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The nexus of market power and female board representation in European banks

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Simone Voigt [§]

Abstract

This paper empirically investigates the relationship between market power and female board representation in large commercial banks in the EU-27 from 2020 to 2024. Using the Lerner Index as a proxy for market power and hand-collected data on female board representation, the findings suggest that increasing market power is detrimental to a bank's likelihood of reaching the 33 percent gender diversity target for the board of directors, as proposed by the EU Directive EU2022/2381. The negative effect is especially pronounced for listed banks and systemically important banks, highlighting the importance of considering banking market structures (market power and competition) when enforcing regulatory diversity standards for those banks in particular.

Keywords: Market Power, Competition, Gender Diversity, Banking, Female Board Representation

Paper type: Research paper

JEL Classification: G21, G34, J71

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1. Introduction and motivation

In 2009, the report of the High-Level Group on Financial Supervision in the EU stated that weaknesses in corporate governance structures of banks contributed to the global financial crisis in 2007/2008 and its subsequent economic and financial consequences (De Larosière, 2009). Against this background, the Basel Committee on Banking Supervision (BCBS) has recognized the importance of examining and strengthening corporate governance in banks, as effective governance is essential for financial stability and sustainable economic development (BCBS, 2010).

A growing strand of literature highlights the relevance of gender diversity in the top management in this regard. Research by Adams and Ferreira (2009), Chen et al. (2018), Baghdadi et al. (2023) and others suggests that greater female board representation enhances a firm's monitoring function by strengthening oversight of the top management. This positive effect may depend on theoretical predictions from the critical mass theory (Kanter, 1977a; 1977b; Joecks et al., 2013), as a critical mass of female directors seems to matter for fostering managerial ability, especially in monitoring roles (Baghdadi et al., 2023). The European Commission acknowledged these findings and imposed the *Gender Balance on Corporate Boards Directive* (EU 2022/2381), which proposes a ratio of 40 percent of the respectively underrepresented gender among non-executive directors and 33 percent among all board directors for large listed firms in the European Union (European Commission, 2025).

Although this directive targets financial and non-financial firms, its implications may be particularly relevant for the banking sector. Banks differ fundamentally from non-financial firms due to their high leverage and stringent regulatory environment, which highlights the importance of effective board monitoring and overall governance oversight (Becht et al., 2011; De Haan and Vlahu, 2015). While these differences translate into corporate governance in general, they are especially pronounced with regard to board gender diversity (Adams and Kirchmaier, 2016).

However, given the EU directive is relevant for a large number of European banks, the pursuit of gender diversity goals is unlikely to be uniform across those banks. Competitive markets may foster stronger incentives to adopt gender diverse boards due to heightened competitive pressure (Becker, 1957), whereas banks with greater market power may face weaker incentives to prioritize diversity practices. In this context, competition authorities play an important role. The Directorate-General for Competition (DG Comp) and national competition authorities aim to preserve competitive markets to limit excessive market power (European Commission, 2026). This indirectly reinforces external discipline which may encourage banks to pursue governance objectives, such as achieving a higher representation of women on their boards.

In light of these aspects, I empirically investigate the relationship between market power and banks' likelihood of reaching the critical mass of at least 33 percent women on their board. My sample entails 220 European banks during the period from 2020 to 2024. I seek to uncover whether market power hinders compliance with the EU directive and contributes to an understanding of market forces in the diversity enforcement practices for European banks.

This paper is structured as follows: Section 2 discusses the theoretical background, related literature and outlines my contribution. Section 3.1 describes the data and variables, while Section 3.2 introduces the empirical model. Section 4 presents and discusses the empirical findings, and Section 5 provides a summary and key implications.

2. Theoretical background and contribution

2.1 Becker's discrimination theory

My investigation is based on Becker's (1957) theory of taste-based employer discrimination.[1] Becker's theory can be adapted to gender discrimination such that employers favor male employees even if they demand higher wages than female employees with the same skill set.[2] This results in increased (discrimination-) costs for the employer, which he can only sustain in a market that allows for inefficiencies like discrimination costs to exist. The discriminating employer in the context of this investigation attributes a disutility to employing women. To avoid this disutility the employer is willing to pay a "discrimination premium" d on top of an employee's wage. If $d > 0$ discrimination is taking place (Becker, 1957).

Becker's main implication is that discrimination will be reduced as product market competition increases. The competitive market pressure would force these discriminating employers, which have higher costs due to the discrimination premium and therefore lower profits in comparison with their peers, to either leave the market or reduce their discriminatory behavior (Becker, 1957). Employers, who do not discriminate (as much) on the basis of gender are therefore able to hire employees efficiently and without the extra costs of the discrimination premium. In equilibrium, discriminated employees will be employed by the least discriminating employer and the wages are determined by the marginal discriminating employer (the employer who discriminates most but still takes them on) (Becker, 1957). As competition rises, d will decrease, as the marginal discriminating employer is forced to work more efficiently and to reduce costs. Ultimately, discrimination will be reduced or even abolished.

[1] Taste-based discrimination refers to an economic model of labor market discrimination in which the personal biases or prejudices of an employer lead to unfavorable hiring outcomes for minority workers. In this framework, such behavior is interpreted as employers having a "taste" for discrimination (Becker (1957)).

[2] In his initial work, Becker focused on racial discrimination (Becker (1957)).

In this paper, I will empirically investigate the impact of market power (as the opposite of market competition) of individual banks on their behavior towards the employment of women in top positions in light of Becker's discrimination theory. The prior rationale based on Becker's theory in this context is that with increasing individual market power (decreasing competition), the discriminating behavior of a bank increases as well, resulting in a lower ratio of female to total board members. Put differently, I expect the probability of the bank to install more female board members over a certain threshold to decrease, as market power increases.

2.2 Critical mass theory

Concerning the ratio of female to total board members, I build on prior literature by Kanter (1977a; 1977b) who focuses on gender diversity in group contexts. The author distinguishes groups based on the ratio of over- and underrepresented genders (typically men and women) and identifies four types of groups (Kanter, 1977a).

In the first type of groups, the *uniform groups,* all group members exhibit the same characteristic, which can be openly observed. In the context of gender, this translates to all members being either male or female.

The second type are *skewed groups*, in which, according to Kanter (1977a), the dominant type controls the outnumbered type and consequently the whole group. The few outnumbered members are called "tokens" and are treated as representatives of their category, rather than individuals (Kanter, 1977a). In the context of this study, this would mean that a bank appoints women to its board solely because they are female in order to comply with gender diversity quotas. Kanter proposes that a group would be classified as skewed if it consists of up to 20 percent of women.

Kanter identifies a third group with a less extreme distribution among the members, which she calls *Tilted Groups*. Within these constellations members of the underrepresented gender are given the chance to ally with the dominant members and thereby influence the group culture

(Kanter, 1977a). Unlike in skewed groups, these outnumbered members are not considered as representative for all of their kind, but as a subgroup, which can be differentiated in itself based on skillset and abilities. These groups would be classified as tilted if they consist of 20 to 40 percent women.

Lastly, Kanter identifies *Balanced Groups*, in which dominant member types and outnumbered member types are two subgroups, where gender related differences lose relevance with the focus shifting to individual abilities and skills of men and women (Kanter, 1977a). Balanced groups consist of 40 to 60 percent women.

The idea of female tokenism is crucial for the study at hand, as it highlights the importance of investigating the level of female representation to analyze the ability of women on bank boards to influence board decisions. Depending on the level of the ratio of female to male directors, these abilities may vary immensely.

