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Board Diversity and Financial Fragility: Evidence from European Banks

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ABSTRACT

In the wake of the recent debt crisis in Europe, we investigate the influence of board diversity on financial fragility and performance of European banks. Corporate governance codes in Europe recommend unitary and dual-board systems; therefore, we believe that the influence of board diversity may vary across governance mechanisms and that no other studies have addressed these variations and their influence on financial fragility across European countries. The results show that a critical mass of female representation on both the supervisory board and the board of directors may reduce banks' vulnerability to financial crisis. However, interestingly, we find evidence that female directors on management board are not risk averse. We argue that the degree of risk taking for female directors may vary based on their roles and that female and male executive directors may have the same risk taking behaviour. Our empirical results provide guidelines to the regulators in Europe with respect to the recently approved proposal by the European parliament on female representations.

Keywords: ***Corporate Governance, Corporate Finance, Board Diversity, Board Structure.***

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1. Introduction

World economies have experienced a deep recession due to the global financial crisis. The wave of banks' collapses and scandals in the last decade has fuelled the drive for improved corporate governance. In particular, there has been an increased emphasis on board diversity with the main focus being on gender diversity. The concept of board diversity as a means for improving corporate governance practices in the financial sector has proliferated in recent years following the onset, and the aftermath, of the financial crisis, such that there is a growing intervention by the regulators to implement quotas[1] for corporate boards, a primary example of this approach being that of Norway (Mateos de Cabo et al, 2012).
Recently, the EU Commission (2012) agreed a proposal for a Directive to improve the gender balance of non-executive directors (NEDs) in listed companies by 1 January 2020. The European Parliament overwhelmingly approved proposals that all EU listed companies except small and medium size enterprises (SMEs) should substantially increase the number of women on EU corporate boards by setting a minimum objective that 40% of NEDs should be of the 'under-represented gender', generally women.

There has been an on-going debate in the literature regarding the impact of diversity for many years. Jensen (1993) argued that more diverse boards with different perspectives and varied skills may lead to more efficiency in resource utilisation. The proponents of board diversity argue that diversity brings a variety of backgrounds, skills and perspectives to the boardroom, therefore directors and companies may benefit from these diverse social and occupational experiences in developing new products and strategies (Anderson et al., 2011). On the other hand, the opponents of diversity claim that the cost of diversity – in terms of communication, co-ordination and conflict among directors with different backgrounds - exceeds its benefits (Putnam, 2007).

The existing body of the literature tends to focus more on board diversity for non-financial companies. Adams and Mehran (2012) argue that little is known about board effectiveness in the financial sector as the vast majority of the existing literature tends to exclude financial companies from their samples. Few studies have been conducted on board diversity in the banking sector. Those studies have tended to focus only on one specific country namely US e.g. Muller-Kahle and Lewellyn (2011), Berger et al., (2014) and Pathan and Faff (2013).

In the European Union, corporate governance codes recommend a unitary board system in 8 countries e.g. UK and Sweden and a dual-board system in 10 countries e.g. Germany and Netherlands, though there might be some exceptions[2]. Therefore, we argue that using pooled data from European banks with different governance mechanisms may lead to biased results. No other studies- to the best of our knowledge- have addressed the variations in governance mechanisms as the proportion of female directors may vary between the board of directors in the unitary governance mechanism and the supervisory and management boards within the dual board mechanism. Moreover, our study is timely and has clear policy as the empirical results provide guidelines to the regulators in Europe with respect to the recently approved proposal by the European parliament on female representations. Finally and most importantly, none of the existing studies investigate the influence of board diversity on the financial fragility. We try to fill these gaps in the literature using a unique hand collected dataset from 17 European countries.

In this paper, we investigate the influence of board diversity on both financial fragility and performance using a sample of 99 European banks from 17 countries over the period 2004-2012. We find that beyond a critical mass of 18% and 21% female directors on the board of directors and the supervisory boards respectively, banks' vulnerability to financial crisis is significantly less. However, interestingly, we find evidence that female directors are not risk averse as diversity- financial fragility nexus on management boards is also non-linear but has a U shape relationship and that appointing a female director beyond a critical mass of 24% increases banks' risk. This result is consistent with Adams and Funk (2012) and Farag and Mallin (2016) as they argue that female directors are not risk-averse compared with their male counterparts. We argue that the degree of risk taking for female directors may vary based on their roles and that female and male executive directors may have the same risk taking behaviour. Finally and consistent with the resource dependence theory, we find a positive and significant relationship between the proportion of female directors and financial performance for both the board of directors and the supervisory boards.

The remainder of the paper is structured as follows. The next section discusses the theoretical perspectives deriving board diversity followed by a section on the literature and hypotheses development. We then present the data and the empirical models followed by the results and the robustness tests. Finally, we conclude the paper with a discussion of the main findings and the policy implications.

2. Board Diversity: Theoretical Perspectives

Several theoretical frameworks from different disciplines provide insights into the economic benefits and the influence of board diversity (Carter et al., 2010) e.g. agency, resource dependence, human capital, and social psychology theories. Agency theory assumes that a higher proportion of independent NEDs may lead to a better monitoring function of the board. Therefore, boards should include the appropriate mix of experience and backgrounds to better exercise their monitoring role and to evaluate management and assess business strategies (Hillman and Dalziel, 2003 and Adams and Ferreira, 2009). Female representation on the board may improve the board's monitoring role and this may lower agency costs (Carter et al., 2003; Hillman and Dalziel, 2003; Farag and Mallin, 2016). Carter et al. (2003) and Carter et al. (2010) argue that more diverse boards with different backgrounds are more independent and thus provide a better monitoring role. Nonetheless, agency theory does not provide strong support for the link between board diversity and financial performance (Carter et al., 2003). According to the resource dependence theory, the presence of female directors on the board brings different benefits and resources to the company (Carter et al., 2010). Moreover, females bring forward new opinions and perspectives that would not otherwise be demonstrated if the board were to be homogeneous, and this may improve financial performance (Mateos de Cabo et al., 2012). Therefore, the resource dependence theory provides the foundation and convincing theoretical argument with regard to board diversity and suggests that diverse boards have a broader range of more talented and well-connected directors. Moreover, board diversity per se may send a positive signal to the labour market (Carter et al., 2010).

Furthermore, different types of directors provide different experiences, backgrounds and different human capital which may lead to a higher ability to address different environmental dependencies (Hillman et al., 2000). Human capital theory states that directors with different experiences, sets of skills and educational backgrounds may lead to more diverse boards and thus benefit the overall performance of the company (Terjesen et al., 2009). Moreover, more diverse boards with different perspectives and varied skills may lead to more efficiency in resource utilisation (Jensen, 1993), better management quality (unique human capital) and hence better financial performance (Terjesen et al., 2009). Therefore, human capital theory

complements the resource dependence theory in that board diversity may influence companies' financial performance (Carter et al., 2010).

According to contingency theory, internal and external circumstances are one of the main determinants of human capital and hence the influence of gender diversity on financial performance may vary based on companies' internal and external environments (Adams and Ferreira, 2009). On the other hand, the social psychological concept of minority status, which is derived from social impact theory, states that majority status groups have a remarkable influence on the decision making process (Carter et al., 2010). Therefore females, being usually in the minority on diverse boards, may not have the power to influence the board as the result of the internal group dynamics of the board (Westphal and Milton, 2000). Moreover, more diverse boards may lead to more conflict and diverse opinions which make the decision making process time-consuming and less effective (Campbell and Vera, 2008, Lau and Murnighan, 1998 and Carter et al., 2010).

Drawing on the critical mass theory of Kanter (1977a, 1977b), Joecks et al (2013) argue that the skills that female directors (minority) may bring into the group are not the main determinant of board composition unless a critical mass of female directors has been appointed[3]. Kogut et al (2014) argue that female quotas might create a critical mass of female directors to tip the equilibrium to structural equality defined as "*the degree to which women directors are connected without relying upon male intermediaries".*

3. Literature Review and Hypotheses Development

3.1 Board Diversity in the Banking Industry

The literature on corporate governance, and board diversity in particular, is limited for financial institutions. The existing literature has tended to focus on the influence of board diversity on non- financial companies. Therefore, relatively little is known about the influence of board diversity in financial institutions (Adams and Mehran, 2012). However, there have been a few studies which have focussed on the impact of board diversity in the banking industry; these studies have tended to focus on the US; see for example Richard (2000); Adams and Funk (2012); and Hagendorff and Keasey (2012). Board diversity in the European banking sector has received scant attention except for the studies by Mateos de Cabo et al, (2011 and 2012). Moreover, no other studies-to the best of our knowledge - have

addressed the variations in governance mechanisms across European countries. Therefore, we believe that there remains a gap in the literature regarding the influence of board diversity on financial fragility and performance in European banks.

