Political Connections and Banking Performance: The Moderating Effect of Gender Diversity

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Abstract

Purpose – The present study investigates the role of board gender diversity in explaining the effects of board members' political connections on banking performance in the Eurozone.

Design/methodology/approach—This paper analyses panel data on 83 banks supervised by the European Central Bank (ECB) for the period 2013-2017, using a GMM-type estimation methodology.

Findings—Results suggest that when gender diversity is high, there is a U-shaped nonlinear relationship between political connections and banking performance. Empirical evidence also indicates that differentiating characteristics of women, such as greater ethical concern and risk aversion, help mitigate the negative effects of political connections on banking performance, safeguarding the institutions' interests from the adverse effects of personal agendas. In addition, these results also suggest that a minimum of 14% gender diversity can contribute to greater social justice and beneficial structural change.

Research limitations/implications—The period studied may not yet fully reflect the impact of the assessment of the board members' suitability.

Practical implications—The paper contributes to the growing literature on political connections and gender diversity, providing a greater insight into their role as determinants of banking performance. The study also suggests the benefits and possible limitations of the Regulator's two impositions—gender diversity quotas and members' repute (members' political connections).

Originality/value—The effect of gender diversity on the impact of board members' political connections on banking performance has not been studied, as these relationships have not been analysed separately for banks directly supervised by the ECB.

Keywords: Political connections, Gender diversity, Bank performance, ECB, GMM

Paper type: Research paper

1. Introduction

The composition of corporate boards of directors has received increasing attention from both investors and shareholders (Tanaka, 2019; Wang et al., 2018). This issue has received particular notice following the financial scandals of recent decades (namely, WorldCom bankruptcy and 2008 financial crisis) being also driven by the need to improve the effectiveness of these boards (Nyamongo and Temesgen, 2013; Reguera-Alvarado et al., 2017). Boards are composed of elements with diverse attributes, characteristics and knowledge, which contribute to the group as a whole (Walt and Ingley, 2003). Two of these characteristics have received particular attention in the recent literature: i. the presence of politicians or former politicians in company boards (e.g., Chen et al., 2018; Lin et al., 2015; Wong and Hooy, 2018), leading to political connections of board members; ii. the adoption of policies and practices that seek to include people, considered different from traditional ones, in organizations, creating an inclusive culture (Herring, 2009) with emphasis on gender diversity (e.g., Adusei et al., 2017; García-Meca et al., 2018; Owen and Temesvary, 2018; Rodríguez-Ruiz et al., 2016).

Literature has shown that political connections can impact both positively and negatively companies' performance. Indeed, political connections can lead to an increase in sales, facilitate access to the credit market, with lower interest rates (Su and Fung, 2013), often providing an informal protection mechanism that affords both a reduction in their operational risk and an increase in their performance level (Song et al., 2016). However, firms can use political connections to overinvest, because they have easier access to long-term financing (Ling et al., 2016), and managers with such connections take advantage of these relationships, in detriment of the collective good (Saeed et al., 2016) and of shareholders' interests (Bebchuk and Fried, 2004).

Furthermore, the literature has not yet studied the impact of gender diversity on the relationship between political connections and performance. On the basis of agency theory, women, when compared to men, are more likely to monitor management and more diligent (Kirsch, 2018). Moreover, women are more conservative, more averse to excessive risk-taking (Palvia et al., 2014), and have more significant ethical concerns (Ku Ismail and Abdul Manaf, 2016) than men. Thus, the presence of women on the boards of directors conditions unethical practices, affecting the profitability of banks and the quality of their assets.

The present paper studies the effect of gender diversity on the relationship between political connections and banking performance, allowing for possible linear and nonlinear relationships between these variables. So far, to the best of our knowledge, this relationship has not been studied. Some studies use moderating effects to explain the relationship between performance and gender diversity, such as the culture or presence of women in management positions (e.g., Adusei et al., 2017; García-Meca et al., 2018). Our research, in addition, also takes into account the possible simultaneity of the two characteristics of corporate governance (gender diversity and political connections) and banking performance.

In our view, the present text offers several relevant contributions to the existing literature. Firstly, the paper focuses on the banking sector, which plays an essential role in most economies at both national and local levels, by contributing to the payment and liquidity system (Fama, 1985) and by efficiently transforming investment savings (Mayur and Saravanan, 2017; Pathan and Faff, 2013). Only a stable and robust financial market allows the resources obtained by banks (deposits/savings) to be allocated to the most productive projects, thus enabling economic development (Huang et al., 2015), evinced through subsequent growth of the Gross Domestic Product (Jokipii and Monnin, 2013). Indeed, the development of the financial sector influences the speed and pattern of countries' economic development (Levine, 1997). Accordingly, corporate governance decisions of banks affect not only their performance but also society in general (García-Meca et al., 2018). In addition, the banking sector has particular characteristics, such as asymmetric information, that facilitates the concealment of political motivations in lending decisions, and provides more opportunities for political influence (Dinc, 2005). Moreover, the banking sector is subject to specific regulations, with significant repercussions on the composition of its boards (e.g., Booth et al., 2002) as well as on its capital structure (Adams and Mehran, 2012). Thus, the impact of political connections on banking performance also affect the economy and financial stability as a whole, and it is important to study this relationship in the banking sector.

Secondly, this study focuses on Eurozone banks whose monetary policy emphasizes financial stability. Moreover, we investigate a sample of data on 83 banks overseen by the European Central Bank (ECB) observed over 2013-2017, a period coinciding with two important ECB measures: i. The introduction, in 2013, of gender quota targets aimed at the increase of female participation in boards (up to 35% in 2019—European Central Bank, 2018a); ii. As of November 4, 2014, the ECB has overseen the appointment of

members of the Boards of Directors of significant banks under its direct supervision through the assessment of candidates' fit and proper requirements (European Central Bank, 2017).[1]

Finally, the present study contributes to a better understanding of the effect of imposing such measures on banks' performance. In particular, our results provide evidence of a non-linear U-shaped relationship between political connections and banking performance, which is moderated by the gender diversity of boards. When gender diversity is high, political connections reduce banking performance to a certain point, suggesting that the differentiating characteristics of women, such as greater ethical concern and risk aversion, help mitigate the negative effects of political connections on banking performance; which means that institutions' interests are favoured over personal agendas, in line with the suggestions of behavioural finance.

Our findings can also provide a useful source of knowledge for the Regulator (ECB). The ECB will be able to evaluate better the impact of its policy requirements on banking performance, assessing the effectiveness of its gender quota imposition and the resilience of political connections in the boards of banks under its supervision.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature, emphasizing its relation with the research agenda of the present study. Section 3 describes the sample and methodology. Section 4 presents and comments on empirical results. Section 5 concludes the paper, stressing its main findings and suggesting future related research.

2. Literature Review

The links between the business world and governments are not new to the 21st century, with a continuing interference of politics and governments on business activity, even as customs barriers, deregulation and privatization fall (Hillman, 2005). These links are designated by the scientific community as political connections and correspond to a social relationship aiming at authority or power gain (Wong and Hooy, 2018). Following the established literature, an element has political connections if he or she is an ex-government official (e.g., Carretta et al., 2012; García-Meca and García, 2015; Hung et al., 2017), i.e., someone who worked as a bureaucrat/advisor in a ministry and/or a

[1] To the best of our knowledge, no previous study has addressed a set of major European banks; the received literature includes Hung et al. (2017), who studied a sample of Chinese banks, and Owen and Temesvary (2018), who analysed North American banks.

politician who is elected an was a former minister. These connections are ubiquitous (Banerji et al., 2018) and can be considered a type of "invisible corruption" (Domadenik et al., 2016). Companies, where these political connections occur, are termed "politically connected" (Chen et al., 2018; Saeed et al., 2016). The existence of these connections can be explained by the theory of resource dependence, which states that organizations need to acquire and exchange resources, leading to the dependence between companies and external units, such as governments (De Cabo et al., 2012). Such dependence creates risks and uncertainty, which can be reduced by establishing political connections (Hillman, 2005) that enable companies to obtain a stronger resource base in order to increase their value (Wong and Hooy, 2018). In addition, these links also take us to agency theory. According to this theory, proposed by Jensen and Meckling (1976), the separation between shareholders and managers generates information asymmetries (agency problems), constituting an incentive for boards' members with political connections to use the their political resources for their personal interest, to the detriment of shareholders' interests, which may lead to the expropriation of the shareholders' wealth (Bebchuk and Fried, 2004).