To sum up, the discrimination theory (Becker, 1957) and the critical mass theory (Kanter, 1977a; 1977b) contribute to understanding how market structures (market power vs. competition) and group structures may influence female board representation. Based on these two theories, I assume that market power enables banks to keep discriminating preferences in their employment practices (Becker, 1957), which translates to women being the minority on bank boards and potentially being considered as mere tokens (Kanter, 1977a).

In light of these theoretical implications, the EU has proposed the *Gender Balance on Corporate Boards Directive* (EU 2022/2381), which sets a gender diversity target for listed EU firms of 40 percent of the underrepresented gender among non-executive directors and 33 percent of all directors (European Commission, 2025). With this, the Commission has actively stepped in to account for a potential lack of competitive pressure by imposing regulatory pressure to eliminate taste-based discrimination. By setting binding quotas of 33 percent and 40 percent, the Commission is trying to empower women to have real impact, rather than being mere tokens.

2.3 Related literature

The broad strand of literature on board gender diversity in banks predominantly concentrates on its effects on bank performance (García-Meca et al., 2015; Owen and Temesvary, 2018; Geyfman et al., 2018; Khalaf, 2022), and risk-taking (Berger et al., 2014; Abou-El-Sood, 2019; Cardillo et al., 2021; Menicucci and Paolucci, 2022; Hoang and Wu, 2023; Liu and Wu, 2023).

In contrast, empirical evidence on the nexus of market power and female board representation is relatively scarce. Chen et al. (2018) investigate the impact of female board representation on innovation and firm performance via R&D expenditures and find a moderating role of product market competition on these effects. The authors investigate U.S. firms with NBER patent data from 1976 to 2006. Similar results were obtained by Kamarudin et al. (2021), who investigate the effect of board gender diversity on a firm's sustainability performance. Their investigation is based on ESG data of financial and non-financial firms from 37 countries for the period of 2009 to 2018.

The most related research for the study at hand was conducted by Ashenfelter and Hannan (1986). In their study, the authors identify local banking markets and analyze the effects of a bank's local market share on its employment diversity individually and for the entire market. The authors use the three-bank concentration ratio as a structural measure of a well-defined market to account for competitive pressure in the broadest sense. Analyzing 120 banks in 43 local markets in the states of Pennsylvania and New Jersey in 1976, the authors find a negative effect of market concentration on a bank's employment of women in managerial positions (Ashenfelter and Hannan, 1986). However, it is stated that this relationship is primarily driven by differences across markets rather than by individual banks.

The study at hand contributes to this strand of literature by proposing the Lerner Index as a more adequate measure of market power (and competition) compared to structural measures such

as the concentration ratio. By doing so, I hope to gain thorough insights into the effect of market power on the individual bank-level on its likelihood of employing a sufficient number of women on its board, in terms of reaching a decision-critical mass. Moreover, I analyze the largest commercial banks in the EU-27 in light of recent efforts of the European Union to foster female board representation. To the best of my knowledge, I am the first to investigate this nexus for European banks during the most recent period of 2020 to 2024.

3. Empirical methodology

3.1 Data and sources

Table 1 presents notes on variables and data sources, while Table 2 provides the descriptive statistics.

The data on bank board composition is hand collected via the banks' annual reports. Additionally, I gathered yearly bank-level financial data from Bank Focus (Bureau Van Dijk) for the largest 220 commercial banks in the EU-27 for the period from 2020 to 2024. Macro-economic data is sourced from the World Development Indicators of the World Bank. The Gender Equality Index Power Dimension is obtained from the European Institute for Gender Equality.

3.1.1 Female Ratio 33

The *Female Ratio 33* used in this study is a dummy variable, which equals one if a bank's share of female relative to total members of the board of directors is at least 33 percent and zero otherwise, corresponding with the target set by the EU Directive. In constructing the equally weighted share of the overall female ratio as the number of female directors divided by the total number of board directors, I follow the existing literature on board gender composition (Levi et al., 2014; Gul et al., 2011; Adams and Ferreria, 2009). The primary objective of this study was to collect data on the board composition of the top ten largest commercial banks (measured in terms

of total assets) for each EU-27 country. Table 4 provides a detailed overview of the sample composition per country. For some countries[3], data were available for less than ten banks.

Table 2 reports the summary statistics for the entire sample. The mean value of the dummy variable *Female Ratio 33* is 0.4186 with a standard deviation of 0.4936. This translates into approximately 42 percent of the banks in the sample, which already comply with the 33 percent board diversity target.

3.1.2 Lerner Index

Conventional analyses of competition and market power in banking are largely rooted in the Structure-Conduct-Performance (SCP) paradigm, which posits a systemic relationship between market structure, banks' conduct and resulting performance (Bain, 1956). Within this framework, structural indicators such as the Herfindahl-Hirschman Index and the k-bank concentration ratio have traditionally been employed to infer the intensity of competition from the observed structure of banking markets (Herfindahl, 1950; Hirschman, 1964). However, the reliability of these indicators as proxies for a bank's market power has increasingly been challenged. From a theoretical perspective, the concept of market contestability argues that even highly concentrated markets may remain competitive if entry and exit barriers are sufficiently low (Baumol et al., 1983).

In addition to that, concentration at the country level may primarily reflect efficiency gains and economies of scale rather than genuine market power (Coccorese, 2014), while assuming that banks respond homogeneously to changes in market concentration (Dell'Ariccia, 2001). Structural measures are also susceptible to endogeneity concerns, as consolidation may be the result of competitive pressure, which would create reverse causality (Claessens and Laeven, 2004). Empirical evidence supports these concerns, as previous studies report only a weak association

[3] These countries are: Belgium, Bulgaria, Estonia, Finland, Greece, Croatia, Latvia, Luxembourg, Lithuania, Malta, Romania and Slovenia.

between concentration-based indicators and more direct measures of competition (De Guevara et al., 2005; Carbó et al., 2009; Claessens and Laeven, 2004; 2005). Taken together, these limitations suggest that structural indicators are ill-suited to reliably capture banks' market power. This shortcoming has motivated the development and application of alternative non-structural approaches grounded in microeconomic theory (Bhuyan, 2014).

Among these non-structural indicators, the Lerner Index is preferred to alternatives such as the H-Statistic and the Boone indicator for several reasons. First, it represents a direct and widely recognized measure of market power, which is frequently employed by national and international competition authorities (OECD, 2021). Second, in contrast to the H-Statistic and the Boone indicator, the Lerner Index is not sensitive to sample composition (Van Leuvensteijn et al., 2011; Bikker et al., 2012). Moreover, it does not rely on an ex ante market definition (Shaffer and Spierdijk, 2017) and does not require the assumption of a long-run market equilibrium (Bikker et al., 2012).

As a non-structural measure, the Lerner Index captures the degree of market or pricing power at the individual bank level (Lerner, 1934). In its general form, the Lerner Index calculates a price-to-cost margin as:

$$Lerner_{i,t} = \frac{\left(P_{i,t} - MC_{i,t}\right)}{P_{i,t}}, \tag{1}$$

where $P_{i,t}$ denotes the price of total assets (interest and non-interest revenues divided by total assets) and $MC_{i,t}$ are the marginal costs of total assets for bank *i* in year *t*. The Lerner Index takes on values between 0 and 1, while a value of 0 indicates perfect competition since banks operating in a fully competitive environment are not able to demand mark-up prices. In contrast, a value of

1 reflects a monopolistic banking market where the mark-up price over marginal cost is maximized.