3.2 Board Diversity and Financial Fragility

World economies have experienced a deep recession due to the global financial crisis 2007-2008. The crisis hit Europe by the contagion effect and concerns were raised about the financial fragility of various financial institutions. Subsequently, a large number of financial institutions collapsed or were bailed out by governments during the global financial crisis e.g. RBS and HBOS in the UK; Dexia, Fortis, Hypo Real Estate and UBS in continental Europe (Ivashina & Scharfstein, 2010 and Erkens et al., 2012). Grove et al. (2011) define financial fragility as a bank's vulnerability to a financial crisis measured by Loan quality measures e.g. Non-Performing Assets (NPA). Beltratti and Stulz, (2012) use other measures of financial fragility e.g. the percentage of liquid assets to total assets. They argue that banks with more liquid assets will be in a better position to cope with financing difficulties. Moreover, earlier Eng and Nabar (2007) used the percentage of loan loss reserve to gross loans as an alternative measure of financial difficulties.

The stereotype that women are more risk averse than men may explain the low proportion of females sitting on the banks' boards (Sunden and Surette, 1998). Moreover, this stereotype is the main reason for the "Glass Ceiling" on the corporate promotion ladder in banks (Mateos de Cabo et al., 2012). Adams and Ferreira (2009) argue that boards of directors tend to be more homogeneous and less diverse when companies are operating in riskier environments. Therefore, there might be less likelihood of hiring female directors in banks due to the high financial risk associated with this industry. Moreover, firms with more gender diverse boards have been found to be less involved in sub-prime lending (Muller-Kahle and Lewellyn, 2011).

Furthermore, female CEOs might be seen as more risk averse compared with their male counterparts as they may rely on less leverage (Graham et al., 2013), less long-term debt, and their companies have less earning volatility, higher survival rate (Faccio et al., 2016) and less involved in acquisitions (Huang and Kisgen, 2013). Female CEOs also used to exercise their share options early compared with their male counterparts (Huang and Kisgen, 2013). Arun et al (2015) find that the higher the proportion of female independent directors the more

restrained earnings management practices in the UK. Sila et al (2016) find that unobserved company heterogeneity may derive the negative gender–risk relation.

Adams and Funk (2012) find that female and male directors have substantial differences with respect to their risk attitude. This might be due to the belief that women may not perform well in less competitive environment (Gneezy et al., 2003 and Niederle & Vesterlund, 2007). Consistent with the existing literature, Adams and Funk (2012) find that female directors are more benevolent and universally concerned but less power oriented than male directors. However, Adams and Funk (2012) show that some of the "typical" population gender gaps appear to reverse for directors, in Sweden, since female directors are found to be more open to change and less risk-averse than their male counterparts. Therefore, appointing a female director need not lead to less risk-averse decisions as female directors are more risk-loving than male directors (Adams and Funk, 2012).

Mateos de Cabo et al., (2012) find that the proportion of female directors in boardrooms is higher for lower-risk banks; in addition, banks with a growth orientation are more likely to appoint female directors. The above discussion shows that the findings of the existing literature support the negative relationship between board diversity and the attitude towards risk. To the best of our knowledge, there are no other studies that investigate the influence of diversity on financial fragility in European banks. Therefore, based on the above discussion we formulate our first hypothesis:

H1: There is a negative relationship between the proportion of female directors and bank's financial fragility.

3.3 Board Diversity and Financial Performance

The board diversity-financial performance nexus has been investigated in the academic literature for non-financial companies, however, there is mixed evidence and no real agreement on the impact of board diversity on firm performance.

This could be due to the discrepancies in sample sizes, time periods, and industries in addition to the econometrics problems e.g. endogeneity. The diversity- performance nexus is more problematic when quotas are applied due to some methodological issues e.g. the exact date of the quota event, the choice of control group in the context of experimental studies,

sample selection and the influence of other confounding effects e.g. other governance-related reforms (Ferreira, 2015). Moreover, there is no formal theory that interprets the diversity-performance nexus for financial companies therefore the existing literature largely relies on the results of the empirical studies of non-financial companies (Pathan and Faff, 2013).

A few studies find no positive impact of board diversity on financial performance. Randøy et al. (2006) investigate the impact of gender, age and ethnic diversity on the financial performance of the top 500 companies in Denmark, Norway and Sweden and find no significant impact on companies' financial performance. Similarly, Farrell and Hersch (2005) and Francoeur et al. (2007) find that more gender diverse boards have no impact on company performance in the US and Canada respectively. However, Ryan and Haslam (2005) find that during a period of poor market performance, companies who appointed female directors had tended to have negative performance during the preceding five months compared with companies who appointed male directors.

Moreover, Adams and Ferreira (2009) find that female directors have an overall negative effect on firm performance in the US although they enhance the overall effectiveness of the board. On the other hand, a large strand of the literature finds that there is a positive influence of board diversity on financial performance, mostly in the US; see for instance, Erhardt et al. (2003); Miller and Triana (2009) in addition to Campbell and Vera (2008) in Spain. The latter study highlights that the causal relationship between these two endogenous variables runs from board diversity to financial performance. Moreover, the diversity-performance nexus can be partially mediated by both innovation and company reputation (Miller and Triana (2009).

There have been relatively few studies that investigate the relationship between board diversity and financial performance in the financial sector. Pathan and Faff (2013) study large US bank holding companies over the period 1997-2011 and find that pre-Sarbanes-Oxley (SOX), i.e. 1997-2002, gender diversity improves bank performance; however this positive effect declines post-SOX (2003-2006) and the financial crisis (2007-2011) periods respectively. Kim and Starks (2016) find that directors' heterogeneity and the proportion of female directors in particular result in higher company valuation. Similarly, Bantel and Jackson (1989) find that innovative banks are characterised by heterogeneous boards and this

facilitate decision making process. Board diversity in the financial sector is also found to have a positive influence on corporate social performance (Siciliano, 1996); and company's competitive advantage (Richard, 2000). Moreover, positive announcement returns to mergers are reported by more occupationally diversified boards (Hagendorff and Keasey, 2010 and 2012).

We believe that board diversity creates both costs and benefits to companies. Drawing on the resource dependence and the human capital theories, we believe that female directors may bring to the board different backgrounds, experience and opinions and this may lead to better financial performance. Therefore, we expect that more diverse boards may have better financial performance if the benefits of diversity - in terms of better advisory and monitoring roles - exceed the costs of communication and conflict between managerial levels. Based on the above discussion we formulate our second hypothesis:

H2: There is a positive relationship between the proportion of female directors and bank's financial performance

4. Methodology

4.1 Data and Sample

We hand collect data on board diversity, financial fragility, financial performance and governance characteristics for a sample of listed and private European banks over the period 2004-2012. We constrain our sample to banks located in the EU as they are broadly subject to similar regulatory and governance backgrounds. Our sample also includes banks operate in Switzerland as part of the single market. Swiss banks are the most widely regarded in Europe as they have unique reputation in banking sector globally. Our main source is the "The Bankers top 1000 World Banks" report which includes financial institutions from all over the globe from 6 continents. The total number of banks included in the report from EU countries and Switzerland is 223 banks. We exclude EU courtiers with less than 2 banks e.g. Bulgaria, Hungary, Malta, Slovakia and Luxemburg (11 banks). To be consistent with the literature we exclude credit institutions and real estate and mortgage banks due to the differences in their operating structures (58 institutions.) Moreover, we excluded 55 banks with missing data either from Bankscope, Thomson One Banker and Datastream databases or the annual reports and the websites of the respective banks. Thus our final sample is 99 banks [4]. Our sample banks is located in 17 countries namely Austria, Belgium, Denmark, Finland, France, Germany, Greece, Cyprus, Italy, Ireland,

Netherlands, Poland, Portugal, Spain, Sweden, Switzerland, and the UK[5]. We excluded Norway as it introduced a compulsory gender quota for listed companies in 2008 by which the percentage of female NEDs sitting on the board had to be at least 40%. Moreover, Norway is not a member state in the EU[6].

Our sample includes both board structures, i.e. unitary and dual boards Therefore, we classify our sample into 53 banks with unitary boards and 46 dual board banks for which a complete set of information is available. Our dataset is unbalanced panel data and consists of 462 and 393 bank-year observations for unitary and dual board structures respectively over the period 2004-2012. We measure gender diversity by the percentage of female directors sitting on the board[7]. Moreover, as the appointment of additional female directors may enhance financial performance or reduce risk, we use the squared percentage of female directors as an independent variable in the estimation. We define financial fragility as a bank's vulnerability to a financial crisis. Grove et al. (2011) use Non-Performing Assets (NPA) ratio as a measure of financial fragility. NPA ratio is calculated by dividing the level of non-performing assets to total loans. Grove et al. (2011) argue that loan quality measures e.g. NPA are often used by rating agencies to assess the overall ratings of the banks and are considered to be an essential credit quality measure with respect to the banks' lending practices. However, we use a stricter measure of banks' financial fragility namely the ratio of impaired loans to gross loans. Moody's rating agency argue that impaired loans are a better measure of asset quality than non-performing assets, as they are more comprehensive, globally comparable, and less prone to regulatory discretion[8]. Other measures of financial fragility are also used as a robustness check e.g. NPA ratio, the percentage of liquid assets to total assets following Beltratti and Stulz, (2012) who argue that banks with more liquid assets will be in a better position to cope with financing difficulties. We also use the percentage of loan loss reserve to gross loans as an alternative measure of financial fragility following Eng and Nabar (2007).

