effects on public budgets – made it necessary to include time variables to evaluate the possible impact of each year on municipal budgetary solvency. Then, the initial baseline model attained the following form:

$$y_{it} = b_1 \cdot x_{1it} + b_2 \cdot x_{2it} + b_3 \cdot x_{3it} + \beta_1 \cdot Z_{it} + \alpha_i + \tau_t + \varepsilon_{it} \quad (1)$$

where y_{it} is the budgetary solvency in municipality i in the year t ; x_{1it} is the indicator of gender diversity of government in municipality i in year t ; x_{2it} and x_{3it} indicate if the municipality i in year t has a female mayor and a right-wing government respectively; Z_{it} is a vector including the remaining control variables in municipality i in year t . The coefficients b_1 to b_3 measure the marginal effects of the aim variable and the gender of the mayor and ideology variables. β_1 measures the marginal effects of the remaining control variables. α_i and τ_t are the possible individual and time specific effects respectively, and ε_{it} is the idiosyncratic error.

Subsequently, to be able to contrast hypotheses 2 and 3, we estimated the model in the groups defined by the variables gender of the mayor and the ideology of the government. Consequently, the econometric models were reformulated for the segments female and male mayor,

$$y_{it} = b_1 \cdot x_{1it} + b_3 \cdot x_{3it} + \beta_1 \cdot Z_{it} + \alpha_i + \tau_t + \varepsilon_{it} \quad (2)$$

and for the segments right-wing and leftist ideology,

$$y_{it} = b_1 \cdot x_{1it} + b_2 \cdot x_{2it} + \beta_1 \cdot Z_{it} + \alpha_i + \tau_t + \varepsilon_{it} \quad (3)$$

In coherence with the linear regression model raised and after making the appropriate checks, we will provide the most efficient estimates.

With the proposal to give robustness to the findings and taking into account that the budgetary solvency of the municipality in the year could be conditioned by the solvency in the previous year, we reformulated the models in a dynamic way:

$$y_{it} = \gamma \cdot y_{it-1} + b_1 \cdot x_{1it} + b_2 \cdot x_{2it} + b_3 \cdot x_{3it} + \beta_1 \cdot Z_{it} + \alpha_i + \tau_t + \varepsilon_{it} \quad (4)$$

$$y_{it} = \gamma \cdot y_{it-1} + b_1 \cdot x_{1it} + b_3 \cdot x_{3it} + \beta_1 \cdot Z_{it} + \alpha_i + \tau_t + \varepsilon_{it} \quad (5)$$

$$y_{it} = \gamma \cdot y_{it-1} + b_1 \cdot x_{1it} + b_2 \cdot x_{2it} + \beta_1 \cdot Z_{it} + \alpha_i + \tau_t + \varepsilon_{it} \quad (6)$$

where y_{it-1} is the level of budgetary solvency of municipality i in the previous year ($t-1$).

The econometric literature frequently shows estimates by the generalised method of moments (GMM) to estimate these panel data dynamic models. However, although GMM estimators could provide consistent estimates of coefficients, they often are not fully efficient, have considerable small-sample bias, and perform poorly. For these reasons, the econometric literature raises alternatives such as maximum likelihood (ML) estimators, evidencing that these last estimators overcome many of the limitations of the GMM estimators (Allison et al., 2017; Moral-Benito et al., 2019). Williams et al.