Marginal costs are computed by taking the derivative of a translog cost function (TCF) with respect to a bank's output, measured by total assets. Following Forssbæck and Shehzad (2015), the TCF is estimated using constrained linear regressions (Huang et al., 2018)[4], with three constraints imposed to ensure homogeneity of degree one in input prices and symmetry in cross-price effects.[5] The specification comprises a single output (total assets) and three input prices (labor, funding, and capital). The resulting TCF is specified as follows:

$$\begin{aligned} &\ln\left(TC_{i,t}\right) \\ &= \alpha_0 + \alpha_1 \ln Y_{i,t} + \frac{1}{2}\alpha_2 \left(\ln Y_{i,t}\right)^2 \\ &+ \sum_{k=1}^{3} \beta_k \ln(w_{k,i,t}) \\ &+ \sum_{k=1}^{3}\sum_{m=1}^{3} \frac{1}{2}\delta_{km} \ln(w_{k,i,t}) \ln\left(w_{m,i,t}\right) \\ &+ \sum_{k=1}^{3} \gamma_k \ln(w_{k,i,t}) \ln(Y_{i,t}) \\ &+ \sum_{k=1}^{3} \lambda_{kw} \ln\left(w_{k,i,t}\right) T + \varepsilon_{i,t}. \end{aligned} \tag{2}$$

[4] Before estimating the TCF, observations with zero or negative values for total assets, total equity and all income and expense variables were removed. As a plausibility check, I compute the ratio of total equity to total assets and discard observations for which these ratios exceed the value of one.

[5] Following the related literature (e.g. Huang et al., 2018), several parameter restrictions are imposed. Specifically, the coefficients of input prices are constrained to add up to one $\sum_{k=1}^{3} \gamma_k = 1$. Coefficients of the interactions between input prices and output are constrained to sum to zero $\sum_{k=1}^{3} \eta_k = 0$, while coefficients of the input price interactions and of the interaction between time trend and input prices are restricted to add up to zero, as imposed by $\sum_{k=1}^{3}\sum_{m=1}^{3} \frac{1}{2}\delta_{km} = 0$ and $\sum_{k=3}^{4} \lambda_k = 0$.

Following the related literature, total costs (TC) are calculated as the natural logarithm of the sum of a bank's total interest expense and total operating costs via their accounting values per year. $Y_{i,t}$ denotes the total assets per bank and year. The three input prices (funding costs, labor costs, and costs of fixed capital) are calculated as the following ratios of accounting values per bank and year, respectively: total interest over total liabilities, personnel expense over total assets and operating expenses over fixed assets. T denotes the time trend which captures technological changes over time. Hence, this variable is set to one at the beginning of the sample period (2020) and increases by one every subsequent year, with the maximum value of T being five in 2024. After calculating the partial derivations of the TCF, the marginal costs for each bank *i* and year *t* are obtained by multiplying the derivative by the ratio of total costs (TC_{it}) to the output variable.

$$MC_{i,t} = \left[\alpha_1 + \alpha_2 \ln(Y_{i,t}) + \sum_{k=1}^{3} \gamma_k \ln w_{k,i,t} + \lambda_k T\right] \frac{TC_{i,t}}{Y_{i,t}} \quad (3)$$

Higher values of the Lerner Index indicate greater market power, which is equivalent to reduced competition intensity in the market. A value of one would imply a monopolistic market. As Table 2 describes, the sample exhibits a mean value for the Lerner Index of 0.9576, which indicates relatively high market power for the mean individual bank. It further reports a minimum value of the Lerner Index of 0.5853 and a maximum value of 1.0379[6].

[6] Note that a Lerner Index slightly above the maximum value of one may reflect distortions in marginal cost estimates due to the zero-lower bound on retail deposit rates during the negative interest rate period (which would concern the years 2020-2022 in this sample) (Claessens et al., 2018), rather than genuine excessive market power.

3.1.3 Control variables

Next to the *Female Ratio 33* and the Lerner Index, I additionally include bank-specific control variables. First, I control for a bank's profitability by including the *return on average assets (ROAA).* Prior literature suggests that profitable banks tend to differ systematically in their governance practices and decision-making capacity, which potentially affects board diversity (Sarhan et al., 2019; Khalaf, 2022). One argument could be that profitable banks possess more resources and discretion to implement strategic changes as diversity targets as part of their corporate governance.

Second, I include the natural logarithm of *non-performing loans (NPL),* as a proxy for asset quality and a bank's credit risk exposure. A higher amount of non-performing loans is associated with a larger credit risk exposure, which could influence governance outcomes. High amounts of non-performing loans could be interpreted as an indicator of a weak credit risk management or inadequate monitoring (ECB, 2017). This signal generates a call for banks to change their governance structure, possibly also regarding board composition. I therefore assume that higher values for NPLs are associated with a positive change in a bank's probability of reaching the threshold of 33 percent women on its board.

Third, I include a bank's *Equity Ratio* as an indicator of a bank's capital structure. An increase in the equity ratio is associated with a stronger capitalization and a reduction in moral hazard incentives for excessive risk-taking, which could potentially confound the relationship between market power and board composition. Hence, controlling for the equity ratio isolates the direct influence of market power with the rationale that well-capitalized banks may prioritize diverse boards for better monitoring and performance (García-Meca et al., 2015; Owen and Temesvary, 2018).

Fourth, this analysis includes variables that capture the macroeconomic environment. *GDP growth* is used to account for the role of overall economic expansion and business cycle in

influencing the composition of banks' boards of directors. The expectation is that during boom periods, higher profits allow banks to invest more in differentiating their corporate governance structures and in implementing diversity initiatives. Consequently, a positive association is anticipated between GDP growth and the likelihood of installing women on a bank's board.

Fifth, to specifically control for a country's behavior towards gender equality in leading economic positions, I employ the respective *Gender Equality Index Power Dimension* provided by the European Institute for Gender Equality on an annual basis. To the best of my knowledge, I am the first to incorporate this index into an investigation of female board representation on bank boards. As this measure assesses a country's quality of gender equality in decision-making positions with higher values indicating a better performance, I assume a higher consciousness for gender equality and hence, higher ratios of female bank board representation in these countries.

3.2 Empirical model

I employ a logistic random effects model with time dummies to capture time-specific effects, such as institutional changes or common shocks to the banking market. A random effects model is advantageous for the topic of this research paper, since it exploits the variation between banks in addition to the variation within banks over time. This is of great importance as it is the aim of this study to investigate the differences in levels of female ratios across European banks as well as the evolution over time.

To quantify the economic relevance of estimated coefficients, I compute predicted probabilities from the logistic random effects model. Predicted probabilities are obtained by applying the logistic transformation to the linear index of the model, evaluated at the sample means of all covariates. Specifically, I estimate a logistic random effects regression of the form:

$$\Pr(\, FemaleRatio_{33_{i,t}} = 1 \mid X_{i,t}, u_i) = \Lambda\,(X_{i,t}\beta + u_i), \tag{4}$$

where $\Lambda(\cdot)$ denotes the logistic cumulative distribution function, $X_{i,t}$ is the vector of explanatory variables, and u_i represents bank-specific random effects, assumed to be normally distributed.