We use the return on total assets (*ROA*), and return on equity (*ROE*) as measures of a bank's financial performance. We calculate *ROA* as net income divided by the average of the two most recent years of total assets, while we define *ROE* as net income divided by the average of the two most recent years of total equity. We also use the interest rate margin as an alternative proxy for banks financial performance. Interest rate margin is the ratio of net interest revenue divided by total earning assets. This study incorporates a comprehensive set of bank-specific characteristics to control for bank and country heterogeneity. We control for

governance characteristics proxied by board size, board independence and CEO/chair duality. We measure the board of directors' size and both supervisory and management board size by the total number of board members. We also control for board independence by using the percentage of independent non-executive directors sitting on the board of directors and the supervisory board. We believe that board independence may have a positive impact on diversity and that more independent boards are more likely to embrace diversity. Moreover, combining the roles of CEO/Chair for unitary boards might be seen as an indication of power vested in a single individual and hence lead to less diversity. CEO/Chair duality is defined by a dummy variable equal to 1 where the roles of the CEO and Chairman are conducted by the same person, and zero otherwise.

We argue that larger banks tend to have larger boards and are expected to have more diverse boards (Andres and Vallelado, 2008; Aebi et al., 2012). Therefore, we control for bank size, defined by the natural logarithm of total assets in euros. We also control for bank age defined as number of years since the bank's foundation. Moreover, we control for whether the bank is listed or privately held by creating a dummy variable which takes the value of 1 for private banks and 0 otherwise.

Furthermore, we control for the total capital ratio as a regulatory requirement in banking sector. Moreover, to address the differences in legal environments, we create a dummy variable that takes the value of 1 if a bank's headquarter is located in a common law country and 0 otherwise. We also use Hofstede's culture framework (2001) to control for the cultural differences across EU countries. We use the individual cultural dimensions of Hofstede (2001) separately and presented the results using the Power Distance dimension (Frijns et al., 2016 and Aggarwal and Goodell, 2009). Moreover, we control for bank internationalisation following the study Ekman et al (2014) by creating a dummy variable that takes the value of 1 if a bank has overseas branches and 0 otherwise.

We use The Bank Regulation and Supervision Survey, carried out by the World Bank formulated in 2003, 2007, and 2012. This is a unique survey on how banks are regulated and supervised for 143 jurisdictions around the world. The survey includes questions on banking regulations and supervision including disclosure and enforcement dimensions. There are 32 and 20 Yes/No questions on disclosure and enforcement respectively. Therefore, we

developed two indices namely disclosure and enforcement by creating dummy variables take the value of 1 if the answer to a question is yes and 0 otherwise. The sum of each dummy is the disclosure and enforcement indices respectively[9]. We also control for the macroeconomic indicators by using the natural logarithm of country's GDP in euros. Finally, country and year dummies are used to capture country and time heterogeneity respectively.
Table 1 presents a description for the variables used in the empirical analysis.

Insert Table 1 about here

4.2 Endogeneity

There has been a long debate in the empirical literature about the endogeneity between board diversity and financial performance and in particular their causal relationship. Endogeneity results in biased and inconsistent coefficients and this makes statistical inference virtually impossible (Wintoki et al, 2012). The existing body of the literature has investigated two main sources of endogeneity namely unobservable heterogeneity and simultaneity (reverse causality) e.g. the causality between board diversity and financial performance; see for example Adams and Ferreira (2009); Carter et al (2010) and Pathan and Faff (2013). Researchers usually use static panel data (fixed effects model) to control for company heterogeneity and any other unobservable company characteristics that may drive the results[10] (e.g. managerial ability); see for example Adams and Ferreira (2009).

Wooldridge (2002) argues that in the case of a dynamic nature of independent variables (e.g. gender diversity) and a past dependent variable (e.g. *ROA*), the fixed effects model may be biased. Wintoki et al (2012) claim that the dynamic nature of the governance-performance nexus is a potential source of endogeneity. They argue that the current governance characteristics (e.g. board size and independence) are a function of past financial performance and ignoring this link may have serious consequences for statistical inference. Hermalin and Weisbach (1998) argue that higher past financial performance leads to higher CEO ability and bargaining power and this may lead to less board independence. We agree with Hermalin and Weisbach (1998) and argue that higher past financial performance/ fragility may also result in less diverse boards when the CEO has greater bargaining power.

4.3 Empirical modelling

To overcome the above econometrics problems and to capture the alternative possible sources of endogeneity, we use a dynamic panel data model namely the two-step system GMM. Moreover, as a robustness check, we also estimate the fixed effects models. The system GMM combines in a system the equation in first-differences with the same equation expressed in levels as in equations 1, 2 and 3 respectively.

$$FF_{it} = \alpha_0 + \theta FF_{i.t-1} + \omega BD_{i.t} + \eta FP_{it} + \beta' x_{it} + \pi_i Year_t + v_i + \varepsilon_{it} \quad (1)$$

$$FP_{it} = \alpha_0 + \eta FP_{i.t-1} + \omega BD_{i.t} + \theta FF_{it} + \beta' x_{it} + \pi_i Year_t + v_i + \varepsilon_{it} \quad (2)$$

$$BD_{it} = \alpha_0 + \eta BD_{i.t-1} + \eta FP_{i.t} + \theta FF_{it} + \beta' x_{it} + \pi_i Year_t + v_i + \varepsilon_{it} \quad (3)$$

Where, FF is bank financial fragility, FP is bank financial performance, BD is bank board gender diversity, x_{it} is a $1*k$ vector of corporate governance characteristics (board size, independence, CEO power), loan quality and other control variables in addition to bank-and country-specific effects. β'_1 is a $1*k$ vector of parameters to be estimated, v_i is the panel unobservable heterogeneity (which may be correlated with the covariates), and ε_{it} is independent and identically distributed (i.i.d.) over the whole sample with variance σ_ε^2. v_i and ε_{it} is assumed to be independent for each *i* over all *t*. We use the adjustment for small samples introduced by Windmeijer (2000) to improve the robustness of our results and to avoid any potential bias in the estimated asymptotic standard error.

We use lagged levels instruments for the regression in differences, and lags of the first-differenced variables for the equation in levels. Therefore, we use three lags of financial performance, financial fragility, board size, board independence, and the proportion of female directors as instruments in the equation in first-differences, and two lags of their difference as instruments in the equation in levels (Andres and Vallelado, 2008; and Wintoki et al., 2012). Roodman (2009) and Wintoki et al. (2012) claim that it may be possible to use a set of historical values of suspect endogenous variables as a valid internal instrument to control for simultaneity and other sources of endogeneity and this eliminates the need for external instruments[11] (Wintoki et al., 2012). We carry out rigorous tests to assess the validity of the orthogonality assumptions and the strength of our instruments. We calculate the Arellano and

Bond test for first- and second-order autocorrelation with a null hypothesis of no autocorrelation. Rejecting the null in the first-differenced errors for the second or higher order suggests that the moment conditions used are not valid (Roodman, 2009).

To test for the over-identifying restrictions, we report the Hansen test results. The null hypothesis associated with the Hansen test is that the instruments are exogenous. Insignificant values for the Hansen test indicate that the instruments are adequate and that the model is correctly specified. Finally, as the residuals may be correlated across banks and across time and therefore the standard errors can be biased, we estimate, following Roodman (2009), clustered standard errors to produce more robust, reliable and unbiased coefficient estimates.

5. Empirical Results

Table 2 presents the descriptive statistics of the pooled sample for the main variables used in the empirical analysis. We present in Panels A and B the descriptive statistics for the unitary and the two tier board banks respectively. The figures presented in Panel A show that the average proportion of female directors ranges from 0 % to 58.3% with an average of 10% across the unitary boards sample. The average *ROA* is 0.28% and ranges from -22.4% to 9.7%, while the average impaired loans to gross loans is 5.7% with standard deviation of 3.7% and ranges from 0.05% to 62.4%. Table 1 also shows that the mean value of the board of directors' size is 14.7 directors with a standard deviation of 4.4 and a range from 4 to 31 directors during the period of study. The average proportion of the independent non-executive directors across the sample is 46.4% with a standard deviation of 20.9% and the CEO/Chair duality prevails in 3.5% of our sample. Furthermore, the average capital ratio is 12.2% and 72% of the banks has international branches. Finally, 19.3% of the sample banks are privately held while the average bank age across the sample is 100 years.