(2018) and Moral-Benito (2013) have shown that ML estimators are substantially more efficient than the GMM method when the normality assumption is met. They also proved that ML estimators also produce consistent estimators even when the normality assumption is violated, and ML estimators suffer less from finite sample biases. They ran several simulation studies to compare GMM and ML estimators under a wide variety of plausible conditions and determined that the ML estimator generally works at least as well as GMM estimator and often better; it produces approximately unbiased estimates under all of the studied conditions; the bias of the autoregressive parameter in the GMM estimator was much more substantial than in the ML estimator; the GMM estimator's relative efficiency was also poorer; and ML estimator was less biased than GMM estimator when the disturbances were not normally distributed. The technique developed for the estimation of ML estimators by Williams et al. (2018) does, however, present problems with unbalanced panels, as in our case, especially when some time periods have only a few cases, so to perform the robustness analysis through the proposed dynamic model, we used the alternative quasi-maximum likelihood (QML) estimator. The QML estimator is useful in estimating dynamic models, respond to the previously mentioned limitations of GMM estimators, and also they are applicable to unbalanced panels (Bhargava & Sargan, 1983; Breitung et al., 2021; Hsiao et al., 2002; Kripfganz, 2016).

4. Findings and discussion

After performing the initial estimation of the regression of static models 1 to 3 using fixed effects (FE) and random effects (RE) estimators and the adequacy of the estimate with panel data being verified (F-Test that all $u_i = 0$), we observed the presence of fixed effects (Hausman test) as well as time-fixed effects (F-test). Then, we used the FE estimator.

In order to provide robustness to the results, in accordance with the exposed methodological approach, we assume the presence of individual and time fixed effects, and we used the QML estimator in the dynamic models. The results of the estimates are shown in Tables 2 and 3.

The estimates on the entire sample, both in the static (model 1) and dynamic (model 4) methodological approach, have not allowed us to verify compliance with the first hypothesis. That is, the models do not show that the gender diversity (H1) in governments of the Spanish municipalities have effects on the budgetary solvency if other factors are not taken into account.

The analysis in the dimensions defined by the gender of the mayor and the ideology of the government through models 2 and 3, proposed to contrast hypotheses H2 and H3, only allows us to observe in the model 2 that gender diversity is affecting municipal budgetary solvency differently in municipalities governed by male mayors with respect to those governed by female mayors. In relation to H2, the result of the regression of model 2 in the segment of municipalities governed by female mayors shows that gender diversity significantly reduces the budgetary solvency of the institution. The specific value is a decrease in the per capita budget solvency indicator by 434.07 euros compared to if all members of the government were of the same sex ($p < .01$). On the contrary, in the segment of municipalities governed by male mayors, full gender diversity in the government causes an increase in the budgetary solvency of the municipality of 238.19 euros per capita compared to other municipalities with governments with all the members of the same sex ($p < .01$). In