The effects of political connections have been studied from a variety of perspectives, such as their impact on performance (e.g., Hung et al., 2017; Wong and Hooy, 2018), on financial markets (e.g., Faccio et al., 2006), fiscal policies (e.g., Adhikari et al., 2006; Lin et al., 2015) and on job creation (e.g., Menozzi et al., 2012). However, the direction of this effect on business activity is far from consensual, with different studies showing both positive and negative effects.

Companies with political connections more easily obtain investment projects and bank loans (Wang et al., 2018) and green grants (Lin et al., 2015), face lower tax rates (Adhikari et al., 2006), higher stock prices (Faccio, 2006), as well as greater ease of entry into high barrier industries (Chen et al., 2014). In addition, it has been shown that political connections have a positive effect on employment (Menozzi et al., 2012) and are associated with a higher rescue probability of companies in times of economic hardship (Faccio, 2006; Faccio et al., 2006). Which, in turn, leads to a systemic risk reduction and, consequently, a lower cost of capital (Boubakri et al., 2012). However, along with these positive effects, the literature has also shown negative effects of political connections on business activity and performance. In particular, companies with political connections have been shown to over-invest (Ling et al., 2016), to have lower productivity levels (Domadenik et al., 2016) and higher debt ratios (Faccio, 2010). Furthermore, studies

focused on the impact of political connections on performance have also revealed contradictory results, hinting to a possible nonlinear relationship between the relevant variables. Indeed, political connections favour companies' performance (e.g., Hung et al., 2017; Song et al., 2016; Su and Fung, 2013; Wang et al., 2018; Wong and Hooy, 2018) as they tend to increase sales levels and lower unit costs, facilitate access to the credit market, with lower financing costs (Su and Fung, 2013). Moreover, the relationship of politically connected companies with the government can be seen as an informal protection mechanism that often affords both a reduction in their operational risk and an increase in their performance level (Song et al., 2016).

However, companies with political connections may have political and social goals (Chong et al., 2018) that can result in a lower financial performance (e.g., Carretta et al., 2012; Chen et al., 2018; Chong et al., 2018; García-Meca and García, 2015; Jackowicz et al., 2014; Ling et al., 2016; Saeed et al., 2016). Furthermore, companies can use political connections not as a means of obtaining resources but as a protection mechanism against external shocks (Jackowicz et al., 2014). As these companies often have easier access to long-term financing, they can overinvest, thereby lowering their own financial performance (Ling et al., 2016).

One other argument that may help explain a negative impact of political connections on performance is that managers with such connections take advantage of these relationships, in detriment of the collective good (Saeed et al., 2016). According to the theory of resource dependency, politically connected companies are less stable and have a weaker resource base because they are primarily connected to a single influential politician (Wong and Hooy, 2018).

Finally, the above mentioned literature notwithstanding, studies abound that suggest negligible effects of political connections on the financial performance of companies. One such example is provided by Zhang et al. (2014).

In the case of the banking sector, the literature is still scarce. Recent studies, by Hung et al. (2017) and by Chen et al. (2018), constitute important references in this literature. According to the study by Hung et al. (2017), produced in the context of Chinese banking, politically connected banks appear to be benefited in the process of granting of credit to politically connected companies, considered to be high-quality assets as they are more likely to be bailed out in case of financial difficulties. In addition, this study suggests that a politically connected bank detects and interprets relevant political signals, uses

appropriate diplomatic language and takes proper measures to achieve superior performance (Hung et al., 2017).

However, using a sample of banks from 41 countries from various continents, Chen et al. (2018) conclude that political connections lead to lower performance, as a result of a relaxation in loan risk analysis, due to private agendas. For European banking, particularly in Spain and Italy, the authors find a negative relationship between performance and political connections, which is explained by the fact that members with political connections are more interested in serving their personal interests, rather than collective ones (Carretta et al., 2012), and by the approval of unprofitable projects (García-Meca and García, 2015).

In view of the above contradictory findings in the literature, the following hypothesis is formulated:

H1. Political connections in ECB-supervised banking influence its performance.

With regard to gender diversity in business leadership, two main reasons help explain a growing interest noted in the literature: i. Women are under-represented on the Boards of Directors of major companies in most countries of the world (Jamali et al. 2007; Yap et al., 2017); and, ii. Several European countries, such as Norway, Spain, Finland, Iceland, France, Italy and Belgium, have set gender quotas in the Boards of Directors (Terjesen et al., 2015), because of the potentially positive effects of this diversity, as suggested by behavioural finance. This branch of modern finance has observed that male and female economic agents have behavioural differences. For example, women, when compared to men, are more risk and competition averse and their preferences are more flexible (Croson and Gneezy, 2009). They also present greater ethical concerns (Ku Ismail and Abdul Manaf, 2016), propose less aggressive strategies, invest less in research and development and more in social sustainability initiatives (Apesteguia et al., 2012), take pro-social actions, which means that companies to which they belong can have higher levels of social responsibility (Galbreath, 2018). The literature also suggests that men, rather than women, often exhibit overconfidence in decision making (e.g., Huang and Kisgen, 2013).

The literature that examines the relationship between gender diversity and corporate financial performance is also somewhat inconclusive. Some studies have shown that gender diversity enhances performance (e.g., Chong et al., 2018; García-Meca et al., 2015; Pathan and Faff, 2013; Reguera-Alvarado et al., 2017; Yap et al., 2017); other studies, in turn, either suggest a contrary conclusion (e.g., Adusei et al., 2017) or claim that there is no effect of gender diversity on performance (e.g., Carter et al., 2010).

A positive relationship has been sustained by the argument that greater gender diversity in the composition of boards promotes a better understanding of markets, increases innovation and improves problem-solving through more alternatives/visions (Campbell and Mínguez-Vera, 2008). However, according to social competition theories, people categorize themselves into groups, with underlying stereotypes which, in turn, contribute to competitive behaviour and may lead to dysfunctional outcomes and worse performances (Rodríguez-Ruiz et al., 2016). In addition, if the decision to appoint female board members is motivated by social pressure for greater gender equality, this could have a negative effect on performance (Campbell and Mínguez-Vera, 2008). This is verified by Ahern and Dittmar (2012), who study the imposition of the gender quota in Norway in 2003. These authors conclude that this measure led to the growth of companies in size, through acquisitions, but also to lower returns, due to the appointment of less experienced members to their boards.

Given this duality of results, research has also been concerned with a possible nonlinear relationship between gender diversity and banking performance. Owen and Temesvary (2018) conclude that in American banking this relationship is U-shaped, due to a greater board interaction when the percentage of women increases. These authors argue that the continued voluntary expansion of gender diversity in banks' Boards of Directors is likely to bring performance increases, provided banks have good management quality and are adequately capitalized. Quality management helps maximize the benefits of gender diversity, such as innovation, and minimize its costs, such as potential conflicts (Owen and Temesvary, 2018). Nevertheless, Rodríguez-Ruiz et al. (2016) find, in the context of Spanish banking, a nonlinear but inverted U-shaped relationship and conclude that banks with moderate level of female on their boards have superior performances. This conclusion finds its main support under the cognitive resources view, which argues that problem-solving capacity increases with demographic heterogeneity growth (Rodríguez-Ruiz et al., 2016). Thus, gender diversity is synonymous with strategic capacity that drives performance.

In view of the above, studies that focus exclusively on the banking sector (e.g., Adusei et al., 2017; García-Meca et al., 2015; Hung et al., 2017; Owen and Temesvary, 2018; Pathan and Faff, 2013; Rodríguez-Ruiz et al., 2016) are becoming increasingly relevant in the literature. De Vita and Magliocco (2018) state that the banking sector, as compared to other industries, is more reluctant to accept gender diversity in decision-making positions, as cultural constraints and stereotypes still dominate finance. However, there

is a growing concern with management bodies being more balanced in terms of suitability and gender balance. The present study can be envisaged as one more contribution to this line of research.