Insert Table 2 about here

Figure 1 presents the average proportion of female directors sitting on European banks with unitary boards over the period 2004-2012 by country. We notice that Sweden has the highest proportion of female directors of 34.4% followed by Finland and France with average proportions of female directors of 22.2% and 17.5% respectively. However, Cyprus, Greece,

Italy and Portugal have the lowest proportions of female directors of 4.4%, 4.3%, 3.6% and 3.3% respectively. Figure 2 presents the average proportions of female directors in European banks with unitary boards from 2004-2012 and shows that the average female representation increased from 7.6% in 2004 to 15.3% in 2012.

Insert Figures 1 and 2 about here

Panel B of Table 1 shows the descriptive statistics for the two-tier board sample banks. We notice that the average proportions of female directors sitting on the supervisory and management boards are 13.1% and 3% respectively. We also notice that the financial performance of dual board banks on average is relatively higher than those of their unitary board counterparts as the average *ROA* is 0.57% and ranges from -2.5% to 2.9%, while the average impaired loans to gross loans is 5.3% with a standard deviation of 10.44% and ranges from 0.03% to 73.2%. Panel B also shows that the average size of the supervisory board is 12.6 directors with a standard deviation of 5.6% and ranges from 4 to 29 directors. However, the average size of the management board is remarkably much lower with 5.3 directors with a maximum of 16 directors during the period of the study. Moreover, the average proportion of the independent non-executive directors across the supervisory boards is 68% with a standard deviation 18.7%. The average capital ratio as the regulatory requirement is 14.11% and 65% of the banks with dual boards has overseas branches. Finally, 29.5% of the sample banks are privately held while the average bank age across the sample is 79.4 years.

Figure 3 presents the average proportions of female directors on the supervisory and management boards over the period 2004-2012 by country. We notice that the average proportion of female directors on the supervisory board is much higher than those on the management board across all countries. Germany has the highest female representation on the supervisory board of 18.6% followed by Denmark and Austria with average proportions of females of 16.3% and 15.4% respectively. On the other hand the lowest female representation is found in Italy and Portugal with averages of 3.5% and 2% respectively. Moreover, Figure 3 shows that Austria has the highest female representation on the management board (6.3%) while there are no female directors sitting on the management board in Portugal. Figure 4 presents the average proportion of female directors sitting on each of the supervisory and management boards over the period 2004-2012. Figure 4 shows that the proportion of female

directors on the supervisory board increased from an average of 11.5% in 2004 to 15.8% in 2012. Moreover, we notice that there is a modest increase in the proportion of female directors on the management board from 2.6% in 2004 to 3.7% in 2012. We also notice that the proportion of female directors on the supervisory board is higher than those sitting on the board of directors. To sum up, Table 3 presents a cross country analysis for board structure and diversity for the unitary and dual board sample banks over the period of study.

Insert Figures 3 and 4 and Table 3 about here

Tables 4 and 5 present the correlation matrixes for the main variables used in the empirical analysis for the unitary and dual board sample banks respectively. The results show that there is no evidence of multicollinearity.

Insert Tables 4 and 5 about here

Table 6 presents the results of the system GMM estimator for the influence of female directors on EU banks' financial fragility as defined in Equation 1. Panels A and B present the results for the unitary and dual board respectively.

Insert Table 6 about here.

The results presented in Table 6 reject the null hypothesis that lagged endogenous variable (impaired loans to gross loans) is zero in Panels A and B for the unitary and dual board banks respectively. This implies rejection of a static panel data model in favour of a dynamic model. The results of Model 1 show that there is a positive but insignificant relationship between the proportion of female directors and the ratio of impaired loans to gross loans as a proxy for bank's financial fragility.

However, given the low proportion of female representation on boards and drawing on the critical mass theory of Kanter (1977), we believe that appointing a critical mass of female directors may have an influence on financial fragility. Therefore, we control for the quadratic term of the proportion of female directors as presented in Model 2. We find that, the diversity-financial fragility relationship is non-linear and has an inverted U shape. This suggests that female directors apparently have a positive impact on banks' financial fragility.

However, appointing a female director beyond a critical mass of 18% may reduce banks' vulnerability to financial crisis[12]. This result is consistent with Mateos de Cabo et al, (2012) and Jianakoplos and Bernasek (1998) as they argue that female directors tend to be more risk averse and this stereotype of being risk averse is the main reason for the "Glass Ceiling" on the corporate promotion ladder. Based on the above discussion we cannot reject our first hypothesis when a critical mass of female director has been appointed in banks with unitary boards.

With respect to dual boards' banks, the results presented in Model 3 show that there is a positive but insignificant relationship between the proportion of female directors on the supervisory board and the ratio of impaired loans to total loans. Moreover, consistent with the results for the unitary boards, we find that diversity-financial fragility relationship is non-linear and has an inverted U shape as the coefficient on female directors on supervisory boards is positive and highly significant while its quadratic term is negative and highly significant as presented in Model 4. This suggests that beyond a critical mass of 21%, appointing an additional female director may reduce banks' vulnerability to financial crisis. Again, this result is consistent with Mateos de Cabo et al, (2012) and Jianakoplos and Bernasek (1998).

On the other hand, we find an insignificant relationship between the proportion of female directors on the management boards and banks' financial fragility. However and interestingly, when we control for the quadratic term of the proportion of female directors on the management boards as in Model 4, we find that the coefficient on the proportion of female directors is negative and highly significant however, its quadratic term is positive and highly significant. This suggests that diversity- financial fragility nexus on management boards is non-linear and has a U shape. This also implies that beyond a critical mass of 24%, appointing an additional female director increases banks' risk. This result is consistent with the study of Adams and Funk (2012) in which they argue that female directors are more open to change compared with their male counterparts. Therefore, appointing a female director need not lead to less risk-averse decisions as female directors are more risk-loving than male directors (Adams and Funk, 2012).

The above results are interesting, as we argue that the degree of risk taking behaviour for female directors may vary based on their roles. Global statistics shows that female directors

are mainly appointed as NEDs and/or INEDs on either board of directors or supervisory boards. Table 1 shows that the proportion of female directors on supervisory and management boards are 13% and 3% respectively. Therefore, we argue that female executive directors may have the same risk taking behaviour as their male counterparts. Based on the above results we cannot reject our first hypothesis when a critical mass of female directors has been appointed in the supervisory board. However, we reject our first hypothesis with respect to management boards when a critical mass of female directors has been appointed. Finally, the tests regarding serial correlation reject the absence of first order, but not second order serial correlation. The models are well specified as the Hansen test does not reject the over-identifying restrictions.

Table 7 presents the results of the system GMM estimator for the influence of female directors on EU banks' financial performance as defined in Equation 2. Panels A and B present the results for the unitary and dual board respectively.

Insert Table 7 about here.

The results presented in Table 7 reject the null hypothesis that lagged endogenous variable (*ROA*) is zero in Panels A and B. This implies rejection of a static panel data model in favour of a dynamic model. The results presented in Model 1 show that there is a positive and significant relationship at the 5% level between diversity and financial performance of unitary board banks. This suggests that the higher the proportion of female directors the higher the bank's financial performance. Kandel and Lazear (1992) and Anderson et al. (2011) argue that operationally complex companies may benefit from more diverse boards as the different perspectives and viewpoints of board members lead to better monitoring benefits for the shareholders and a stronger advisory role for managers. In Model 2, we estimate the effect of appointing an additional female director on financial performance. Drawing on the critical mass theory of Kanter (1977), Joecks et al (2013) argue that the influence of female directors is not the main determinant of board composition unless a critical mass of female directors has been appointed. Therefore, we expect that diversity-performance relationship might be non-linear and appointing a critical mass of female directors may have an influence on financial performance.

Interestingly, when we control for the quadratic term of the proportion of female directors in Model 2, we find that there is a positive and significant relationship at the 5% level between boards' gender diversity and banks' financial performance. Moreover, we find a negative and significant (P<5%) relationship between the quadratic term of the proportion of female directors and financial performance. This implies that the performance-diversity relationship is non-linear and has an inverted U shape; meaning that appointing up to 21% female directors may increase financial performance after which appointing an additional female director may result in a decrease in financial performance[13].

This result is consistent with those presented in Table 6 as appointing additional female directors may lead to lower risk and hence lower financial performance. Furthermore, Lang (1986), Arrow (1998), Putnam (2007), O'Reilly et al. (1989) find that diversity may cause communication problems and increases the inter-group conflicts and this may lead to lower financial performance. Our result is also consistent with Carter et al. (2010) who argue that, according to contingency theory, the net effect of gender diversity can be either positive or negative from a financial performance perspective. Based on the above results we reject our second hypothesis when a critical mass of female director has been appointed in banks with unitary boards.