The explanatory variables used in this study are the following: $FemaleRatio\_33_{i,t}$, which takes the value one if the ratio of female board members to total board members of bank i in a given year t equals 33 percent or more and zero otherwise. $LI_{i,t}$ denotes the Lerner Index for bank i in a year t. $ROAA_{i,t}$ represents the return on average assets for bank i in a year t. $NPL_{i,t}$ denotes the natural logarithm of a bank's i non-performing loans in a year t. The final bank-specific control variable $EquityRatio_{i,t}$ represents the ratio of total equity to total assets for bank i in a year t. $GDP\ growth_{i,t}$ denotes the annual growth of a country's gross domestic product. Lastly, the power dimension of the $Gender\ Equality\ Index_{i,t}$ represents a measure of gender equality in the decision-making domain per year t and country m.

Predicted probabilities are computed using post-estimation marginal predictions, holding all covariates at their sample means and integrating over the distribution of the random effects. Standard errors of the predicted probabilities are obtained using the delta method. All estimations rely on cluster-robust standard errors at the bank-level, with one exception being specification (2) in Table 5, where standard errors were clustered at the country-level.

4. Empirical results

The results from the baseline regression are reported in Table 5, while the results from further sensitivity analyses are shown in Tables 6 to 8. Table 3 displays the respective correlation matrix.

4.1 Baseline regression results

I start with the results from the baseline regression as reported by specification (1) in Table 5. As shown, the Lerner Index enters the regression significantly negative at the ten-percent level, suggesting a decline in the likelihood of reaching a ratio of female board members to total board members of at least 33 percent (Female Ratio 33) as requested by the EU directive. To put this into an economic perspective, the Lerner Index is firstly standardized by its standard deviation ($SD_{Lerner\ Index}$). This enables a deeper understanding of finer changes in individual market power by a one-standard-deviation increase. The standard deviation of the Lerner Index for the full sample is 0.0610. In addition, the margin at the mean for specification (1) is 0.4238. I calculate the change in the predicted probability as follows:

$$\Delta\, Pr = \beta_{Lerner\ Index} \times SD_{Lerner\ Index} \times margin\ at\ mean \times (1 - margin\ at\ mean). \quad (5)$$

Consequently, the predicted probability for banks to reach a ratio of women on their boards of at least 33 percent, holding all covariates at the sample mean, decreases by about 7 basis points with an increase in market power of one standard deviation.

This finding indicates that for the entire sample of European banks, an increase in market power at the individual bank level can be associated with a lower probability of achieving the EU directive's proposed goal of having at least 33 percent female directors on the board. In other words, banks operating with greater market power appear less likely to reach the threshold that the directive considers necessary to promote more balanced gender representation in corporate governance. This relationship suggests that competitive conditions in the banking market may play an important role in shaping board composition and diversity outcomes. The result is consistent with the intuition derived from Becker's discrimination theory (1957), as introduced in Section

2.1. According to this framework, discriminatory employment practices are more likely to persist in environments with weaker competitive pressure, as firms with greater market power can more easily bear the resulting inefficiency costs. Applied to the context of this study, this suggests that banks facing less competitive pressure may be less inclined to promote female representation at the board level.

Moreover, the result implies that higher market power may encourage banks to keep female board representation below a critical mass threshold of 33 percent. Remaining below this level can limit the ability of female directors to exert meaningful influence on board decisions. This interpretation is consistent with the critical mass theory proposed by Kanter (1977a; 1977b), discussed in Section 2.2. Consequently, maintaining female representation below this threshold may reduce their potential impact on boardroom dynamics and strategic outcomes.

Turning to the control variables, the returns on average assets (*ROAA*) enter the regression specification significantly positive at the one-percent, indicating that increasing profit seems to support the likelihood of reaching the threshold of 33 percent female board members. This is in line with previous empirical findings that profitable banks may be more likely to have a higher representation of women on their board, than banks with lower profitability, as they have the financial means to improve gender diversity in their governance practices.

Furthermore, non-performing loans (*NPL*) enter the regression significantly positive, as expected. An increase in non-performing loans, which is associated with higher credit risk, seems to increase the likelihood of complying with the EU directive of having at least 33 percent women as executive board directors. This may be due to the fact that the bank is incentivized to change its board structure to more risk-sensitive decision-makers, as a step to mitigate the increased credit risk. There is ample empirical evidence on the relationship between female directors and bank risk taking, emphasizing that women on bank boards reduce balance sheet or overall bank risk (Liu and Wu, 2023; Sbai and Ed-Dafali, 2025).

To control for the impact of business cycles on a bank's ability to invest in board gender diversity, and ultimately on the probability of reaching at least 33 percent female board directors, I included a country's growth in GDP (*GDP growth*) into the regressions. As for specification (1), a statistically significant positive effect is observed at the five-percent level, suggesting that a prospering economy is beneficial to the bank's ability to invest in gender diversity. One possible explanation is that during periods of economic growth, banks have more financial resources available, which enables them to support initiatives related to gender diversity.

Finally, the *Power dimension* of the *Gender Equality Index* enters regression specification (1) significantly positive at the one-percent level, indicating that a higher participation of women in the political, economic and decision-making sphere of a given country may positively affect a bank's likelihood of having at least 33 percent women on its board. A possible explanation for this finding is that higher levels of gender equality in the country where the bank is headquartered may foster greater awareness of gender diversity within institutions. As a result, banks operating in such environments may be more inclined to appoint female directors to their boards.

To account for potential correlation in the error terms, standard errors are clustered in the analysis. Specifically, clustering is applied at both the bank and the country level. The above results were obtained with clustering at the bank level, which accounts for unobserved bank-specific heterogeneity that may persists over time and could influence bank board composition. In addition to that, the results in Table 5, regression specification (2) are obtained with standard errors clustered at the country level. Clustering at the country level could be sensible to capture shocks and institutional factors affecting all banks within the same national context. Banks operating in the same country are subject to similar regulatory frameworks, labor market conditions and cultural norms regarding female representation in leadership positions. These shared characteristics could potentially induce correlation in the error terms among banks in the same country. In this regard, regression specification (2) indicates that the results hold if the standard

errors are clustered at country-level for all but the control variable of non-performing loans, where the observed effect is no longer statistically significant. The main variable and effect of interest, the coefficient of the Lerner Index is robust to clustering at country level.

However, the number of countries in the sample is relatively limited compared to the number of banks. Clustering at country level with a small number of clusters can lead to unreliable standard error estimates and potentially biased statistical inference. For this reason, clustering at bank level represents the more statistically reliable approach for the analysis at hand. Country-specific factors are nevertheless accounted for through the inclusion of country-level control variables.

4.2 Listed versus non-listed banks

Table 6 reports the results for sub-groups by listing status, with regression specification (1) including the results for listed banks and specification (2) reporting the results for non-listed banks. As for the sub-group of listed banks, it can be seen that the effect of the Lerner Index on the probability of a bank of having at least 33 percent women on the board of directors is significantly negative at the one-percent level. Calculating the economic effect according to equation (5), holding all covariates at the sample mean, leads to a change in the probability of reaching the 33 percent threshold of -22.71 basis points if market power increases by one standard deviation. This negative effect of a one standard deviation increase in market power is therefore more pronounced in size for the subsample of listed banks, compared to the whole sample (see Table 5, specification (1)).

One possible explanation for this finding could be that increasing market power has a double negative effect on governance reformation in publicly listed banks. The first negative effect may stem from the banks' shareholders, who may predominantly focus on short-term performance, rather than long-term governance changes, like increased board gender diversity. According to the shareholder view, banks should exclusively act in the interest of their shareholders. Hence, the

bank management may favor actions increasing shareholder value over long-term improvements in gender diversity. The second effect may be that in less competitive markets, managers of listed banks are more prone to managerial slack and less inclined to innovate governance structures (Hart, 1983; Giroud and Mueller, 2011).