The present paper investigates how gender diversity impacts the effect of political connections on banking performance. This research is motivated by the apparent diversity of scientific opinions regarding the influence of political connections and gender diversity on banking performance, and by the lack of research on the relationship between the two former dimensions. Furthermore, in view of agency theory and Kirsch (2018), women as compared to men are more diligent and likely to better monitor management. Thus, the monitoring of activities by a female can yield a reduction in agency costs caused by political connections and thereby impact performance. Given that women are more conservative, more averse to excessive risk-taking (Palvia et al., 2014) and with a greater ethical concern than men (Ku Ismail and Abdul Manaf, 2016), the presence of women on the boards of directors conditions unethical practices, affecting the profitability of banks and the quality of their assets. By promoting cognitive disparity between the members of the Board of Directors, gender diversity increases the board's independence of thinking and, consequently, its performance of supervisory and advisory functions (Zhou et al., 2019). Gender diversity expectably weakens the intensity of both positive and negative relationships between political connections and banking performance—one general expectation that can be translated in the following formal hypothesis:

H2. Gender diversity mitigates the effect of political connections on banking performance.

3. Variables, sample and model

3.1. Sample used in the study

The sample used in the present study comprises 83 banks, out of the total number of entities overseen by the ECB, in the 19 countries that adopted the euro currency (117 entities on January 1, 2019—European Central Bank, 2019). Banks directly supervised by the ECB account for 82% of euro-zone banking assets (European Central Bank, 2018b). In 2017, the sampled banks corresponded to 88.4% of the total assets of significant banks, i.e., supervised by the ECB. These entities are considered significant in light of criteria such as asset size, economic importance, cross-border activities and direct public financial assistance (European Central Bank, 2018c). The difference between 117 and 83 banks derives from data availability—in order to use a balanced

panel, the sample to be studied comprises 83 banks, for which there are available data in all the sample periods (2013 through 2017). Table 1 lists the number of banks, per country, supervised by the ECB and analysed in the present study.

[Insert Table 1 about here]

The period under review is 2013-2017. This period was chosen for two main reasons: firstly, as of 2013, ECB has introduced gender targets in order to increase female participation on boards, so as to reach 35% by 2019 (European Central Bank, 2018a). The ECB is, therefore, promoting gender diversity—as in some countries, such as Spain, through the "Law of Equality" (Reguera-Alvarado et al., 2017). Secondly, as of November 4, 2014, the ECB has been intervening in the appointment of board members of the significant banks under its direct supervision, by assessing candidates' fit and good repute (European Central Bank, 2017). Non-significant banks are under the supervision of the national banks of their respective countries, which aligned their rules with those issued by the ECB (e.g., Bank of Portugal, 2018).

The fact that a board candidate currently holds, or held in the last two years, a political office and/or a government office does not prevent him from being appointed, unless significant conflicts of interest exist—as evaluated by examining the nature, powers and political office, and its relationship with the bank (European Central Bank, 2017; Bank of Portugal, 2018). Given that our sample comprises only banks directly supervised by the ECB, the regulatory framework for political connections is the same for all the entities under study, as all sampled banks have to comply with the same rules—contrarily to what occurs in studies addressing banks subject to diverse regulatory frameworks (e.g., Chen et al., 2018; García-Meca et al., 2015).

Data collection was carried out in two stages. In the first stage, we collected the names of the members of the banks' Boards of Directors through their annual reports and accounts. In a second step, in order to assess the possibility of political connections of these elements, their biographies (published on the banks' institutional websites) were analysed. If this information were not available on bank websites, we used press releases, annual bank reports, *Linkedin* pages—following Hung et al. (2017). We emphasize that for two-tier boards, we consider only the elements of the management board, since it is this body that manages the daily business, as in the one-tier board. According to Puchniak and Sik Kim (2017), double boards (two-tier boards) are not equivalent to one tier-boards. In fact, in the two-tier boards there is a clear separation of responsibilities, since a member of the management board cannot be a member of the supervisory board at the same time (Davies

et al., 2013). Moreover, on the two-tier board, the management board manages the daily business and the supervisory board supervises management board decisions; on one-tier board all board members participate in corporate decisions (Pletzer et al., 2015). In addition, in the two-tier board banks, the separate treatment of the two boards is seen in the literature, not joining them as a single board (e.g., Farag and Mallin, 2017; Fernández-Temprano and Tejerina-Gaite, 2020; Kramaric and Miletic, 2017; Matuszak et al., 2019; Nomran and Haron, 2019). Thus, as our focus lies on the influence of political connections on the decisions of bank administrations, in two-tier boards we consider the management board. Bank financial data were collected through Moody's Analytics BankFocus database; data on macroeconomic variables were obtained from the World Bank.

3.2. Variables

3.2.1. Dependent Variables

In line with previous studies (e.g., Chen et al., 2018; Hung et al., 2017; Talavera et al., 2018), three proxy variables were used to measure banking performance: return on average assets (ROAA), return on average equity (ROAE) and loan loss provisions to total loans (LLPTL). The first two variables provide profitability measures; the third variable is a risk measure, assessing the frailty of banks' assets—so an increase in this indicator means an increase in overdue credit (NPL) in the bank's loan portfolio (Hung et al., 2017).

3.2.2. Explanatory Variables

3.2.2.1. Variables of interest

Regarding the explanatory variables of interest, the political connections indicator (POLBO) is measured by the percentage of members of the Board of Directors with political connections in the past, as defined by Carretta et al. (2012), García-Meca and García (2015) and Pathan and Faff (2013), i.e., someone who worked as a bureaucrat/advisor in a ministry and/or a politician who is elected an was a former minister. Gender diversity (WBO) is measured by the percentage of women on the boards, in line with Adusei et al. (2017), García-Meca et al. (2018), Owen and Temesvary (2018) and Rodríguez-Ruiz et al. (2016). To measure gender diversity, the Shannon Index (SIN) was also calculated, which, according to Campbell and Mínguez-Vera (2008), is more sensitive to small variations in the gender composition of boards.

Given that the present study analyses the interaction between gender diversity and political connections, we centred these two variables. We then created the product terms from these centred variables (POLBOWBO and POLBOSIN), as in Salachas et al. (2017). Such transformation aims at reducing the correlation between the two variables (Aiken and West, 1991; Moon, 2018).

Tables 2 and 3 present a summary characterization of the sample, with regard to gender diversity and political connections and how these variables were operationalized. The number of women on ECB-supervised bank boards has been increasing, at a rate of 43% over the period 2013-2017. It is also noted that women, although in minority, have a higher rate of political connections than men. However, the percentage of board elements with political connections decreases slightly over the period under study. This is in line with the ECB's requirements in assessing the good reputation of administrations.

[Insert Table 2 about here]

3.2.2.2. Control variables

The control variables are either internal (bank-specific) or external determinants. Internal control variables are those that are influenced by management decisions; external variates are those that, although outside the bank's control, reflect the economic and legal environment that affects the functioning of financial institutions (Athanasoglou et al., 2008). Thus, the first set of variables concerns the characteristics of banks and the second set regards macroeconomic determinants.

The internal determinants used are as follows: i. bank size (e.g., Carretta et al., 2012; Chen et al., 2018; García-Meca and García, 2015; Hung et al., 2017; Talavera et al., 2018); ii. bank capital adequacy, which is higher the lower the risk the bank poses to savers (e.g., Athanasoglou et al., 2008; Dietrich and Wanzenried, 2011; Garcia and Guerreiro, 2016; Hung et al., 2017; Talavera et al., 2018); iii. leverage (e.g., García-Meca and García, 2015); iv. operational efficiency, a ratio that is higher for more inefficient banks (e.g., Garcia and Guerreiro, 2016; Hung et al., 2017); v. non-operational efficiency, the larger the more efficient the institution (e.g., Hung et al., 2017). To measure the macroeconomic environment, the following indicators were used: i. economic growth (e.g., Adusei et al., 2017; Chen et al., 2018); ii. corruption control, measured by the Corruption Index calculated by the International Country Risk Guide (e.g., Chen et al., 2018).