With respect to dual boards, the results presented in Panel B show that there is a positive and significant (P<5%) relationship between the proportion of female directors on supervisory boards and banks' financial performance as in Model 3. This suggests that the higher the proportion of female directors the better the financial performance. This result is consistent with the resource dependence theory and human capital theory. However, we find that the coefficient on the quadratic term of female directors on the supervisory board is negative and highly significant as in Model 4. This suggests that the diversity-performance relationship is non-linear and has an inverted U shape and that appointing an additional female director beyond a critical mass of 23% may reduce the financial performance.

By contrast for management boards, we find that diversity-performance has a U shape relationship and appointing an additional female director beyond a critical mass of 27% may have a positive impact on financial performance as presented in Model 4. The above results are consistent with Lang (1986), Arrow (1998), Putnam (2007), O'Reilly et al. (1989).

Moreover, it is consistent with our arguments regarding the degree of risk attitude of female directors on management boards. Based on the above discussion we reject our second hypothesis when a critical mass of female directors has been appointed in supervisory board. However, we cannot reject our second hypothesis with respect to management boards beyond a critical mass of female directors. Finally, the tests regarding serial correlation reject the absence of first order, but not second order serial correlation. The models are well specified as the Hansen test does not reject the over-identifying restrictions.

Table 8 presents the results of the system GMM estimator for the main determinants for the proportion of female directors on EU banks as defined in Equation 3. Panels A, B and C present the results for the board of directors (unitary board), supervisory and management boards (dual boards) respectively.

Insert Table 8 about here.

Again, the results presented in Table 8 reject the static panel data model in favour of a dynamic model. In Panel A, we find a negative but insignificant relationship between banks' financial fragility and the proportion of female directors. On the other hand, the results show that there is a negative and significant ($P<5$) relationship between financial performance and the proportion of female directors on European banks with unitary boards. This may imply that the higher the financial performance the lower the board diversity.

We agree with Adams and Ferreira (2009) that diverse boards are likely to be associated with stronger governance characteristics. Looking at our results in Model 1, we find a positive and significant (P<5%) relationship between both board size and independence and the proportion of female representation on the board of directors. This suggests that female directors are likely to be appointed in larger and more independence boards. This result is consistent with Brammer et al. (2007) and Conyon and Mallin (1997) as they find that larger boards and boards with a higher proportion of NEDs are more likely to have a higher percentage of female directors.

With respect to the main determinants of the female representation on supervisory boards, the results presented in Model 2 are similar to those of the board of directors presented in Model

1 and thus board size and independence are the main determinants for the proportion of female directors. Moreover, we find that big banks tend to have higher proportion of female directors compared with smaller banks. Furthermore, the results show that there is a positive and significant relationship between power distance index and female representation on the supervisory board. The index is concerned with the expectations of less powerful members in a society with respect to equal distribution of power. This suggests that in countries with dual board banks people accept a hierarchical order in which everybody has a place and the power is distributed equally (Hofstede, 2001).

With respect to the main determinants of female representation on management boards, we find a negative and highly significant relationship between banks' financial fragility and the proportion of female directors on management boards. This suggests that the higher the banks' financial fragility the lower the proportion of female directors. This may imply that banks with higher risk and more vulnerability to financial crisis (e.g. due to the poor loan quality) are likely to be associated with less diverse management boards. This may also suggest that high risk and more financially fragile banks are less likely to appoint female directors and this due to the belief that females are more risk averse and would tend not to condone more risky decisions. We also find a positive and highly significant relationship between financial performance and the female representation on management boards.

Moreover, we find a negative and highly significant relationship between management board size and gender diversity. This result is consistent with Adams and Ferreira (2009) as they argue that boards tend to be more homogeneous and less diverse when companies are operating in riskier environments. Table 2 shows that the average proportion of female directors on management board is 3% and this suggests that management boards are maily homogenous and male dominated. Adams and Ferreira (2007) also argue that in riskier environments homogeneous boards may reduce monitoring process as board heterogeneity may be considered as a potential source of conflict and difficulties in decision making. Furthermore, the results also show that, listed companies are likely to have a higher proportion of female directors on management boards. Our models are well specified as the tests regarding serial correlation reject the absence of first order, but not the second order and the Hansen test does not reject the over-identifying restrictions.

As robustness checks, we estimate the fixed effects regressions for both unitary and dual boards' banks and obtained similar results. We also re-estimate the regression models pre and post the global financial crisis and found that our results are more robust during the period post crisis as we find that the higher the proportion of female directors the lower the banks' vulnerability to financial crisis.

6. Discussion and Conclusion

There has been an ongoing debate about the rationale and importance of board diversity. Female under-representation has long been a global phenomenon in developed and developing countries despite the benefits that female directors may bring to boardrooms. For instance the proportion of female CEOs in the US is 3% while the proportion of female directors ranges between 10-15% (Kogut et al., 2014). Female directors' under-representation might be partially caused by fact that women tend to be strongly represented in some non-board roles e.g. human resources and customer care (Higgs, 2003). However, there is a remarkable increase in the proportion of female directors over the past few years in particular during, and after, the financial crisis. This might be due to the changes in legislation e.g. female quotas.

In this paper, we investigate the influence of board diversity on both financial fragility and performance for a sample of 99 banks from 17 countries over the period 2004-2012. The results of the system GMM estimator show that the diversity-financial fragility relationship is non-linear and has an inverted U shape. This suggests that beyond a critical mass of 18% and 21% appointing an additional female director on the board of directors and the supervisory boards respectively may reduce banks' vulnerability to financial crisis. This result is consistent with Mateos de Cabo et al, (2012) and Jianakoplos and Bernasek (1998) as they argue that female directors tend to be more risk averse and this stereotype of being risk averse is the main reason for the "Glass Ceiling" on the corporate promotion ladder.

However interestingly, we find evidence that female directors are not risk averse as diversity-financial fragility nexus on management boards is also non-linear but has a U shape and that appointing an additional female director beyond a critical mass of 24% increases banks' risk. Adams and Funk (2012) argue that female directors are not less risk-averse. Therefore, appointing a female director need not lead to less risk-averse decisions as female directors are more risk-loving than male directors (Adams and Funk, 2012). We argue that the degree of

risk taking behaviour for female directors may vary based on their roles. Farag and Mallin (2016) find that female CEOs are not risk averse compared with their male counterparts. Therefore, we argue that female and male executive directors may have the same risk taking behaviour.

We also find a positive and significant relationship between the proportion of female directors and financial performance for both the board of directors and the supervisory boards. This result is consistent with resource dependence theory and human capital theory. Moreover, we find that diversity- performance nexus is non-linear and have an inverted U shape. This implies that beyond a critical mass of 21% and 23%, appointing an additional female director on the board of directors and the supervisory boards respectively decreases financial performance. Board diversity may cause communication problems and increases the inter-group conflicts and this may lead to lower financial performance (Lang, 1986; Arrow, 1998; Putnam, 2007; O'Reilly et al., 1989).

On the other hand, we find that diversity- performance nexus on management boards is non-linear and has a U shape. Therefore, appointing a female director beyond a critical mass of 27% may lead to better financial performance. This result is consistent with Carter et al. (2010) as the net effect of gender diversity can be either positive or negative from a financial performance perspective. The result is also consistent with our argument on the risk-taking behaviour of female directors with respect to their role as executive directors.

We also find that board size and independence are the main determinants for the proportion of female directors on the board of directors and the supervisory boards. This result is consistent with Brammer et al. (2007) and Conyon and Mallin (1997). On the other hand, management boards seem to be more homogenous and less diverse. Adams and Ferreira (2009) argue that boards tend to be more homogeneous and less diverse when companies are operating in riskier environments. Finally, we find that banks with higher risk and more vulnerability to financial crisis (e.g. due to the poor loan quality) are likely to be associated with less diverse management boards.

This study has a number of policy implications especially. The relationship between board diversity and bank risk may potentially have important implications for the stability and

increased confidence in the banking sector. Our empirical results provide support for the calls by various government reports e.g. Lord Davies Report in 2011 and its subsequent annual updates for more board diversity in the UK and the European Commission (2012) recommendations on board diversity. However, given the striking results of the influence of critical mass of female directors, policy makers should carefully address the concerns regarding the economic impact of the call for more diverse boards or imposing female quotas. Although it is not easy to draw a conclusion on the impact of female quotas on financial performance (Ferreira, 2015), in Norway for instance, once the law was passed, there was a remarkable decline (23%) in the proportion of public limited companies whilst a higher proportion of the Norwegian companies listed in London (Kogut et al., 2014). Moreover, imposing the 40% quota in Norway was associated with lower financial performance (Ahern and Dittmar, 2012). Kogut et al (2014) argue that a small quota (between 10% and 20%) can achieve large structural consequences and social justice. We agree with Kogut et al (2014) that small quotas may be preferable as they are the key to better structural equality as female quotas may enhance their network and connectivity and this may lead to a better position for female directors.