Turning to regression specification (2), no statistically significant effect of increasing market power on the likelihood of reaching at least 33 percent women on a bank's board of directors can be found. Accordingly, the absence of a significant effect in the sub-sample of non-listed banks may indicate that the effect observed in the full sample (Table 5, regression specification (1)) is largely driven by listed banks.

4.3 Systemically important banks

Table 7 includes the results for the sub-groups of systemically important banks (G-SIBs and O-SIIs) and banks which are not considered systemically important. Starting with regression specification (1), one can see that the negative effect of increasing market power on the likelihood of having at least 33 percent female board directors is reiterated. The effect is statistically significant at the five-percent level, with a calculated economic effect of -23 basis points, indicating that the negative effect of market power is most pronounced for the sub-sample of global systemically important banks (G-SIBs) (Financial Stability Board, 2024) as compared to the entire sample. Moreover, specification (3) displays the results for the sub-sample of other systemically important institutions (O-SIIs). The results reveal a statistically negative effect of increasing market power at the ten-percent level on the likelihood of having at least 33 percent women on the board. The calculated economic effect, holding all covariates at the sample mean, is a decline in the above-mentioned probability of -14.48 basis points if market power increases by one standard deviation. This effect is less pronounced than the effect for G-SIBs but still larger than the effect observed for the entire sample, indicating that increased regulatory scrutiny on "hard facts" such

as capital ratios worsens the negative effect of increasing market power on the individual bank level.

The stronger negative relationship between market power and the Female Ratio 33 for G-SIBs can be explained by several mechanisms. First, lower competitive pressure may weaken incentives to modernize the banks' governance structures, including gender diversity (Mensi-Klarbach et al., 2019). Second, systemically important banks tend to exhibit more firmly established board networks and lower turnover, which could potentially slow the integration of female directors. Third, given that systemically important banks may benefit from implicit government guarantees and greater risk-taking incentives, they may have weaker incentives to adopt more diverse governance structures associated with more intensive monitoring (Adams and Ferreira, 2009; Chen et al. 2018; Baghdadi et al., 2023). Finally, systemically important banks face higher capital requirements than other banks (BCBS, 2018) and hence tend to focus more on reaching or maintaining capital ratios than on non-financial goals like board diversity. This effect is especially pronounced if the market lacks competitive pressure to improve governance practices.

Regression specification (2) and (4) consider sub-samples of banks that are not classified as G-SIBs (specification (2)) and banks that are neither classified as G-SIBs nor as O-SIIs. For these groups, no statistically significant relationship can be observed between increasing market power and the likelihood of reaching a minimum of 33 percent female board membership.

4.4 Quota heterogeneity

Finally, Table 8 reports the results for the two sub-samples of banks headquartered in countries which have introduced gender quotas for board representation (specification (1)) and banks headquartered in countries without such quotas (specification (2)). As specification (1) shows, the effect of increasing market power on the likelihood of having at least 33 percent women on board remains significantly negative. The calculated effect translates to a decline in the

likelihood of 7.79 basis points if market power increases by one standard deviation and is statistically significant at the ten-percent level.

This finding suggests that increases in market power may be particularly detrimental to female board representation in countries where formal quota regulations exist. Prior research shows that binding gender quotas create clear regulatory benchmarks and significantly increase female representation on corporate boards (García et al., 2024). At the same time, competition has been shown to act as a disciplining mechanism on corporate governance, encouraging the adoption of governance practices such as board gender diversity (Giroud and Mueller, 2011). In this context, higher market power may weaken competitive pressure and thereby reduce incentives for banks to actively comply with gender diversity targets. As specification (1) displays, the negative effect of market power seems to outweigh the aforementioned positive relationship between binding regulatory quotas and female representation in countries with formal quota regulations.

This interpretation is further supported by regression specification (2), where no statistically significant impact of higher market power can be observed for banks headquartered in countries without gender quotas. In such environments, the absence of a binding regulatory threshold may imply that changes in market power do not translate into notable adjustments in female board representation. Overall, the results of this sensitivity analysis suggest that regulatory quotas alone may not be sufficient to ensure higher female board representation if competitive market discipline is weak.

5. Summary and implications

This paper empirically investigates the relationship between market power and the likelihood of reaching at least 33 percent female board representation in European banks over the period from 2020 to 2024. The main goal of this research is to investigate whether market pressure

acts as an additional enforcing mechanism of the Gender Balance on Corporate Boards Directive (European Commission, 2025). My baseline analysis initially reveals a significantly negative effect of the Lerner Index on the likelihood of reaching this target for the entire sample of European banks. This result indicates that banking market structure seems to have a substantial influence on enforcing the directive. More specifically, the negative effect of the Lerner Index suggests that a lack of market competition (i.e. higher individual market power) could create a misguided incentive regarding female board representation.

Having a closer look at this relationship, I find that the negative effect of market power on the probability of complying with the directive is stronger for listed banks, compared to non-listed banks. A potential rationale for this finding may be that banks take shareholder scrutiny more into account, and in turn focus more on reaching financial goals and short-term profits, than on long-term gender diversity improvements.

Also, I observe that the negative effect of market power on the likelihood of reaching at least 33 percent women on the board of directors is most pronounced for global systemically important banks. This finding may be due to the fact that increasing market power in G-SIBs is associated with more rigid governance structures and reduced reputational pressure to adapt diversity improvements. Moreover, these banks tend to focus more strongly on meeting the higher capital requirements rather than pursuing non-financial objectives such as board diversity, especially if the markets lack competitive pressure. These results are qualitatively reiterated for banks which are considered to be other systemically important institutions. However, the calculated effect of market power on the likelihood of having at least 33 percent women on board is slightly smaller compared to the sub-sample of G-SIBs.

Finally, an investigation into the existence of gender diversity quotas reveals that higher market power only seems to impact the likelihood of complying with the EU directive, if the country a bank is headquartered in established an adaptation of the directive via any quota. In

contrast, no significant effect could be observed in countries that have not yet translated the directive into national law or any other measure.

The results of this study provide important implications for policymakers, regulators and stakeholders in the banking industry. In particular, my analysis reveals that policymakers and regulators in the EU need to take the enforcement power of market structures into account when setting directives or regulations. Moreover, competition authorities play a crucial role in maintaining a level playing field within the banking industry. In light of the results of this study, they should consider also the potential impact of market power on the banking system, particularly with regard to its long-term implications for governance developments towards gender equality.

References

Abou-El-Sood, H. (2019), "Corporate governance and risk taking: the role of board gender diversity", *Pacific Accounting Review*, Vol. 31 No. 1, pp. 19–42, https://doi.org/10.1108/PAR-03-2017-0021

Adams R.B. and Ferreira, D. (2009), "Women in the boardroom and their impact on governance and performance", *Journal of Financial Economics*, Vol. 94 No. 2, pp. 291–309, https://doi.org/10.1016/j.jfineco.2008.10.007

Adams, R.B. and Kirchmaier, T. (2016), "Women on Boards in Finance and STEM industries.", *American Economic Review*, Vol. 105 No. 5, pp. 277–281, https://doi.org/10.1257/aer.p20161034

Ashenfelter, O. and Hannan, T. (1986), "Sex Discrimination and Product Market Competition: The Case of the Banking Industry", *The Quarterly Journal of Economics*, Vol. 101 No. 1, pp. 149–173, https://doi.org/10.2307/1884646

Baghdadi, G.A., Safiullah, M. and Heyden M.L.M. (2023), "Do gender diverse boards enhance managerial ability?", *Journal of Corporate Finance*, Vol. 79, https://doi.org/10.1016/j.jcorpfin.2023.102364

Bain, J.S. (1956), Barriers to New Competition. Harvard University Press, Cambridge, MA.