Table 2. Regressions on budgetary solvency based on static models

	(1)	(2)		(3)	
		Female	Male	Right	Left
Aim variable					
Gender diversity	49.795 [70.192]	-434.073*** [130.285]	238.195*** [89.254]	-0.628 [110.203]	32.258 [122.076]
Control variables					
Segmentation variables					
Female mayor	12.283 [14.685]			35.866 [29.291]	5.355 [22.162]
Government with right-wing ideology	43.195*** [13.514]	62.095 [45.690]	76.869*** [14.807]		
Other control variables					
Transfer revenues per capita	0.952*** [0.126]	0.604** [0.289]	0.780*** [0.129]	0.579*** [0.145]	0.607*** [0.162]
Tax level	-300.048*** [67.626]	-613.751*** [191.533]	-309.203*** [70.837]	15.498 [84.012]	-98.612 [107.074]
Demographic structure					
Population (Logs.)	225.878 [206.617]	1972.681*** [677.504]	-99.320 [213.663]	-589.012** [268.552]	563.827** [278.360]
Female population	63.146 [2248.629]	-9107.260 [9788.714]	1578.368 [2173.010]	-455.789 [3237.634]	-11428.125*** [3257.872]
Youth population	-1188.823 [928.245]	-8442.354** [3591.667]	1145.609 [963.415]	1693.150 [1428.908]	-2437.079** [1221.753]
Elderly	962.320 [792.330]	-402.694 [2902.067]	1642.195** [793.125]	991.529 [977.069]	228.256 [1207.169]
Immigrants	492.065 [392.559]	-13.763 [1334.091]	91.938 [391.698]	965.917** [463.119]	1050.844* [609.779]
Density	272.982*** [83.405]	146.721 [167.486]	273.461*** [95.807]	481.334*** [112.757]	142.971 [103.520]
Economic activity					
Economic level	5.376 [8.098]	20.064 [22.696]	-9.867 [8.333]	-3.435 [9.388]	8.355 [11.561]
Unemployment	914.718** [432.354]	1748.485 [1244.377]	371.521 [441.721]	-1047.281** [526.811]	1506.964** [603.426]
Other political variables					
Electoral year	-141.395*** [34.730]	-252.259** [105.701]	-115.242*** [35.031]	21.764 [43.636]	2.657 [59.587]
Turnout	-839.522*** [180.249]	-2937.770*** [606.664]	-589.103*** [199.428]	-818.858*** [280.468]	-1003.855*** [242.589]
Weak government	-4.045 [16.206]	37.335 [55.228]	7.748 [16.499]	-53.754** [24.037]	-10.693 [23.365]
Fragmentation - Herfindhal index	387.226*** [109.079]	-1123.060*** [404.385]	439.157*** [112.281]	342.250** [149.544]	669.927*** [150.944]
Years	Yes	Yes	Yes	Yes	Yes
Statistics:					
Hausman statistic	Chi-sq(17): 146.153***	Chi-sq(16): 76.726***	Chi-sq(16): 117.241***	Chi-sq(16): 133.146***	Chi-sq(16): 63.707***
F test that all $u_i=0$	F(232, 1986): 6.88***	F(92, 325): 7.74***	F(222, 1555): 7.27***	F(165, 882): 7.11***	F(197, 950): 9.65***
F test that all $u_t=0$	F(8, 1986): 13.97***	F(8, 325): 3.59***	F(8, 1555): 9.13***	F(8, 882): 8.54***	F(8, 950): 7.07***
Observations (N)	2244	442	1802	1072	1172

FE estimators with standard errors in parentheses. *, **, and *** denote significance at the 90%, 95% and 99%.

Table 3. Regressions on budgetary solvency based on dynamic models

	(4)	(5)		(6)	
		Female	Male	Right	Left
Budgetary solvency.Lag1	7.655 [53.661]	-329.126** [128.858]	120.407* [66.727]	-69.779 [92.356]	-25.217 [124.627]
Aim variable					
Gender diversity	7.655 [53.661]	-329.126** [128.858]	120.407* [66.727]	-69.779 [92.356]	-25.217 [124.627]
Control variables					
Segmentation variables					
Female mayor	18.216 [11.543]			13.418 [26.685]	33.065 [23.955]
Government with right-wing ideology	22.801** [10.832]	38.868 [46.834]	44.965*** [11.647]		
Other control variables					
Transfer revenues per capita	0.688*** [0.110]	0.409 [0.301]	0.692*** [0.112]	0.438*** [0.131]	0.513*** [0.157]
Tax level	-98.175 [60.219]	-573.483*** [212.623]	-46.681 [62.240]	59.356 [73.660]	87.510 [118.532]
Demographic structure					
Population (Logs.)	-411.953** [193.773]	1247.886 [904.681]	-296.302 [196.281]	-483.506* [270.136]	-145.865 [303.091]
Female population	3766.202* [2033.920]	2138.552 [11265.379]	6179.499*** [1967.067]	585.384 [3172.943]	-9118.649** [3981.137]
Youth population	-2164.584** [857.345]	-6007.930 [4170.920]	-387.201 [873.236]	2448.113* [1346.356]	-2545.997* [1489.467]
Elderly	141.733 [706.671]	-1750.915 [3549.179]	116.121 [681.780]	1061.253 [920.890]	2824.775* [1517.949]
Immigrants	283.374 [334.722]	-402.568 [1525.775]	389.549 [321.711]	414.681 [407.177]	144.043 [663.096]
Density	173.403** [71.745]	91.777 [193.391]	197.764** [84.242]	326.051*** [110.168]	215.361** [108.980]
Economic activity					
Economic level	2.511 [6.804]	14.981 [25.744]	-4.561 [6.773]	9.225 [8.389]	-2.955 [11.537]
Unemployment	-253.601 [374.210]	2137.260 [1510.844]	-250.025 [380.503]	-581.600 [543.338]	-150.258 [663.277]
Other political variables					
Electoral year	46.944** [22.393]	-107.615 [85.972]	21.278 [22.345]	24.872 [31.368]	30.955 [34.697]
Turnout	-185.093 [149.603]	-2142.158*** [639.703]	-130.796 [158.548]	-332.471 [275.637]	-317.938 [246.348]
Weak government	3.989 [12.221]	33.321 [57.546]	-0.882 [12.479]	-58.234*** [20.751]	-5.643 [21.283]
Fragmentation - Herfindhal index	109.565 [84.981]	-844.565** [408.516]	212.766** [88.420]	203.535 [129.525]	273.026* [146.735]
Years	Yes	Yes	Yes	Yes	Yes