Future research might investigate the relationship between banks' specific characteristics and the propensity to appoint female directors, and to investigate the impact of the appointment of a new female director on board dynamics and on the bank's overall risk and return. Moreover, we believe that a further analysis of the influence of board diversity on corporate sustainability and risk-taking behaviour may provide additional insights to the results of our empirical study.

ENDNOTES

[1]In January 2006 Norway enforced a gender quota requirement on listed companies with the target of 40% females on the board by 2008. Whilst the UK and many other countries have not introduced binding gender quotas to facilitate board diversity, nonetheless there has been a move by governments towards targets for gender representation on boards, for example the Davies Report (2011) and its subsequent annual updates in the UK.

[2] In the remaining 9 countries a hybrid system applies and companies can choose between a one and two-tier approach. Moreover, in some European countries e.g. registered companies in Italy, there is the choice to follow one of three governance models: a unitary governance systems; a dual governance system with distinct supervisory and management functions; or the traditional model in Italy with a decision-making board and a separate board of auditors.

[3] Kanter (1977b) suggests that group interaction can be classified into 4 areas namely uniform, skewed, tilted, and balanced groups. In the uniform groups, all members have the same characteristics i.e. male or female in the context of gender. When the male type dominates, the group is identified as skewed. Joecks et al (2013) report that the proportion of females in skewed groups is up to 20%. However, the tilted group has less extreme distribution compared with the skewed group as females (as the minority) can impact the group culture. Female representation in the tilted group ranges from 20-40% (Joecks et al., 2013). Finally, the balanced group focuses on the pool of talent and skills and not on the proportion of males and females (sub-groups). In the balanced group, the female representation ranges from 40-60% on average and the performance of the balanced group is expected to be higher than the skewed group (Kanter, 1977 and Joecks et al., 2013).

[4] Andres and Vallelado (2008- JBF p2572) investigated the role of the board of directors using a sample of 65 banks from six countries over the period 1996-2006.

[5] Some countries have recently introduced gender quota e.g. France (2016), Italy (2015), Spain (2015), Germany (2016) and the Netherlands (2016). For more details, see *http://ec.europa.eu/justice/gender-equality/files/womenonboards/factsheet_women_on_boards_web_2015-10_en.pdf*

[6] We estimate our models with and without Sweden as obvious outlier with respect to the proportion of female directors and find similar results.

[7] We also use Blau index as an alternative measure of board diversity. Blau index is calculated as the percentage of board members in each category (male/female). The index values range from 0 to 0.5 which occurs when the board is equally balanced.

[8] See for instance *https://www.moodys.com/research/Moodys-Impaired-loans-better-gauge-of-Taiwanese-banks-asset-quality--PR_257689*

[9] For more details please see *http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20345037~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html#Original_Database_by_country__40kb_each_*

[10] Fixed effects model has a strict exogeneity assumption in which, for instance, current board diversity and governance characteristics are independent of past financial performance variables.

[11] Although the higher order of lag lengths result in more exogenous instruments, the use of internal instruments may cause the problem of weak instruments as the number of lags increases (Wintoki et al., 2012). However, we used different lag lengths as an empirical trade-off.

[12] We find similar results when we use both the ratio of non-performing loans to total assets and the ratio of loan loss reserve to gross loans.

[13] We find similar results when we use ROE and interest margin as alternative proxies for financial performance; however the results are marginally significant when we use ROE.

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Table 1: Variables Description

Variable	Description
Female	Proportion of female directors sitting on the board of directors.
FemaleSB	Proportion of female directors sitting on the supervisory board.
FemaleMgtB	Proportion of female directors sitting on the management board.
ROA	Ratio of net income divided by the average of the two most recent years of total assets.
Impaired Loans/Gross Loans (%)	The ratio of impaired loans/gross loans as a proxy for financial fragility.
B.Size	Total number of directors sitting on the board directors
SB.Size	Total number of directors sitting on the supervisory board;
Mgt.B.Size	Total number of directors sitting on the management board.
INED	Proportion of independent non-executive directors.
CEO/Chair	Dummy variable takes the value of 1 where the role of the CEO and Chairman are conducted by the same person, and zero otherwise.
LnTA	Natural logarithm of bank total assets as a proxy for bank size.
BankAge	Bank age calculated as the number of years since bank's foundation.
ListDummy	Dummy variable takes the value of 1 if the bank is privately held and 0 otherwise.
Total capital ratio	Total capital ratio as a regulatory requirement in banking sector.
Power Distance	A dimension from Hofstede's culture framework (2001) to control for the cultural differences across EU countries.
Disclosure Index	Sum of dummy variables take the value of 1 if the answer to 32 questions on disclosure from the Bank Regulation and Supervision Survey, carried out by the World Bank is yes and 0 otherwise.
Enforcement Index	Sum of dummy variables take the value of 1 if the answer to 20 questions on enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank is yes and 0 otherwise.
Overseas Branches	Dummy variable takes the value of 1 if a bank has overseas branch(es) and 0 otherwise as a proxy for internationalisation.
Law	Dummy variable takes the value of 1 if the respective banks' headquarter is located in a common law country and 0 otherwise.
lnddp	Natural logarithm of gross domestic product in euros.

Table 2: Descriptive Statistics for the Pooled Sample over the period 2004-2012

	Mean	Median	SD	Min	Max	N
Panel A: Unitary Boards						
Female	0.100	0.071	0.107	0.000	0.583	449
ROA (%)	0.281	0.540	2.331	-22.429	9.783	446
Impaired Loans/Gross Loans (%)	5.778	3.777	7.410	0.048	62.373	417
B.Size	14.712	15.000	4.389	4.000	31.000	458
INED	0.464	0.500	0.209	0.105	0.933	456
NoCom	3.717	4.000	1.542	1.000	6.000	435
CEO/Chair	0.035	0.000	0.184	0.000	1.000	458
LnTA	11.410	11.150	1.668	7.781	14.882	447
Bank Age	100.263	82.000	93.533	3.000	540.00	460
List Dummy	0.193	0.000	0.395	0.000	1.000	462
Total capital ratio	12.231	11.500	3.451	8.101	31.558	451
Power Distance	48.318	50.000	13.447	28.000	68.000	462
Disclosure Index	20.977	21.000	1.433	19.000	23.000	455
Enforcement Index	13.036	14.000	3.801	7.000	18.000	453
Overseas Branches	0.716	1.000	4.511	0.000	1.000	462
Panel B: Two-Tier Boards						
FemaleSB	0.131	0.111	0.113	0.000	0.511	392
FemaleMgtB	0.029	0.000	0.087	0.000	0.500	392
ROA	0.574	0.465	0.772	-2.574	2.989	376
Impaired Loans/Gross Loans (%)	5.391	3.189	10.445	0.030	73.275	322
SB.Size	12.620	11.000	5.604	4.000	29.000	392
Mgt.B.Size	5.349	4.500	2.809	2.000	16.000	392
INED	0.680	0.667	0.187	0.167	1.000	392
LnTA	10.626	10.421	2.030	6.436	14.625	377
Bank Age	79.471	75.000	64.382	3.000	275.00	393
List Dummy	0.295	0.000	0.457	0.000	1.000	393
Total capital ratio	14.111	13.000	4.588	8.712	37.167	343
Power Distance	33.793	35.000	17.695	11.000	68.000	393
Disclosure Index	21.468	22.000	1.273	20.000	23.000	393
Enforcement Index	15.442	15.000	2.247	12.000	18.000	393
Overseas Branches	0.646	1.000	0.478	0.000	1.000	393

Female: proportion of female directors sitting on the board of directors; FemaleSB: proportion of female directors sitting on the supervisory board; FemaleMgtB: proportion of female directors sitting on the management board; ROA: ratio of net income divided by the average of the two most recent years of total assets. Impaired Loans/Gross Loans (%): The ratio of impaired loans/gross loans as a proxy for financial fragility; B.Size: total number of directors sitting on the board directors; SB.Size: total number of directors sitting on the supervisory board; Mgt.B.Size: total number of directors sitting on the management board; INED: proportion of independent non-executive directors; CEO/Chair: dummy variable takes the value of 1 where the role of the CEO and Chairman are conducted by the same person, and zero otherwise; LnTA: natural logarithm of bank total assets as a proxy for bank size; BankAge: bank age calculated as the number of years since bank's foundation; ListDummy: dummy variable takes the value of 1 if the bank is privately held and 0 otherwise; Total capital ratio: capital ratio as a regulatory requirement in banking sector; Power Distance: A dimension from Hofstede's culture framework (2001) to control for the cultural differences across EU countries; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise; Overseas Branches: dummy variable takes the value of 1 if a bank has overseas branch(es) and 0 otherwise as a proxy for internationalisation.