Basel Committee on Banking Supervision (BCBS) (2010), "Principles for enhancing corporate governance", Bank for International Settlements, https://www.bis.org/publ/bcbs176.pdf

Basel Committee on Banking Supervision (BCBS) (2018), "Global systemically important banks: revised assessment methodology and the higher loss absorbency requirement", Bank for International Settlements, https://www.bis.org/bcbs/publ/d445.pdf

Baumol, W.J., Panzar, J.C. and Willig, R.D. (1983), "Contestable markets: An uprising in the theory of industry structure: Reply", *The American Economic Review*, Vol. 73 No. 3, pp. 491–496, https://www.jstor.org/stable/1808145

Becht, M., Bolton P. and Röell A. (2011), "Why bank governance is different", *Oxford Review of Economic Policy*, Vol. 27 No. 3, pp. 437–463, https://doi.org/10.1093/oxrep/grr024

Becker, G.S. (1957), "The Economics of Discrimination", University of Chicago Press, Chicago.

Berger, A.N., Kick, T. and Schaeck, K. (2014), "Executive board composition and bank risk taking", *Journal of Corporate Finance*, Vol 28, pp. 48–65, https://doi.org/10.1016/j.jcorpfin.2013.11.006

Bhuyan, S. (2014), "Visiting an old battleground in empirical industrial organization: SCP versus NEIO", *Applied Economics Letters*, Vol. 21 No. 11, pp. 751–754, https://doi.org/10.1080/13504851.2014.887187

Bikker, J.A., Shaffer, S. and Spierdijk, L. (2012), "Assessing competition with the Panzar-Rosse Model: The role of scale, costs and equilibrium", *The Review of Economics and Statistics*, Vol. 94 No. 4, pp.1025–1044. https://doi.org/10.7910/dvn/bycafe

Carbó, S., Humphrey, D., Maudos, J., and Molyneux, P. (2009), "Cross-country comparisons of competition and pricing power in European banking", *Journal of International Money and Finance*, Vol. 28 No. 1, pp. 115–134, https://doi.org/10.1016/j.jimonfin.2008.06.005

Cardillo, G., Onali, E. and Torluccio, G. (2021), "Does gender diversity on banks' boards matter? Evidence from public bailouts", *Journal of Corporate Finance*, Vol. 71, https://doi.org/10.1016/j.jcorpfin.2020.101560

Chen, J., Leung W.S. and Evans, K.P. (2018), "Female board representation, corporate innovation and firm performance", *Journal of Empirical Finance*, Vol. 48, pp. 236–254, https://doi.org/10.1016/j.jempfin.2018.07.003

Claessens, S., Coleman, N. and Donnely, M. (2018), "Low-For-Long" interest rates and banks' interest margins and profitability: Cross-country evidence", *Journal of Financial Intermediation*, Vol. 35 Part A, pp. 1–16, https://doi.org/10.1016/j.jfi.2017.05.004

Claessens, S. and Laeven, L. (2004), "What drives bank competition? Some international evidence", *Journal of Money, Credit and Banking*, Vol. 36 No. 3, pp. 563–583, https://www.jstor.org/stable/3838954

Claessens, S. and Laeven, L. (2005), "Financial dependence, banking sector competition, and economic growth", *Journal of the European Economic Association*, Vol. 3 No. 1, pp. 179–207, https://doi.org/10.1162/1542476053295322

Coccorese, P. (2014), “Estimating the Lerner Index for the banking industry: A stochastic frontier approach”, *Applied Financial Economics*, Vol. 24 No. 2, pp. 73–88, https://doi.org/10.1080/09603107.2013.866202

De Haan, J. and Vlahu, R. (2015), “Corporate Governance of Banks: A Survey”, *Journal of Economic Surveys*, Vol. 30 No. 2, pp. 228–277, https://doi.org/10.1111/joes.12101

Dell’Ariccia, G. (2001), “Asymmetric information and the structure of the banking industry”, *European Economic Review*, Vol. 45 No. 10, pp. 1957–1980, https://doi.org/10.1016/S0014-2921(00)00085-4

De Guevara, J.F., Maudos, J. and Pérez, F. (2005), “Market power in European banking sectors”, *Journal of Financial Services Research*, Vol. 27, pp. 109–137, https://doi.org/10.1007/s10693-005-6665-z

De Larosière, J. (2009), Report by the High-Level Group on Financial Supervision. https://ec.europa.eu/economy_finance/publications/pages/publication14527_en.pdf

European Central Bank (ECB) (2017), “Guidance to banks on non-performing loans”, https://www.bankingsupervision.europa.eu/ecb/pub/pdf/guidance_on_npl.en.pdf

European Commission (2025), “New EU rules to improve Gender Balance in corporate boards enter into application”, https://ec.europa.eu/commission/presscorner/detail/en/ip_25_22

European Commission (2026), “Competition Policy”, https://competition-policy.ec.europa.eu/index_en

Financial Stability Board (FSB) (2024), “2024 List of Global Systemically Important Banks (G–SIBs)”, November 2024.

Forssbæck, J. and Shehzad, C.T. (2015), “The conditional effects of market power on bank risk – cross-country evidence”, *Review of Finance*, Vol. 19 No. 5, pp. 1997–2038. https://doi.org/10.1093/rof/rfu044

García, C., Borrell J.-R., Jiménez, J. L. and Ordóñez-de-Haro, J. M. (2024), “Cartels, board gender composition and gender quotas”, European Journal of Law and Economics, Vol. 58, pp. 283–320, https://doi.org/10.1007/s10657-024-09815-x

García-Meca, E., García-Sánchez, I.-M. and Martínez-Ferrero, J. (2015), "Board diversity and its effects on bank performance: An international analysis", *Journal of Banking and Finance*, Vol. 53, pp. 202–214, https://doi.org/10.1016/j.jbankfin.2014.12.002

Geyfman, V., Cooper, W.A. and Davis, L.M. (2018), "Board Gender Diversity and Bank Performance", *Journal of Business Diversity*, Vol. 18 No. 1, pp. 51–67, https://doi.org/10.33423/jbd.v18i1.518

Giroud, X. and Mueller, H.M. (2011), "Corporate Governance, Product Market Competition, and Equity Prices", *The Journal of Finance*, Vol. 66 No. 2, pp. 563–600, https://doi.org/10.1111/j.1540-6261.2010.01642.x

Gul, F.A., Srinidhi, B. and Ng, A.C. (2011), "Does board gender diversity improve the informativeness of stock prices?", *Journal of Accounting and Economics*, Vol. 51 No. 3, pp. 314–338, https://doi.org/10.1016/j.jacceco.2011.01.005

Hart, O. (1983), "The market mechanism as an incentive scheme.", *The Bell Journal of Economics*, Vol. 14 No. 2, pp. 366–382, https://doi.org/10.2307/3003639

Herfindahl, O.C. (1950), "Concentration in the steel industry", Columbia University.

Hirschman, A.O. (1964), "The Paternity of an index", *The American Economic Review*, Vol. 54 No. 5, pp. 761–762.