QML estimators with standard errors in parentheses. *, **, and *** denote significance at the 90%, 95% and 99%.

model 3, we could not verify that gender diversity has a significant differential effect on municipal budgetary solvency according to the ideology of the municipal segment (H3).

These results are corroborated in the dynamic methodological approach developed through the previously exposed models 5 and 6 to contrast H2 and H3 respectively. We only found that gender diversity is affecting municipal solvency differently in municipalities governed by male mayors compared to those governed by female mayors (Model 5), decreasing the budgetary solvency in the case of municipalities with women mayors in 329.12 euros per capita ($p < .05$) when there is full diversity, and increasing it when governed by mayors by 120.40 euros per capita ($p < .1$).

The cause that seems to justify out not being able to verify H1 (in the sense that a greater gender diversity in government improves institutional budgetary solvency) could be the intergroup bias engendered by the heterogeneity arising from other dimensions, in line with the arguments forwarded by van Knippenberg et al. (2004) and van Knippenberg & Schippers (2007). In this same line, it should be noted that, according to meta-analyses carried out in private corporations in the field of relational demography (Pletzer et al., 2015; Post & Byron, 2015) and considering social identity or social categorization theories (Hornsey, 2008; Turner et al., 1987), the non-appearance of relevant effects of gender diversity in corporate boards on firm financial performance seems to come from not having considered the existence of specific moderators. This also seems to be happening in our research on the impact of the gender diversity of politically elected municipal governments on municipal budget solvency.

Indeed, when we consider the gender of the leader (the mayor) as moderator, we verified that gender diversity has a different effect on budget solvency in the segment of municipalities governed by male mayors compared to the segment governed by female mayors. Nevertheless, the intensity of the found effects contradicts H2, which is supported by gender synergies (Konrad et al., 2010, Arvate et al., 2018), indicating that the gender diversity of the government in municipalities governed by female mayors has a greater positive effect on budget solvency than in those municipalities governed by male mayors. This result could be due to the fact that the leadership of a woman does not allow the positive effects based on differences in preferences for gender in public revenues and expenditures and the greater social capital of the diverse groups that the diversity literature highlights (Ely, 2004; Park, 2020), perhaps because her gender self-categorization (Hornsey, 2008) leads her to align herself with the female part of the team. Another explanation could be founded in the framework of the Queen Bee phenomenon (Staines et al., 1974) based on which the female leader of the organization distances herself psychologically from other women (Derks et al., 2016), neutralizing the argued positive effects that gender diversity has on budget solvency.