Table 3 presents a summary of the variables' operationalization procedures, as well as the main studies that support these procedures, and Table 4 presents a summary of the descriptive statistics of the variables used in the study. It should be noted that in the period under review there are banks with negative returns and that the average political connections is 11.6% (maximum 75%) and the average gender diversity is 16.6% (maximum 60%).

[Insert Table 3 about here]

[Insert Table 4 about here]

3.3. Model

The relationships previously exposed in the above hypotheses suggest the specification of the following dynamic model for panel data:

$$\text{Performance}_{it} = \delta\text{Performance}_{i,t-1} + \theta\text{POLBO}_{it} + \partial\text{WBO}_{it} + \gamma\text{POLBO}_{it} * \text{WBO}_{it} + \sum_{j=1}^{J} B_j X_{it}^{j} + \varepsilon_{it} + v_i. \quad (1)$$

As there is a possibility of the nonlinearity of the relationship between the variables of interest and performance, the following dynamic model was also estimated, allowing for this possibility:

$$\text{Performance}_{it} = \delta\text{Performance}_{i,t-1} + \theta\text{POLBO}_{it} + \partial\text{WBO}_{it} + \gamma\text{POLBO}_{it} * \text{WBO}_{it} + \beta POLBO_{it}^2 + + \varepsilon POLBO_{it}^2 * WBO_{it} + \vartheta WBO_{it}^2 + \mu POLBO_{it} * WBO_{it}^2 + \rho POLBO_{it}^2 * WBO_{it}^2 + \sum_{j=1}^{J} B_j X_{it}^{j} + \varepsilon_{it} + v_i \quad (2)$$

As mentioned, banking performance is alternatively measured by the variables ROAA, ROAE and LLPTL. Contrarily to the variable POLBO, the Shannon Index (SIN) is also used as a measure of gender diversity. In addition, we use a set of control variables, described in the previous section, represented in the model by the vector X^j. All variables are bank-indexed (index i) and period-indexed (t). Finally, the error term is composed of a random element (ϵ_{it}), which can vary across banks and time periods, and the individual effect (v_i), bank-specific and supposed time-invariant.

When estimating dynamic panel data models, under which one or more explanatory variables are not strictly exogenous (the lagged dependent variable, at least), common fixed effects approaches—like least squares dummy variables or first differencing—may produce severely biased estimates (Rumler and Waschiczek, 2016; Wintoki et al., 2012). Thus, the generalized moment method (GMM), as proposed by Arellano and Bond

(1991), is the method selected here to estimate the present panel data dynamic model (Baltagi, 2005). This method has two advantages. Firstly, with this type of estimator, we can allow for the issue of possible simultaneous determination of the dependent variable (performance) and some explanatory variables. For example, banking performance may explain political connections, as better/worse-performing banks may attract elements with more/less political connections. Furthermore, the GMM estimator also allows dynamics to be incorporated into the models, as lagged regressors are used as valid instruments. Secondly, this methodology, contrarily to simultaneous equations' estimation methods (such as Maximum Likelihood and Least Squares in two or three stages—2SLS or 3SLS, respectively—enables the control of individual heterogeneity, avoiding the risk of inconsistent parameter estimates (García-Meca et al., 2015). This point is crucial in the present study, as banking performance probably relates to unobservable aspects specific to each bank (unobserved individual heterogeneity). In order to avoid this risk, the individual effect is eliminated through first-differencing of the variables, as shown in equation 4.

Given the above, the method used in the present study corresponds to the GMM two-step system GMM, developed by Blundell and Bond (1998), a derivation of the Arellano and Bond estimator. This method combines the equation in levels,

$$\text{Performance}_{it} = \delta\text{Performance}_{i,t-1} + \theta\text{POLBO}_{it} + \partial\text{WBO}_{it} + \gamma\text{POLBO}_{it} * \text{WBO}_{it} + \sum_{j=1}^{J} B_j X_{it}^{j} + \varepsilon_{it} + v_i \quad (3)$$

—where the variables in first differences are used as instruments—and the equation in first differences,

$$\text{Performance}_{it} - \text{Performance}_{i,t-1} = \delta(\text{Performance}_{i,t-1} - \text{Performance}_{i,t-2}) + \theta(\text{POLBO}_{it} - \text{POLBO}_{it-1}) + \partial(\text{WBO}_{it} - \text{WBO}_{it-1}) + \gamma(\text{POLBO}_{it} - \text{POLBO}_{it-1}) * (\text{WBO}_{it} - \text{WBO}_{it-1}) + (\sum_{j=1}^{J} B_j X_{it}^{j} - \sum_{j=1}^{J} B_j X_{it-1}^{j}) + (\varepsilon_{it} - \varepsilon_{it-1}) + (v_i - v_i), \quad (4)$$

—where level variables are used as instruments.

This method is recommended when the number of temporal observations is not very high and the dependent variable has a high degree of persistence (in this case, high correlation between present and past performance) (Blundell and Bond, 1998). Thus, for the equation in differences we use as instruments the political connections, gender and product

diversity between lags one and two periods (t-1 and t-2), and for the level equation we use as instruments the first and second differences of those variables.

To validate the adopted specification two tests were used, in line with the procedure adopted by Dietrich and Wanzenried (2011), Moon (2018), Rumler and Waschiczek (2016) and Tan (2016). Firstly, the error autocorrelation was evaluated through the statistics m1 and m2 developed by Arellano and Bond (1991), where the null hypothesis is the absence of error autocorrelation. A second specification test corresponds to the Hansen test, asymptotically $\mathcal{X}^2$, where the null hypothesis is null correlation between the instruments and the error term (i.e., the hypothesis that the instruments are valid). In addition, to assess the joint significance of the model variables, a Wald test was also performed.

4. Results

4.1. Correlation Analysis

Table 5 presents the correlation matrix between the variables used in the study. Regarding the analysis of the variables of interest, there is a negative correlation between political connections (POLBO) and the different performance measures—an increase in the political connections is associated with a decrease in profitability (ROAA and ROAE) and an increase in Credit Risk (LLPTL). The correlation between gender diversity (WBO) and performance has the opposite meaning to that of political connections. Regarding control variables, we stress that the high correlations presented in the table, namely those between the proxy used to measure performance, LEV and ETA, CIR and NINC and GDPPC and CIN, refer to variables that are not used simultaneously in the same estimation. Thus, for each of the estimates presented in the next section, the correlations between the independent variables are reduced—so the precision of our estimates does not seem to be strongly affected by high regressor correlations.

[Insert Table 5 about here]

4.2. Estimation results for the base model

The explanatory variables of the base model are grouped into three sets: 1) variables of interest (POLBO, WBO, POLBOWBO); 2) bank characteristics (TA, ETA and CIR); 3) macroeconomic variables (GDPPC). In this sense, the estimation of model 1 followed a sequential process in order to highlight the effect of these three groups of variables. In the first step, we include the variables of interest for each of the variables to be explained; in

the second step, we use the internal variables of interest and control; and in the third step, we also include macroeconomic variables. The results of these estimates are summarized in Table 6.

Regarding the estimates for model 1, we verify that the inclusion of interaction (POLBOWBO) alters the statistical significance of political connections, maintaining its negative impact on profitability (ROAA and ROAE) and positive on risk (LLPTL). Gender diversity exhibits statistical significance and a positive impact on different performance measures. However, when introducing control variables, gender diversity is no longer individually statistically significant.

Regarding political connections, these have a negative impact on ROAA and ROAE on models 2 and 3, and this effect is statistically significant at the 1% significance level. Moreover, their effect on LLPTL is positive in these models and is statistically significant at the 5% significance level only in model 3. An analysis of these results suggests that political connections reduce banks' profitability and increase their risk, by increasing overdue credit (NPL) in the bank's loan portfolio—in line with the findings of Hung et al., (2017). Such results are in agreement with those obtained by Carretta et al. (2012); Chen et al. (2018); García-Meca and García (2015), leading to the conclusion that personal interests of members with political connections overlap with the interests of the institution, through the approval of unprofitable projects and relaxation of risk analysis of loans under appraisal.