Hoang, A. and Wu, Q. (2023), "Could "Lehman Sisters" reduce bank risk-taking? International evidence", *Corporate Governance: An International Review*, Vol. 32 No. 2, pp. 297–321, https://doi.org/10.1111/corg.12530

Huang, T.-H., Liu, N.-H. and Kumbhakar, S.C. (2018), "Joint estimation of the Lerner Index and cost efficiency using copula methods", *Empirical Economics*, Vol. 54 No. 2, pp. 799–822, https://doi.org/10.1007/S00181-016-1216-Z

Joecks, J., Pull K. and Vetter, K. (2013), "Gender diversity in the boardroom and firm performance: what exactly constitutes a "critical mass"?", *Journal of Business Ethics*, Vol. 118, pp. 61–72, https://doi.org/10.1007/s10551-012-1553-6

Kamarudin, K.A., Ariff, A.M. and Ismail, W.A.W. (2021), "Product market competition, board gender diversity and corporate sustainability performance: international evidence", *Journal of Financial Reporting and Accounting*, Vol. 20 No. 2, pp. 233–260, https://doi.org/10.1108/JFRA-01-2021-0020

Kanter, R.M. (1977a), “Men and women of the organization”, New York: Basic Books, pp. 206–242.

Kanter, R.M. (1977b), “Some effects of proportions on group life: Skewed sex ratios and responses to token women”, *American Journal of Sociology*, Vol. 82 No. 5, pp. 965–990, https://doi.org/10.1086/226425

Khalaf, B.A. (2022), “The impact of board diversity on the performance of banks”, *Corporate Governance and Organizational Behavior Review*, Vol. 6 No. 4, pp. 275–283, https://doi.org/ 10.22495/cgobrv6i4sip8

Lerner, A.P. (1934), “The concept of monopoly and the measurement of monopoly power”, *The Review of Economic Studies*, Vol. 1 No. 3, pp. 157–175. https://doi.org/10.2307/2967480

Levi, M., Li, K. and Zhang, F. (2014), “Director gender and mergers and acquisitions”, *Journal of Corporate Finance*, Vol. 28, pp. 185–200, https://doi.org/10.1016/j.jcorpfin.2013.11.005

Liu, C. and Wu, Y.W. (2023), “Gender diversity and bank risk-taking: female directors and executives”, *Managerial Finance*, Vol. 49 No. 5, pp. 761–788, https://doi.org/10.1108/MF-01-2022-0059

Menicucci, E. and Paolucci, G. (2022), “Gender diversity and bank risk-taking: an empirical investigation in Italy”, *Corporate Governance*, Vol. 22 No. 2, pp. 317–339, https://doi.org/10.1108/CG-11-2020-0498

Mensi-Klarbach, H., Leixnering, S. and Schiffinger, M. (2019), „The Carrot and the Stick: Self-Regulation for Gender-Diverse Boards via Codes of Good Governance”, *Journal of Business Ethics*, Vol. 170, pp. 577–593, https://doi.org/10.1007/s10551-019-04336-z

Organization for Economic Co-operation and Development (OECD) (2021), Methodologies to measure market competition, OECD Competition Committee Issues Paper, https://oe.cd/mmmc.

Owen, A.L. and Temescary, J. (2018), “The performance effects of gender diversity on bank boards”, *Journal of Banking and Finance*, Vol. 90, pp. 50–63, https://doi.org/10.1016/j.jbankfin.2018.02.015

Sarhan, A.A., Ntim, C.G. and Al-Najjar, B. (2019), "Corporate Board Diversity, Corporate Governance, and Corporate Performance and Executive Pay", *International Journal of Finance and Economics*, Vol. 24 No. 2, pp, 761–786, https://doi.org/10.1002/ijfe.1690

Sbai, H. and Ed-Dafali, S. (2025), "Gender diversity and risk-taking: evidence from dual banking systems", *Journal of Financial Reporting and Accounting*, Vol. 23 No. 5, pp. 1813–1836, https://doi.org/10.1108/JFRA-07-2022-0248

Shaffer, S. and Spierdijk, L. (2017), "Market power: competition across measures", Bikker, J. and Spierdijk, L. (Eds.), *Handbook of Competition in Banking and Finance*, Edgar Elgar Publishing, pp. 11–26.

Van Leuvensteijn, M., Bikker, J.A., van Rixtel, A. and Sørensen, C.K. (2011), "A new approach to measuring competition in the loan markets of the euro area", *Applied Economics*, Vol. 43 No. 23, pp. 3155–3167. https://doi.org/10.1080/00036840903493

Appendix

Table 1: Notes on variables and data sources

Variable	Description	Data Source
Female Ratio 33	Dummy variable that equals 1 if a bank's ratio of female board members to total board members reaches 33% or more and zero otherwise.	Own calc.
LI	Lerner Index per bank and year. This index measures the mark-up that banks demand from their customers relative to the marginal costs of output. Higher values indicate more market power and thus less competition. Winsorized at the 1st and 99th percentile levels.	Bank Focus (Bureau Van Dijk), own calc.
ROAA	A bank's return on average assets before taxes per year.	Bank Focus (Bureau Van Dijk), own calc.
NPL	Natural log of non-performing loans per bank and year. Higher values indicate a higher risk exposure. Winsorized at the 1st and 99th percentile levels.	
Equity Ratio	A bank's ratio of total equity to total assets per year. Winsorized at the 1st and 99th percentile levels.	
GDP growth	Growth of a country's gross domestic product (GDP) per year.	World Bank's World Development Indicators
Gender Equality Index Power Dimension	The power dimension of the EIGE Gender Equality Index measures gender equality in decision-making positions across political, economic, and social domains for each year and country. It is calculated using indicators on the representation of women and men in key leadership and governance roles, with higher values indicating a more equal power distribution. It is a sub-index of the more general Gender Equality Index with theoretically possible values between 0 and 100 percent.	European Institute for Gender Equality

Table 2: Descriptive statistics

Variable	N	Mean	Std. dev.	Min	Max
Female Ratio 33	1051	0.4186	0.4936	0	1
LI	992	0.9576	0.0610	0.5853	1.0379
ROAA	1059	0.7851	1.3947	–12.2	6.52
NPL	1037	5.7012	2.1166	0.1740	10.0455
Equity Ratio	1054	9.1896	4.0672	3.64	27.18
GDP growth	1100	1.8367	4.5635	–10.94	16.26
Gender Equality Index Power Dimension	1100	48.0430	20.5190	15.7	86.6

Table 3: Correlation matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Female Ratio 33	1.00						
(2) LI	−0.0388	1.00					
(3) ROAA	0.0267	0.1201***	1.00				
(4) NPL	0.1961***	−0.0381	−0.1658***	1.00			
(5) Equity Ratio	−0.0682	0.0380	0.1631***	−0.3863***	1.00		
(6) GDP growth	0.0376	0.0603*	0.0461	−0.0507	−0.0015	1.00	
(7) Gender Equality Index Power Dimension	0.3473***	−0.0232	−0.0674**	0.3344***	−0.2406***	0.0090	1.00

***, **, * indicate statistical significance at the 1%, 5%, and 10% level.

Table 4: Sample composition by country

Country	Number of banks
Austria	10
Belgium	**8**
Bulgaria	**9**
Cyprus	10
Czech Republic	10
Germany	10
Denmark	10
Estonia	**7**
Spain	10
Finland	10
Greece	**6**
Croatia	**3**
Hungary	10
Ireland	10
Italy	10
Latvia	**9**
Lithuania	**4**
Luxembourg	**5**
Malta	**5**
Netherlands	10
Poland	10
Portugal	10
Romania	**8**
Sweden	10
Slovenia	**5**
Slovakia	**5**
∑	220