In relation to H3, the results do not allow us to verify that the gender diversity of the government in municipalities with right-wing governments has a greater positive effect on budget solvency than in those municipalities with leftist governments. We have not been able to prove that gender diversity has significant effects on budget solvency for any of the ideological segments – not even in the segment of right-wing ideology, in which the literature observed greater gender differences in preferences (Dodson et al., 1995; Erikson, 1997; Lloren & Rosset, 2017; Norris, 1996) and that, according to the arguments developed, could lead to an improvement in institutional budgetary solvency.

Despite it is not the objective of our analysis, we can point

out that the results could be supporting the general position of the political theory that indicates that governments with right-wing ideology have less fiscal laxity than those with left-wing ideology (Benito et al., 2015). Specifically, municipalities with right-wing governments have a higher level of budgetary solvency than those with left-wing ideology (43.19 euros per capita in static model, $p < .01$; 22.80 euros per capita in dynamic model, $p < .05$). Furthermore, in line with Farrell & Titcombe's (2016) arguments that municipalities governed by male mayors seem to be more faithful to the ideological positions of their own political parties than female mayors, the separate analysis of the effect of ideology in the segments identified according to the mayor's gender allowed us to observe that ideology has no effects on budget solvency in municipalities governed by female mayors. In this sense, the sample showed that the right-wing ideology in municipalities governed by male mayors had a positive effect on budget solvency at 76.87 euros per capita ($p < .01$) in static model and 44.96 euros per capita ($p < .01$) in dynamic model.

5. Conclusion

The evolution of societies towards greater participation of women in different areas of decision-making has led to the emergence of growing scientific literature trying to explain the effects of this phenomenon on different issues and from different perspectives. The effects of gender on the outcomes of political institutions have habitually been studied using a trait approach. However, studies using a strict diversity approach being far less frequent.

As the literature shows that the participation of women in political decision-making bodies affects public policies in different ways, we analysed whether gender diversity (gender balance) within municipal government is a factor that explains differences in institutional budgetary solvency using an sample of Spanish municipalities with more than 20.000 inhabitants, taking into account the possible heterogeneity that the gender of the municipal government leader and the political ideology of this government could be generating.

We only have been able to observe in our research that greater gender diversity in municipal government teams has significant effects on municipal budgetary solvency if the gender of mayor is taken into account. Specifically, our research strongly emphasizes that gender diversity in municipal government teams has a negative impact on institutional budgetary solvency in Spanish municipalities headed by female mayors and, on the contrary, the impact is positive in those governed by male mayors. Consequently, the positive effects that the gender diversity can have on institutional performance, justified in the literature by the qualities of each sex and the greater social capital of the government group, only seems to be observed when the municipal government is headed by a male mayor.

With our research we also tried to find out the possible effects of gender diversity in ideologically homogeneous municipal segments (right-wing ideology - left-wing ideology) on budget solvency. Although the literature shows especially remarkable gender differences in right-wing parties, which could favour the idea that if the government has greater gender diversity this could positively affect municipal budgetary solvency, we have not been able to verify any effect in this regard.

As a final reflection, we should note that many developed countries have established gender quotas in their legislation to overcome the problem of gender inequality (Martínez-Córdoba et al., 2022). The configuration of decision-making

bodies in terms of gender parity should lead to the improvement of institutional budgetary solvency based on the main current of the literature. However, when government teams are led by a woman, our research does not capture these positive effects, perhaps because these female leaders tend to self-identify with their group of belonging, favouring the policies of their own group and not allowing diversity to act. Another explanation could be that when some women assume high leadership positions, instead of challenging historically male management with collective coping strategies, some female leaders will respond to this situation by distancing themselves from the unfavourable image of women's potential and aligning themselves with the male organizational culture. These leaders – Queen Bees – can adopt individual positions aimed at improving their personal opportunities in work environments in which options for women are more restricted, not identifying socially with their natural gender collective and opting instead to engage in behaviour following the male stereotype. This may also lead to the fact that, in government environments with female mayors, the gender diversity of government teams does not have the positive effect that we have argued.

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Conflict of interests

The authors declare no conflict of interests.

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