Thus, it is clear that this negative impact has not yet been mitigated by the ECB's 2014 imposition, consisting of curricular and suitability appraisal of prospective members of the boards of directors, prior to their acceptance for management positions. This conclusion is based on the fact that mandates vary from bank to bank, so from 2015 to 2017 there are banks whose managers were previously evaluated, while in other banks this was not the case, as a renewal of mandates has not yet occurred.

Regarding the moderating effect of gender diversity, it seems that the latter accentuates the negative impact of political connections on ROAA and ROAE, and the positive impact on LLPTL—contrarily to what was postulated under hypothesis 2—exhibiting statistical significance in models 2 and 3. This result rests on the fact that the increased participation of female elements results from impositions, as advocated by Campbell and Mínguez-Vera (2008). In the same vein, Ahern and Dittmar (2012) show that the 40% imposition of female quotas in Norway is associated with poorer financial performance,

as this quota has placed inexperienced elements on the boards, leading to increased leverage and acquisitions.

Given the literature, to which we refer in the previous sections, the impact of political connections and gender diversity on performance evinces contradictory patterns, suggesting the existence of a possible nonlinear relationship between variables. In this sense, it is crucial to consider a model specification (model 4) that allows for these possible nonlinear relationships. This model highlights the quadratic effects of the variables of interest, whose graphical representations are shown in Figure 1 (using the procedure suggested by Aiken and West, 1991), considering the standard deviation value of gender diversity to be a high level of this variable. The results obtained when considering nonlinear effects on the variables to be explained reveal that gender diversity and political connections have a negative effect on profitability and a positive effect on risk, being statistically significant at the 1% level. All interaction terms are found to be statistically significant at the 1% and 5% levels. Looking at Figure 1, we find the following conclusions: i. when gender diversity is high, the relationship between political connections and profitability is U-shaped, when banking performance is measured by ROAA and ROAE, and inverted U-shaped when banking performance is measured by LLPTL (as this performance measure is the opposite of performance measured by profitability). This means that, to some extent, political connections destroy banking performance (the portion of the convex curve before its minimum) and then favour it (the portion of the curve after its minimum); ii) when gender diversity is reduced, it is inverted U-shaped for ROAA and ROAE and U-shaped for LLPTL — i.e., from a certain percentage (maximum of the concave curve) political connections begin to destroy banking performance as this performance measure is inverse to performance measured by profitability; iii) the curvature of the relationship between political connections and performance is less pronounced when gender diversity is reduced.

An analysis of figure 1 reveals that when there is a greater presence of female members on bank boards (curves denominated “WBO high” - about 14% for the sample under study), the negative impact of political connections on their performance becomes positive when the political connections are more than about 20% for ROAA and ROAE (minimum of the curve “WBO high”) and 14% for LLPTL (maximum of the curve “WBO high”), which means that gender diversity mitigates this effect, corroborating the second hypothesis. That is, when gender diversity is high, if political connections are over 20% or 14% (depending on the bank performance measure considered), profitability increases

and risk decreases, respectively. However, for percentages of political connections less than these values, gender diversity does not improve banking performance. Moreover, when the presence of female elements is reduced (curve designated "WBO low"), if the political connections are higher than 12.3% (maximum of the curve "WBO low"), when banking performance is measured by ROAA, and higher than 10% for ROAE (maximum of the curve "WBO low") and higher than 16% (minimum of the curve "WBO low") for LLPTL, performance is reduced. Thus, we find opposite results when we have high or low gender diversity — respectively, curves "WBO high" and "WBO low".

Our results are in line with those of Kogut et al. (2014), showing that with a gender share of 10% to 20%, this diversity can contribute to social justice and intended structural changes. In the same vein, Farag and Mallin (2017) consider that such reduced quotas may be preferable as they are the key to greater structural equality, in line with Rodríguez-Ruiz et al. (2016) who conclude that banks with a certain degree of balance in their board composition, i.e. moderate female levels, perform better. The imposition of gender quotas may thus contradict the idea that organizations choose their boards to maximize their value (Ahern and Dittmar, 2012). Our results are also in line with Owen and Temesvary (2018), who conclude that increasing gender diversity in bank boards will bring performance increases as long as banks have good management quality. This quality underlies the supervisory and advisory functions of boards, including the management of political connections. These functions will be best performed whenever there is greater gender diversity, as there will be greater independence of thinking on the boards (Zhou et al., 2019).

The results also support the arguments that female gender differentiating behaviours, such as greater ethical concern and risk aversion mitigate the negative effects of political connections on banking performance. Although female elements have more political connections than men, as shown in Table 2, the presence of female elements, with and without political connections, is crucial to avoid personal interests of these members from being privileged in detriment of those of the institution.

Regarding the impact of the control variables on performance (models 2, 3 and 4 in Table 6), the size of banks has a positive and statistically significant impact when economic growth is not included. When we consider GDP per capita, the size of institutions maintains this impact on the LLPTL only, meaning that the larger the bank's assets, the greater the bank's risk. In this line, GDP per capita only influences LLPTL.

The proxy used to measure bank capitalization has a statistically significant positive impact on profitability measures in models 2, 3 and 4, and on risk (LLPTL), in model 4. Finally, the significance of CIR ratio across models 2, 3, and 4 shows that the higher the bank's inefficiency, the lower the bank's return and the greater the risk. Thus, banks, in order to improve their management practices and consequently their performance, banks must control costs efficiently (Nasserinia et al., 2014).

It should be noted that the results displayed in tables 6, A1, A2 and A3 show that the lagged performance variable is statistically significant, confirming the dynamic character of the model specification, i.e., that past performance impacts present banking performance.

In conclusion to the present section, we note that all the adopted models appear to be correctly specified, for the following reasons: i) there is no evidence of autocorrelation of first and second-order errors (m1 and m2 statistics) since the null hypothesis is not rejected at acceptable significance levels (1%, 5% and 10% for second order, and 10% for the first order); ii) there is no evidence of correlation between the instruments and error terms (Hansen statistic), since the null hypothesis that the instruments are valid is not rejected; and iii) all variables are jointly statistically significant, since we reject the null hypothesis of the Wald (Z) test that all regression coefficients are null.

[Insert Table 6 about here]

[Insert Figure 1 about here]

4.3. Robustness Analysis

In order to analyze the robustness of our results, we re-estimated the four models, changing the proxy for gender diversity (in a first step) and for the control variables (in a second step). The results of these estimates are summarized in Tables A1, A2 and A3. Table A1 presents the results obtained for the proposed models, where we replace, respectively, female percentage with the Shannon index, capitalization with leverage, operational efficiency with non-operational efficiency, and GDP per capita with corruption control. In Table A2, as compared to Table 6, we replaced the female percentage by the Shannon index and in Table A3, as compared to Table 6, leverage, non-operational efficiency and corruption control were used as control variables.

The results obtained confirm the conclusions set out in the previous subsection. Specifically, we note that political connections have a negative impact on profitability and a positive effect on risk, with both effects accentuated by the presence of women on

bank boards. Note that in some models, gender diversity is also statistically significant, with the same sign as that of political connections.

The graphical representation of the quadratic effects from the robustness checks are consistent with those presented in Figure 1. In addition, at higher levels of gender diversity, political connections negatively affect bank profitability, and risk positively, to some extent. Thus, when gender diversity is high and political connections are greater than 20% (Tables A1 and A3) or 23% (Table A2), these links have a positive impact on profitability, i.e., increase it. Regarding the effect on risk (LLPTL), when gender diversity is high, political connections reduce banks' risk when they are over 17% (Table A1), 14% (Table A2) or 20% (Table A3).

Finally, it should be noted that leverage and non-operational efficiency exhibit an opposite sign to the ETA ratio and managerial efficiency, respectively, as these measures are the opposite of each other. The relationship between corruption control and performance shows that the greater this control, the greater the banks' profitability and the lower their risk, corroborating the results obtained by Chen et al. (2018).