Table 5: Baseline regressions

	Female Ratio 33 (1)	Female Ratio 33 (2)
LI	**–4.7821*** **(0.077)**	**–4.7821*** **(0.089)**
ROAA	0.6035*** (0.005)	0.6035** (0.011)
NPL	0.2441* (0.094)	0.2441 (0.120)
Equity Ratio	0.0827 (0.249)	0.0827 (0.304)
GDP growth	0.1200** (0.045)	0.1200** (0.013)
Gender Equality Index Power Dimension	0.0956*** (0.000)	0.0956*** (0.000)
Cluster at bank–level	Yes	No
Cluster at country-level	No	Yes
Time dummies	Yes	Yes
No. of. obs.	906	906
No. of groups	207	207
Log pseudolikelihood	–400.8257	–400.8257
Wald chi2	49.98	83.16
Rho	0.8058	0.8058

The Logit random effects panel model estimated is $FemaleRatio33_{it} = \alpha_i + \beta_1 LI_{i,t} + \beta_2 ROAA_{i,t} + \beta_3 NPL_{i,t} + \beta_4$ Equity $Ratio_{i,t} + \beta_5$ GDP $growth_{i,t} + \beta_6$ Gender Equality Index Power $Dimension_{i,t} + \varepsilon_{it}$. The dependent variable equals 1 if a bank exhibits a ratio of at least 33% female directors on its board and 0 otherwise. Regression specification (1) reports the results for the entire sample of banks with standard errors clustered at the bank-level, while specification (2) reports the results for the same set of banks with standard errors clustered at the country-level. Constant term included but not reported. Heteroscedasticity consistent p-values are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level.

Table 6: Listing status

	Listed Banks Female Ratio 33 (1)	Non-Listed Banks Female Ratio 33 (2)
LI	**–17.1466***** **(0.001)**	–2.9917 (0.308)
ROAA	1.1645** (0.015)	0.3819 (0.138)
NPL	0.2430 (0.326)	0.2156 (0.244)
Equity Ratio	–0.0545 (0.787)	0.1309 (0.103)
GDP growth	0.0733 (0.544)	0.1659*** (0.028)
Gender Equality Index Power Dimension	0.1584*** (0.000)	0.0578*** (0.002)
Cluster at bank–level	Yes	Yes
Time dummies	Yes	Yes
No. of. obs.	366	540
No. of groups	82	125
Log pseudolikelihood	–132.7732	–256.6498
Wald chi2	29.05	24.51
Rho	0.8205	0.7628

The Logit random effects panel model estimated is $FemaleRatio33_{it} = \alpha_i + \beta_1 LI_{i,t} + \beta_2 ROAA_{i,t} + \beta_3 NPL_{i,t} + \beta_4 Equity\ Ratio_{i,t} + \beta_5 GDP\ growth_{i,t} + \beta_6 Gender\ Equality\ Index\ Power\ Dimension_{i,t} + \varepsilon_{it}$. The dependent variable equals 1 if a bank exhibits a ratio of at least 33% female directors on its board and 0 otherwise. Regression specification (1) reports the results only for banks listed on a stock exchange, while specification (2) reports the results for the subset of banks that are not listed. Constant term included but not reported. Heteroscedasticity consistent p-values are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level.

Table 7: Systemically Important Banks

	G-SIBs Female Ratio 33 (1)	Non-G-SIBs Female Ratio 33 (2)	OSIIs Female Ratio 33 (3)	Non-OSIIs Female Ratio 33 (4)
LI	**–22.5809**** **(0.013)**	–3.7351 (0.188)	**–10.9203*** **(0.090)**	–3.2495 (0.261)
ROAA	1.5492 (0.391)	0.6414*** (0.004)	0.3610 (0.293)	0.5391** (0.028)
NPL	0.3323 (0.493)	0.2244 (0.152)	0.1445 (0.621)	0.2589 (0.148)
Equity Ratio	–0.1235 (0.652)	0.1159 (0.125)	0.1962 (0.217)	0.0867 (0.321)
GDP growth	0.0167 (0.938)	0.1224 (0.043)	0.1860* (0.071)	0.0547 (0.483)
Gender Equality Index Power Dimension	0.0821** (0.042)	0.0931*** (0.000)	0.0907*** (0.001)	0.0987*** (0.000)
Cluster at bank–level	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
No. of. obs.	112	794	459	447
No. of groups	26	187	111	112
Log pseudolikelihood	–47.4554	–348.6038	–197.0016	–201.7622
Wald chi2	69.71	46.34	35.48	29.08
Rho	0.7093	0.8143	0.8540	0.7546

The Logit random effects panel model estimated is $FemaleRatio33_{it} = \alpha_i + \beta_1 LI_{i,t} + \beta_2 ROAA_{i,t} + \beta_3 NPL_{i,t} + \beta_4 Equity\ Ratio_{i,t} + \beta_5 GDP\ growth_{i,t} + \beta_6 Gender\ Equality\ Index\ Power\ Dimension_{i,t} + \varepsilon_{it}$. The dependent variable equals 1 if a bank exhibits a ratio of at least 33% female directors on its board and 0 otherwise. Regression specification (1) refers to the subset of banks that are considered as global systemically important, while specification (2) reports the results for the subset of banks that are not considered as such. Likewise, specification (3) reports the results of the subset of banks classified as Other Systemically Important Institutions (O-SIIs) and specification (4) reports on banks which are not classified as systemically important at all. Constant term included but not reported. Heteroscedasticity consistent p-values are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level.

Table 8: Quota Heterogeneity

	Countries with Quota Female Ratio 33 (1)	Countries without Quota Female Ratio 33 (2)
LI	**–4.9610***	–5.0909
	(0.099)	(0.218)
ROAA	1.4222**	0.3974
	(0.024)	(0.116)
NPL	0.5534**	0.0944
	(0.019)	(0.671)
Equity Ratio	0.0466	0.1156
	(0.731)	(0.229)
GDP growth	0.3092**	0.0705
	(0.011)	(0.418)
Gender Equality Index Power Dimension	0.1145***	0.0930***
	(0.000)	(0.000)
Cluster at bank–level	Yes	Yes
Time dummies	Yes	Yes
No. of. obs.	370	536
No. of groups	86	121
Log pseudolikelihood	–162.9077	–230.2890
Wald chi2	28.82	23.80
Rho	0.7251	0.8362

The Logit random effects panel model estimated is $FemaleRatio33_{it} = \alpha_i + \beta_1 LI_{i,t} + \beta_2 ROAA_{i,t} + \beta_3 NPL_{i,t} + \beta_4 Equity\ Ratio_{i,t} + \beta_5 GDP\ growth_{i,t} + \beta_6 Gender\ Equality\ Index\ Power\ Dimension_{i,t} + \varepsilon_{it}$. The dependent variable equals 1 if a bank exhibits a ratio of at least 33% female directors on its board and 0 otherwise. Regression specification (1) refers to the subset of banks that operate in countries, which have implemented any kind of gender quota for boards of directors (these countries are: Austria, Belgium, Germany, Spain, France, Greece, Croatia, Italy, Netherlands and Portugal). Consistently, specification (2) refers to banks in all other countries of the EU-27, which have not implemented any gender quota for boards of directors (namely: Bulgaria, Cyprus, Czech Republic, Denmark, Hungary, Ireland, Estonia, Finland, Lithuania, Luxembourg, Latvia, Malta, Poland, Romania, Sweden, Slovenia and Slovakia). Constant term included but not reported. Heteroscedasticity consistent p-values are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level.