Table 3: Board Structure and Diversity for Unitary and Dual Board Sample Banks

	Belgium	Cyprus	Finland	France	Greece	Ireland	Italy	Portugal	Spain	Sweden	UK
Panel A: Unitary Boards											
Female	0.076	0.044	0.222	0.175	0.050	0.114	0.036	0.033	0.097	0.344	0.105
B.Size	18.630	12.471	9.000	17.333	13.738	9.906	16.736	25.692	14.655	13.074	14.653
INED	0.284	0.493	0.451	0.511	0.243	0.578	0.528	0.278	0.456	0.631	0.510
Panel B: Dual Boards											
	Austria	**Denmark**	**Germany**	**Italy**	**Poland**	**Portugal**	**Netherland**	**Switzerland**			
FemSB	0.154	0.163	0.186	0.035	0.079	0.020	0.113	0.126			
FemMgtB	0.063	0.022	0.025	0.005	0.034	0.000	0.017	0.025			
SB.Size	17.583	10.206	16.783	19.750	8.400	16.846	8.809	9.824			
Mgt.B.Size	4.139	3.079	6.033	10.750	6.756	5.923	4.506	8.500			
INED	0.645	0.676	0.736	0.735	0.613	0.556	0.711	0.690			

Female: proportion of female directors sitting on the board of directors; B.Size: total number of directors sitting on the board directors; INED: proportion of independent non-executive directors; FemaleSB: proportion of female directors sitting on the supervisory board; FemaleMgtB: proportion of female directors sitting on the management board; SB.Size: total number of directors sitting on the supervisory board; Mgt.B.Size: total number of directors sitting on the management board. During the period of study, some countries follow a mixture of unitary and dual board structure.

Table 4: Correlation Matrix for Unitary Board Sample Banks

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	ROA	1.000															
2	Female	**0.112**	1.000														
3	B.Size	**0.098**	**-0.166**	1.000													
4	INED	0.038	**0.324**	**-0.116**	1.000												
5	CEO/Chair	0.010	**-0.112**	0.018	**0.142**	1.000											
6	LnTA	0.024	**0.349**	**0.354**	**0.356**	**-0.176**	1.000										
7	Impaired Loans/Gross Loans	**-0.423**	**-0.142**	**-0.225**	-0.008	0.010	**-0.197**	1.000									
8	Bank Age	-0.018	-0.089	0.082	0.081	-0.068	**0.231**	-0.001	1.000								
9	List Dummy	0.047	**-0.223**	**-0.183**	**-0.223**	**0.177**	**-0.347**	0.012	**-0.129**	1.000							
10	Power Distance	-0.027	-0.327	0.437	-0.376	0.024	-0.026	0.053	-0.076	**-0.130**	1.000						
11	Disclosure Index	-0.063	**-0.204**	-0.083	**0.239**	**0278**	**-0.331**	**0.174**	0.035	**0.179**	-0.045	1.000					
12	Enforcement Index	**-0.271**	**-0.337**	0.038	**-0.155**	**0.155**	**-0.386**	**0.366**	-0.067	-0.036	**0.434**	**0.437**	1.000				
13	Total Capital Ratio	**0.184**	**0.208**	**-0.137**	**0.101**	**-0.145**	0.054	0.071	-0.024	-0.025	-0.091	**-0.189**	**-0.320**	1.000			
14	Law	-0.048	0.048	**-0.290**	**0.222**	**-0.117**	**0.150**	0.002	**0.102**	**0.145**	**-0.444**	**0.308**	**-0.411**	**0.096**	1.000		
15	Overseas Branches	**0.151**	**0.132**	**0.242**	**0.114**	**-0.119**	**0.451**	**-0.241**	**0.175**	**-0.350**	0.035	**-0.172**	**-0.296**	0.089	-0.003	1.000	
16	lnGDP	**0.187**	**0.274**	**0.225**	**0.268**	**0.139**	**0.427**	**-0.321**	**0.266**	**0.104**	**-0.165**	**-0.129**	**-0.383**	**-0.119**	0.013	**0.293**	1.000

ROA: ratio of net income divided by the average of the two most recent years of total assets; Female: proportion of female directors sitting on the board of directors; B.Size: total number of directors sitting on the board directors; INED: proportion of independent non-executive directors; CEO/Chair: dummy variable takes the value of 1 where the role of the CEO and Chairman are conducted by the same person, and zero otherwise; LnTA: natural logarithm of bank total assets as a proxy for bank size; Impaired Loans/Gross Loans (%): The ratio of impaired loans/gross loans as a proxy for financial fragility; BankAge: bank age calculated as the number of years since bank foundation; ListDummy: dummy variable takes the value of 1 if the bank is privately held and 0 otherwise. Power Distance: A dimension from Hofstede's culture framework (2001) to control for the cultural differences across EU countries; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise; Total capital ratio: capital ratio as a regulatory requirement in banking sector; Law: dummy variable takes the value of 1 if the respective banks headquarter is located in a common law country and 0 otherwise; Overseas Branches: dummy variable takes the value of 1 if a bank has overseas branch(es) and 0 otherwise as a proxy for internationalisation; lnddp: natural logarithm of gross domestic product in euros; Bold figures indicate significance at the 5% level or below.

Table 5: Correlation Matrix for Dual Board Sample Banks

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	**ROA**	1.000															
2	**FemSB**	**-0.248**	1.000														
3	**FemMgtB**	0.022	**0.100**	1.000													
4	**SB.Size**	**-0.295**	0.074	0.006	1.000												
5	**Mgt.B.Size**	0.0004	**-0.105**	-0.090	**0.119**	1.000											
6	**INED**	**-0.144**	**0.205**	0.063	**0.150**	**0.230**	1.000										
7	**LnTA**	**-0.327**	0.078	-0.095	**0.364**	**0.452**	**0.321**	1.000									
8	**Impaired Loans/Gross Loans**	0.088	**-0.176**	0.026	-0.092	-0.009	**-0.129**	**-0.200**	1.000								
9	**Bank Age**	-0.059	**0.204**	-0.062	**0.221**	-0.061	**0.271**	0.022	**-0.152**	1.000							
10	**List Dummy**	**-0.133**	0.053	-0.053	**-0.331**	**-0.254**	-0.025	**-0.346**	-0.087	**-0.271**	1.000						
11	**lnGDP**	-0.013	**0.136**	-0.090	-0.073	0.093	**0.130**	**0.279**	0.074	**-0.198**	**-0.141**	1.000					
12	**Power Distance**	**0.285**	**-0.281**	**-0.106**	**-0.256**	**0.400**	-0.046	**0.136**	**0.294**	**-0.342**	**-0.132**	**0.199**	1.000				
13	**Disclosure Index**	0.054	-0.088	-0.082	-0.090	**0.378**	**0.101**	**0.327**	**0.202**	**-0.278**	-0.050	**0.346**	**0.422**	1.000			
14	**Enforcement Index**	**-0.223**	0.085	-0.091	**-0.217**	**-0.365**	**0.138**	0.001	**-0.274**	**0.105**	**0.387**	**0.219**	**-0.343**	**-0.125**	1.000		
15	**Total Capital Ratio**	0.008	**0.212**	**0.141**	**-0.218**	0.054	0.019	-0.004	-0.050	-0.057	0.070	0.054	-0.015	0.020	-0.065	1.000	
16	**Overseas Branches**	0.055	-0.080	**0.111**	0.092	**0.222**	**0.102**	**0.308**	**-0.285**	**-0.171**	-0.046	**-0.132**	**0.172**	0.088	-0.039	0.044	1.000

ROA: ratio of net income divided by the average of the two most recent years of total assets; FemaleSB: proportion of female directors sitting on the supervisory board; FemaleMgtB: proportion of female directors sitting on the management board; SB.Size: total number of directors sitting on the supervisory board; Mgt.B.Size: total number of directors sitting on the management board; INED: proportion of independent non-executive directors; LnTA: natural logarithm of bank total assets as a proxy for bank size; Impaired Loans/Gross Loans (%): The ratio of impaired loans/gross loans as a proxy for financial fragility; BankAge: bank age calculated as the number of years since bank foundation; ListDummy: dummy variable takes the value of 1 if the bank is privately held and 0 otherwise; lnddp: natural logarithm of gross domestic product in euros; Power Distance: A dimension from Hofstede's culture framework (2001) to control for the cultural differences across EU countries; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise; Total capital ratio: capital ratio as a regulatory requirement in banking sector; Overseas Branches: dummy variable takes the value of 1 if a bank has overseas branch(es) and 0 otherwise as a proxy for internationalisation.. Bold figures indicate significance at the 5% level or below.