[Insert Table A1 about here]

[Insert Table A2 about here]

[Insert Table A3 about here]

5. Conclusion

The present study seeks to contribute to the understanding of the effect of gender diversity on the relationship between political connections and banking performance, allowing for linear and nonlinear relationships between variables in the period following two ECB directions—the imposition of gender quota and curriculum assessment and suitability of members of significant banks' boards. The study is a contribution to the relevant literature on this subject, namely with regard to the banks of greatest interest in the Eurozone.

Our results suggest that political connections have a negative impact on banking performance, i.e., they tend to reduce banks' profitability and increase their risk. This means that the personal interests of members with political connections overlap with the institutions' interests, through the approval of unprofitable projects and relaxation of the risk analysis of loans. Concerning the moderating effect of gender diversity, it is noted that the latter accentuates the negative impact on ROAA and ROAE, and the positive effect on LLPTL. This result is based on the fact that the increased participation of female members results from ECB impositions.

However, by examining nonlinear (quadratic) effects of the variables of interest, we can conclude that: (i) when gender diversity is high, the relationship between political connections and profitability (ROAA and ROAE) is U-shaped, and inverted U-shaped for credit risk (LLPTL); ii) when gender diversity is reduced, U is inverted for ROAA and ROAE and U for LLPTL; and iii) the curvature of the relationship between political connections and performance is less pronounced when gender diversity is reduced. Thus, when there is a greater presence of female members on bank boards (around 14%), the negative impact of political connections on performance becomes positive when political connections are greater than about 20% for ROAA and ROAE and 14% for LLPTL, which means that gender diversity mitigates this effect, rather than accentuating it, as the linear relationship indicated. The gender quota, between 10% and 20%, can bring about social justice and intended structural changes. In view of the above, we conclude that the differentiating characteristics of women, such as greater ethical sensitivity and greater risk aversion, mitigate the negative effects of political connections on banking performance, making the institution's interests privileged over personal ones.

Our study contributes to the growing literature on political connections and gender diversity by providing greater insight into the determinants of banking performance. This study may also suggest benefits for the Regulator and possible limitations of its two impositions. In addition, the results obtained may be useful in assessing whether or not the regulator's instructions are proving beneficial in a sector as important to the economy as the banking sector.

Since the period studied may not yet fully reflect the impact of the assessment of the suitability of board members, it is important to revisit the present paper’s main subject in the future, in order to re-estimate the impact of political connections on banking performance. Furthermore, after 2019, the impact of the 35% gender quota imposition on the effect of political connections on banking performance should be studied, assessing the effectiveness of both ECB impositions. In the future, it would also be interesting to analyze banks with more than 50% female on the boards of directors, and to understand the impact of a reduction in the male gender on banking performance.

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Tables

Table 1 - Banks analyzed in the study.

Country	List of supervised entities	Analyzed banks
Austria	6	2
Belgium	7	6
Cyprus	3	1
Germany	21	16
Estonia	3	3
Spain	12	10
Finland	3	1
France	12	9
Greece	4	4
Ireland	6	1
Italy	12	10
Lithuania	2	2
Luxembourg	6	3
Latvia	2	2
Malta	3	3
Netherlands	6	3
Portugal	3	2
Slovenia	3	2
Slovakia	3	3
Total	**117**	**83**

Table 2 - Gender Diversity and Political Connections: Summary Characterization of the Sample.

	2013	2014	2015	2016	2017
Number of women	135	140	162	187	193
Number of political women	32	33	32	38	35
Number of board members=Total board	828	836	827	833	843
Number of political board members	117	118	111	115	109
Number of women/Total board (%)	16.30%	16.75%	19.59%	22.45%	22.89%
Number of political women/Total board (%)	3.86%	3.95%	3.87%	4.56%	4.15%
Number of political women/Total political board members (%)	27.35%	27.97%	28.83%	33.04%	32.11%
Number of political women/Number of women (%)	23.70%	23.57%	19.75%	20.32%	18.13%
Number of political men/Number of men (%)	12.27%	12.21%	11.88%	11.92%	11.38%
Number of political board members/Total board (%)	14.13%	14.11%	13.42%	13.81%	12.93%

Table 3 - Operationalization of variables.

Variable	Codename	Formula	Signal	Authors
Dependent variables				
Performance	ROAA	After tax profit/average total assets	N.A.	Chen et al. (2018); Hung et al. (2017); Owen and Temesvary (2018); Talavera et al. (2018)
	ROAE	After tax profit/average total equity	N.A.	Chen et al. (2018); Talavera et al. (2018)
	LLPTL	Loan Loss Provisions/Total loans	N.A.	Hung et al. (2017)
Explanatory variables				
Political connections	POLBO	Political board members/Total board	+/-	Carretta et al. (2012); Cheng (2018)[1]
Gender Diversity	WBO	Number of women/Total board (%)	+/-	Adusei et al. (2017); García-Meca et al. (2018, 2015); Owen and Temesvary (2018); Rodríguez-Ruiz et al. (2016)[2]
	SIN	$-\sum_i^n P_i ln P_i$, where Pi is the percentage of board members in each category (female/male) and n is the total number of board members (Campbell and Mínguez-Vera, 2008).	+/-	Campbell and Mínguez-Vera (2008); Owen and Temesvary (2018); Yap et al. (2017)[3].
Size	TA	The natural logarithm of Total Assets	+/-	Athanasoglou et al. (2008); Chen et al. (2018); García-Meca and García, (2015); Hung et al. (2017); Rodríguez-Ruiz et al. (2016); Talavera et al. (2018)
Capitalization	ETA	Total Equity/Total Assets	+/-	Athanasoglou et al. (2008); Dietrich and Wanzenried (2011); Garcia and Guerreiro (2016); Hung et al. (2017); Talavera et al. (2018)
Leverage	LEV	Debt/ Total Equity	+/-	Chen et al. (2018); García-Meca and García (2015)
Managerial efficiency	CIR	Cost-to-income ratio: total cost/total income	+/-	Dietrich and Wanzenried (2011); Garcia and Guerreiro (2016); Hung et al. (2017)
Non operational efficiency	NINC	Non-interest income/Total income	+/-	Hung et al. (2017)
Economic growth	GDPPC	The natural logarithm of *Gross Domestic Product per capita*	+/-	Chen et al. (2018)[4]
Corruption Control	CIN	Calculated by International Country Risk Guide. This index ranges from 0 to 6, with 6 signifying a low level of corruption / high control of corruption in the country.	+	Chen et al. (2018)

[1] In other studies, political connections have been measured using a dummy variable, equal to 1 if the board member has past experience in political office and 0 otherwise (e.g., Chen et al., 2018; Hung et al., 2017; Wong and Hooy, 2018) or through the history of political office (e.g., Chen et al., 2014).

[2] Gender diversity has also been measured as a dummy variable, equal to 1 if there is at least one female element on the board and 0 otherwise (e.g., Hung et al., 2017; Yap et al., 2017).

[3] Among the set of studies presented, only Owen and Temesvary (2018) refers to the banking sector, using the Blau index ($1-\sum_i^n P_i^2$) instead of the Shannon index. According to Campbell and Mínguez-Vera (2008), the properties of both indices are qualitatively similar, although Shannon's index, being a logarithm, is more sensitive to small differences in gender diversity.

[4] In the literature, GDP or its growth rate has been used (e.g., Athanasoglou et al., 2008; Dietrich and Wanzenried, 2011; Garcia and Guerreiro, 2016). Here we follow the recent study by Chen et al. (2018).

Table 4 - Descriptive Statistics of Variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
ROAA	415	0.273	1.336	-12.070	6.410
ROAE	415	2.504	18.547	-162.270	81.890
LLPTL	415	0.010	0.020	-0.066	0.213
POLBO	415	0.116	0.156	0.000	0.750
WBO	415	0.166	0.138	0.000	0.600
SIN	415	0.030	0.225	-0.366	0.297
TA	415	18.034	1.644	13.249	21.455
ETA	415	0.077	0.040	0.013	0.253
LEV	415	16.564	10.237	2.959	90.001
CIR	415	60.954	54.202	-525.330	587.410
NINC	415	39.474	30.041	-147.990	319.510
GDPPC	415	10.180	0.414	9.221	11.304
CIN	415	0.660	0.153	0.333	0.917

Table 5 – Correlations matrix.

	ROAA	ROAE	LLPTL	WBO	POLBO	SIN	TA	ETA	LEV	CIR	NINC	GDPPC	CIN
ROAA	1												
ROAE	0.8524***	1											
LLPTL	-0.7324***	-0.8106***	1										
WBO	0.0438	0.0325	-0.0161	1									
POLBO	-0.0353	-0.0859*	0.083*	0.2715***	1								
SIN	0.0464	0.0282	0.0376	0.8766***	0.2812***	1							
TA	-0.0039	-0.1136**	-0.0444	0.1319***	0.2629***	0.1053***	1						
ETA	0.1049**	0.2506***	-0.0222	0.0301	-0.1647***	0.0306	-0.546***	1					
LEV	-0.1163**	-0.1565***	-0.0889*	0.039	0.2315***	-0.0311	0.4145***	-0.7539***	1				
CIR	-0.2133***	-0.3138***	0.1869***	-0.0385	-0.1954***	-0.0693	-0.0244	0.0259	-0.2155***	1			
NINC	0.1097**	0.1744***	-0.1459***	0.1457***	0.0996**	0.2144***	0.105**	-0.0875*	0.1579***	-0.6395***	1		
GDPPC	0.0444	-0.0723	-0.1824***	-0.0872*	0.1975***	-0.0995**	0.4358***	-0.4512***	0.3307***	0.0166	0.1034**	1	
CIN	0.1315***	0.0541	-0.3085***	-0.216***	0.0567	-0.3226***	0.2273***	-0.2991***	0.2839***	-0.012	0.0332	0.6727***	1

Notes: *p-value < 10%, **p-value < 5%, ***p-value < 1%

Table 6 - Results for the base model. Model 1, 2 and 3 represent linear relationships between the variables under study and model 4 the nonlinear (quadratic) relationships.

	Model 1.1.			Model 1.2.			Model 2			Model 3			Model 4		
Dependent variable	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL
Dependent variable lagged 1 period	0.197***	0.185***	0.242***	0.175***	0.169***	0.259***	0.104***	0.135***	0.291***	0.099***	0.133***	0.283***	0.127***	0.178***	0.313***
POLBO	-0.747	-7.343	0.009	-1.161***	-13.707***	0.005*	-0.988***	-10.469***	0.005	-0.916***	-9.969***	0.005**	-2.233***	-24.087***	0.007***
WBO	1.484***	19.142***	0.032***	1.694***	23.421***	0.033***	-0.196	-5.941**	0.007**	-0.107	-5.155	0.004	-1.368***	-12.412***	0.028***
POLBOWBO				-9.494***	-135.354***	-0.011	-5.054***	-76.695***	0.041***	-4.520***	-75.367***	0.042***	-14.643***	-137.804***	0.151***
$POLBO^2$													5.141***	56.325***	0.005**
$POLBO^2WBO$													40.751***	366.933***	-0.499***
WBO^2													5.847***	53.506***	-0.025***
$POLBOWBO^2$													53.505***	371.885***	-0.188***
$POLBO^2WBO^2$													-146.458***	-784.002***	-1.094***
TA							0.009***	0.274***	0.0002***	-0.007	0.139	0.0007***	-0.022*	-0.016	0.0008***
ETA							6.614***	19.860**	-0.013*	6.419***	17.756**	-0.0003	6.847***	23.667***	-0.009**
CIR							-0.003***	-0.024***	0.00001***	-0.003***	-0.023***	0.00001***	-0.003***	-0.014***	0.00001***
GDPPC										0.030	0.245	-0.001**	0.029	0.161	-0.0009***
Z	131.640 (0.000)	137.100 (0.000)	150.800 (0.000)	201.47 (0.000)	168.48 (0.000)	335.48 (0.000)	1372.46 (0.000)	674.49 (0.000)	1334.39 (0.000)	1528.92 (0.000)	655.87 (0.000)	1506.13 (0.000)	27177.17 (0.000)	11818.19 (0.000)	160792.39 (0.000)
m_1	-1.000 (0.319)	-1.780 (0.075)	-2.100 (0.036)	-0.990 (0.322)	-1.730 (0.084)	-2.100 (0.035)	-0.740 (0.460)	-1.600 (0.109)	-2.260 (0.024)	-0.750 (0.451)	-1.590 (0.111)	-2.250 (0.025)	-0.790 (0.431)	-1.650 (0.098)	-2.290 (0.022)
m_2	-1.370 (0.171)	-0.640 (0.524)	0.790 (0.430)	-1.290 (0.196)	-0.610 (0.540)	0.830 (0.405)	-1.470 (0.141)	-0.990 (0.322)	0.870 (0.382)	-1.460 (0.144)	-0.980 (0.326)	0.860 (0.387)	-1.550 (0.121)	-0.770 (0.440)	-0.900 (0.368)
Hansen	25.920 (0.357)	26.630 (0.322)	-22.820 (0.531)	36.600 (0.349)	29.230 (0.701)	28.540 (0.732)	33.170 (0.508)	37.570 (0.309)	37.540 (0.310)	32.840 (0.525)	37.200 (0.324)	37.340 (0.318)	54.920 (0.439)	59.680 (0.277)	61.870 (0.216)

Notes:

(i) P-value in parentheses.

(ii) Z is a Wald test of the joint significance of the reported coefficients, asymptotically distributed as X^2 under the null hypothesis of no relationship.

(iii) m_i (m_1 and m_2) is a serial correlation test of order I (1 and 2) using residuals in first differences, asymptotically distributed as N(0, 1) under the null hypothesis of no serial correlation.

(iv) Hansen is a test of the over-identifying restrictions, asymptotically distributed as X^2 under the null hypothesis of no correlation between the instruments and the error term.

Appendix

Table A1 - Results for the model using SIN, LEV, NINC, CIN. Model 1, 2 and 3 represent linear relationships between the variables under study and model 4 the nonlinear (quadratic) relationships.

	Model 1.1.			Model 1.2.			Model 2			Model 3			Model 4		
Dependent variable	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL
Dependent variable lagged 1 period	0.207***	0.189***	0.299***	0.214***	0.193***	0.298***	0.169***	0.184***	0.295***	0.168***	0.182***	0.275***	0.170***	0.177***	0.297***
POLBO	-0.197	0.996	0.004	-0.692***	-8.482**	0.004*	-0.618**	-10.126***	0.010***	-0.638**	-7.476**	0.006*	-0.698**	-7.978***	0.008***
SIN	0.484**	5.738*	0.025***	0.263	8.753***	0.021***	-0.438**	-4.832*	0.013***	-0.319*	-4.274*	0.010***	-0.227	-10.685***	0.014***
POLBOSIN				-1.925***	-46.451***	-0.012	-2.645***	-39.981***	0.035***	-2.216***	-35.691***	0.033***	-13.134***	-122.799***	0.124***
$POLBO^2$													1.818***	13.655**	0.028***
$POLBO^2SIN$													34.413***	328.634***	-0.464***
SIN^2													0.631	-38.886***	0.010
$POLBOSIN^2$													-34.606***	-364.886***	0.202***
$POLBO^2SIN^2$													76.711***	938.295***	-1.156***
TA							0.029***	0.297***	0.0003***	-0.001	-0.045	0.0009***	-0.006*	-0.064	0.001***
LEV							-0.019***	-0.085	-0.00006*	-0.020***	-0.114**	-0.000003	-0.016***	-0.124***	-0.00004
NINC							0.004***	0.022**	-0.00005***	0.003***	0.020**	-0.00004***	0.003***	0.012**	-0.00003***
CIN										0.855***	9.913***	-0.018***	0.717***	10.528***	-0.021***
Z	321.900 (0.000)	231.46 (0.000)	244.430 (0.000)	467.33 (0.000)	296.270 (0.000)	449.88 (0.000)	532.73 (0.000)	685.67 (0.000)	1497.84 (0.000)	520.66 (0.000)	571.29 (0.000)	1865.76 (0.000)	11074.86 (0.000)	9534.08 (0.000)	188547.43 (0.000)
m_1	-0.960 (0.337)	-1.720 (0.085)	-2.200 (0.028)	-0.910 (0.364)	-1.660 (0.097)	-2.190 (0.029)	-0.680 (0.498)	-1.670 (0.095)	-2.230 (0.026)	-0.660 (0.508)	-1.680 (0.094)	-2.250 (0.025)	-0.730 (0.467)	-1.640 (0.102)	-2.200 (0.028)
m_2	-1.390 (0.163)	-0.570 (0.566)	0.930 (0.352)	-1.440 (0.151)	-0.560 (0.578)	0.920 (0.359)	-1.390 (0.165)	-0.720 (0.475)	0.850 (0.398)	-1.400 (0.163)	-0.790 (0.427)	-0.800 (0.424)	-1.500 (0.132)	-0.930 (0.351)	0.710 (0.476)
Hansen	27.720 (0.272)	25.150 (0.398)	27.120 (0.299)	42.350 (0.154)	37.660 (0.305)	35.070 (0.417)	21.710 (0.949)	24.090 (0.896)	35.000 (0.420)	19.000 (0.982)	21.560 (0.952)	33.670 (0.484)	49.510 (0.648)	57.060 (0.362)	60.660 (0.248)

Notes:

(i) P-value in parentheses.

(ii) Z is a Wald test of the joint significance of the reported coefficients, asymptotically distributed as X^2 under the null hypothesis of no relationship.

(iii) m_i (m_1 and m_2) is a serial correlation test of order I (1 and 2) using residuals in first differences, asymptotically distributed as N(0, 1) under the null hypothesis of no serial correlation.

(iv) Hansen is a test of the over-identifying restrictions, asymptotically distributed as X^2 under the null hypothesis of no correlation between the instruments and the error term.

Table A2 - Results for the model that uses SIN instead of WBO. Model 2 and 3 represent linear relationships between the variables under study and model 4 the nonlinear (quadratic) relationships.

	Model 2			Model 3			Model 4		
Dependent variable	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL
Dependent variable lagged 1 period	0.136***	0.174***	0.302***	0.137***	0.172***	0.300***	0.159***	0.191***	0.327***
POLBO	-0.890***	-9.910***	0.003	-0.904***	-9.549***	0.004	-0.856***	-7.108***	0.005**
SIN	-0.539***	-6.548***	0.010***	-0.532***	-5.986***	0.009***	-0.750***	-12.040***	0.021***
POLBOSIN	-3.434***	-44.186***	0.027***	-3.332***	-41.011***	0.029***	-11.033***	-131.038***	0.120***
$POLBO^2$							2.115	21.866***	0.033***
$POLBO^2SIN$							25.441***	276.064***	-0.493***
SIN^2							-0.728	-43.648***	0.025***
$POLBOSIN^2$							-22.025***	-386.832***	0.207***
$POLBO^2SIN^2$							35.128***	751.088***	-1.356***
TA	0.008**	0.259***	0.0001***	-0.0007	0.066	0.0005	0.005	0.613***	0.0002**
ETA	6.572***	21.347***	-0.011*	6.410***	18.090**	-0.0022	6.043***	23.479***	-0.011***
CIR	-0.003***	-0.025***	0.00001***	-0.003***	-0.022**	0.00001***	-0.002***	-0.017***	0.000009***
GDPPC				0.016	0.347	-0.0006	-0.007	-0.689**	-0.0001
Z	1290.40 (0.000)	939.19 (0.000)	1334.56 (0.000)	1318.89 (0.000)	954.20 (0.000)	1423.36 (0.000)	58179.10 (0.000)	66098.35 (0.000)	282390.50 (0.000)
m_1	-0.770 (0.444)	-1.670 (0.095)	-2.270 (0.023)	-0.760 (0.445)	-1.660 (0.097)	-2.270 (0.023)	-0.760 (0.446)	-1.610 (0.107)	-2.200 (0.028)
m_2	-1.460 (0.145)	-0.820 (0.413)	0.930 (0.350)	-1.460 (0.145)	-0.810 (0.421)	0.930 (0.353)	-1.560 (0.120)	-0.800 (0.425)	-0.830 (0.404)
Hansen	29.590 (0.683)	36.100 (0.370)	28.030 (0.755)	30.190 (0.655)	36.280 (0.363)	28.030 (0.755)	58.110 (0.326)	60.660 (0.248)	60.540 (0.252)

Notes:

(i) P-value in parentheses.

(ii) Z is a Wald test of the joint significance of the reported coefficients, asymptotically distributed as X^2 under the null hypothesis of no relationship.

(iii) m_i (m_1 and m_2) is a serial correlation test of order I (1 and 2) using residuals in first differences, asymptotically distributed as N(0, 1) under the null hypothesis of no serial correlation.

(iv) Hansen is a test of the over-identifying restrictions, asymptotically distributed as X^2 under the null hypothesis of no correlation between the instruments and the error term.

Table A3 - Results for the model using LEV, NINC and CIN instead of ETA, CIR and GDPPC. Model 2 and 3 represent linear relationships between the variables under study and model 4 the nonlinear (quadratic) relationships.

	Model 2			Model 3			Model 2		
Dependent variable	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL	ROAA	ROAE	LLPTL
Dependent variable lagged 1 period	0.154***	0.158***	0.271***	0.146***	0.156***	0.238***	0.146***	0.171***	0.263***
POLBO	-0.848***	-11.275***	0.011***	-0.619***	-8.971***	0.004	-2.329***	-21.152***	0.007***
WBO	-0.324	-4.597	0.005	0.199	-1.459	-0.004	-0.523**	-4.760*	0.017***
POLBOWBO	-5.340***	-71.934***	0.042***	-3.371**	-65.227***	0.033**	-14.172***	-102.697***	0.150***
$POLBO^2$							5.553***	46.605***	0.011***
$POLBO^2WBO$							39.554***	238.784***	-0.429***
WBO^2							5.591***	43.855***	-0.037***
$POLBOWBO^2$							32.420***	233.071***	-0.256***
$POLBO^2WBO^2$							-100.705***	-303.836*	-0.353*
TA	0.026***	0.297***	0.0003***	-0.011	-0.032	0.001***	-0.016***	-0.040	0.001***
LEV	-0.016***	-0.044	-0.0001**	-0.017***	-0.084*	-0.00001	-0.016***	-0.147***	-0.000008
NINC	0.003***	0.009	-0.0002***	0.003***	0.007	-0.00002***	0.001*	0.004	-0.00003***
CIN				1.072***	9.559***	-0.026***	1.037***	8.169***	-0.027***
Z	503.32 (0.000)	414.06 (0.000)	1177.62 (0.000)	294.11 (0.000)	330.91 (0.000)	1559.83 (0.000)	8393.03 (0.000)	10389.56 (0.000)	62004.49 (0.000)
m_1	-0.670 (0.505)	-1.640 (0.101)	-2.220 (0.026)	-0.650 (0.515)	-1.670 (0.094)	-2.220 (0.026)	-0.790 (0.429)	-1.700 (0.089)	-2.240 (0.025)
m_2	-1.370 (0.170)	-0.750 (0.451)	0.780 (0.433)	-1.350 (0.178)	-0.840 (0.401)	0.730 (0.468)	-1.380 (0.168)	-0.830 (0.408)	0.740 (0.460)
Hansen	26.810 (0.805)	22.320 (0.938)	43.020 (0.138)	19.190 (0.981)	21.050 (0.960)	35.520 (0.397)	46.62 (0.752)	42.64 (0.868)	60.580 (0.250)

Notes:

(i) P-value in parentheses.

(ii) Z is a Wald test of the joint significance of the reported coefficients, asymptotically distributed as X^2 under the null hypothesis of no relationship.

(iii) m_i (m_1 and m_2) is a serial correlation test of order I (1 and 2) using residuals in first differences, asymptotically distributed as N(0, 1) under the null hypothesis of no serial correlation.

(iv) Hansen is a test of the over-identifying restrictions, asymptotically distributed as X^2 under the null hypothesis of no correlation between the instruments and the error term.

Figures

Figure 1 - Quadratic effects on the relationship between political connections and performance, moderated by gender diversity (WBO).