Table 6: The Influence of Female Directors on Financial Fragility for EU Banks: System GMM Estimator

	Panel A		*Panel B*	
	Unitary Boards		**Dual Boards**	
	Model 1	**Model 2**	**Model 3**	**Model 4**
L. Impaired Loans/Gross Loans	1.154***	1.237***	0.793***	0.826***
	(0.076)	(0.064)	(0.053)	(0.042)
Female	6.654	25.520**		
	(8.829)	(12.826)		
Female sq		-72.078**		
		(34.480)		
FemSB			3.471	22.814***
			(4.320)	(6.893)
FemSB sq				-54.393***
				(17.569)
FemMgtB			4.123	-21.127***
			(3.835)	(4.912)
FemMgtB sq				43.791***
				(16.622)
ROA	-0.306	-2.010**	-0.040	-0.461*
	(0.921)	(0.809)	(0.977)	(0.274)
B.Size	0.196	-0.001		
	(0.295)	(0.189)		
SB.Size			0.227**	-0.019
			(0.108)	(0.192)
Mgt.B.Size			-0.354	0.211
			(0.465)	(0.414)
INED	9.304	0.975	1.369	0.898
	(5.892)	(3.108)	(3.406)	(3.976)
CEO/Chair	-2.729	-3.298		
	(4.012)	(3.544)		
LnTA	-0.040	-0.280	0.896	-0.071
	(0.566)	(0.527)	(0.861)	(0.471)
Bank Age	0.003	-0.001	0.009	-0.031**
	(0.003)	(0.002)	(0.016)	(0.013)
Total Capital Ratio	-0.752***	0.218*	-0.038	0.083
	(0.269)	(0.125)	(0.069)	(0.085)
List Dummy	15.508***	1.591	3.714	-7.593**
	(4.801)	(3.231)	(4.421)	(3.048)
lnGDP	-2.564**	0.293	0.646	-3.260**
	(1.154)	(0.543)	(1.453)	(1.397)
Power Distance	-0.376***	-0.014	0.102	-0.029
	(0.135)	(0.067)	(0.075)	(0.056)
Disclosure Index	-2.554**	0.246	-1.136	1.355*
	(1.067)	(0.506)	(1.190)	(0.703)
Enforcement Index	0.573*	-0.240	-0.572	1.072**
	(0.317)	(0.239)	(0.531)	(0.514)
Overseas Branches	10.297***	-0.750	-7.282***	-4.606**
	(2.921)	(2.142)	(1.857)	(1.870)
Law	-9.110**	-1.463		
	(3.954)	(1.975)		
Constant	93.959***	-6.219	15.513	4.363
	(35.424)	(15.424)	(14.577)	(10.079)

Time dummy	Yes	Yes	Yes	Yes
Bank type	Yes	Yes	Yes	Yes
Wald test *p.value*	0.000	0.000	0.000	0.000
Arellano-Bond test for AR(1) *p.value*	0.038	0.043	0.020	0.014
Arellano-Bond test for AR(2) *p.value*	0.443	0.669	0.405	0.933
Hansen test *p.value*	0.881	0.473	0.937	0.508

Female: proportion of female directors sitting on the board of directors; FemaleSB: proportion of female directors sitting on the supervisory board; FemaleMgtB: proportion of female directors sitting on the management board ROA: ratio of net income divided by the average of the two most recent years of total assets. Impaired Loans/Gross Loans (%): The ratio of impaired loans/gross loans as a proxy for financial fragility; B.Size: total number of directors sitting on the board directors; SB.Size: total number of directors sitting on the supervisory board; Mgt.B.Size: total number of directors sitting on the management board; INED: proportion of independent non-executive directors; CEO/Chair: dummy variable takes the value of 1 where the role of the CEO and Chairman are conducted by the same person, and zero otherwise; LnTA: natural logarithm of bank total assets as a proxy for bank size; BankAge: bank age calculated as the number of years since bank foundation; ListDummy: dummy variable takes the value of 1 if the bank is privately held and 0 otherwise; lngdp: natural logarithm of gross domestic product in euros; Total capital ratio: capital ratio as a regulatory requirement in banking sector; Power Distance: A dimension from Hofstede's culture framework (2001) to control for the cultural differences across EU countries; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise; Overseas Branches: dummy variable takes the value of 1 if a bank has overseas branch(es) and 0 otherwise as a proxy for internationalisation. Law: dummy variable takes the value of 1 if the respective banks headquarter is located in a common law country and 0 otherwise. ***, **, and * indicates significance at the 1%, 5% and 10% levels respectively. Clustered robust standard errors are present.

Table 7: The Influence of Female Directors on Financial Performance for EU Banks: System GMM Estimator

	Panel A		*Panel B*	
	Unitary Boards		**Dual Boards**	
	Model 1	**Model 2**	**Model 3**	**Model 4**
L. ROA	-0.046**	0.065***	0.207***	0.033***
	(0.021)	(0.018)	(0.029)	(0.012)
Female	5.443**	11.682**		
	(2.641)	(4.761)		
Female sq		-27.672**		
		(13.609)		
FemSB			2.420**	10.955***
			(0.968)	(3.717)
FemSB sq				-23.500***
				(8.800)
FemMgtB			-2.295	-7.388**
			(1.454)	(3.418)
FemMgtB sq				13.434**
				(6.711)
Impaired Loans/Gross Loans	-0.035	0.007	0.005	0.018
	(0.041)	(0.049)	(0.014)	(0.016)
B.Size	-0.066	-0.071		
	(0.081)	(0.093)		
SB.Size			-0.104***	-0.158***
			(0.025)	(0.038)
Mgt.B.Size			0.235**	0.260**
			(0.120)	(0.121)
INED	-0.475	-0.412	3.262***	3.250***
	(1.703)	(1.717)	(1.159)	(1.065)
CEO/Chair	-1.344	-0.800		
	(1.297)	(1.334)		
LnTA	-0.220	-0.214	-0.495***	-0.459***
	(0.263)	(0.243)	(0.157)	(0.174)
Bank Age	-0.0004	-0.001	-0.008**	-0.005
	(0.002)	(0.001)	(0.004)	(0.005)
Total Capital Ratio	0.133***	0.145***	-0.013	-0.005
	(0.047)	(0.049)	(0.013)	(0.017)
List Dummy	-0.424	-0.917	-1.932*	-1.108
	(2.086)	(2.036)	(1.108)	(1.130)
lnGDP	0.437	0.554	-0.639*	-0.602*
	(0.408)	(0.382)	(0.352)	(0.356)
Power Distance	0.026	0.023	-0.032**	-0.026
	(0.039)	(0.037)	(0.016)	(0.019)
Disclosure Index	0.140	0.177	0.374	0.319
	(0.313)	(0.326)	(0.282)	(0.308)
Enforcement Index	-0.141*	-0.122	0.036	-0.015
	(0.075)	(0.102)	(0.171)	(0.159)
Overseas Branches	-0.387	-0.182	0.359	0.794
	(1.094)	(1.236)	(0.775)	(1.006)
Law	-0.552	-0.905		
	(1.323)	(1.366)		

Constant	-6.419 (9.889)	-9.217 (9.619)	5.550 (4.003)	5.736 (4.117)
Time dummy	Yes	Yes	Yes	Yes
Bank type	Yes	Yes	Yes	Yes
Wald test *p.value*	0.000	0.000	0.000	0.000
Arellano-Bond test for AR(1) *p.value*	0.038	0.043	0.031	0.035
Arellano-Bond test for AR(2) *p.value*	0.266	0.264	0.711	0.887
Hansen test *p.value*	0.732	0.931	0.617	0.901

Female: proportion of female directors sitting on the board of directors; FemaleSB: proportion of female directors sitting on the supervisory board; FemaleMgtB: proportion of female directors sitting on the management board ROA: ratio of net income divided by the average of the two most recent years of total assets. Impaired Loans/Gross Loans (%): The ratio of impaired loans/gross loans as a proxy for financial fragility; B.Size: total number of directors sitting on the board directors; SB.Size: total number of directors sitting on the supervisory board; Mgt.B.Size: total number of directors sitting on the management board; INED: proportion of independent non-executive directors; CEO/Chair: dummy variable takes the value of 1 where the role of the CEO and Chairman are conducted by the same person, and zero otherwise; LnTA: natural logarithm of bank total assets as a proxy for bank size; BankAge: bank age calculated as the number of years since bank foundation; ListDummy: dummy variable takes the value of 1 if the bank is privately held and 0 otherwise; lngdp: natural logarithm of gross domestic product in euros; Total capital ratio: capital ratio as a regulatory requirement in banking sector; Power Distance: A dimension from Hofstede's culture framework (2001) to control for the cultural differences across EU countries; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise; Overseas Branches: dummy variable takes the value of 1 if a bank has overseas branch(es) and 0 otherwise as a proxy for internationalisation; Law: dummy variable takes the value of 1 if the respective banks headquarter is located in a common law country and 0 otherwise. ***, **, and * indicates significance at the 1%, 5% and 10% levels respectively. Clustered robust standard errors are present.

Table 8: The Determinants of the Proportion of Female Directors in EU Banks: System GMM Estimator

	Panel A	***Panel B***	***Panel C***
	Board of Directors	**Supervisory Board**	**Management Board**
	Model 1	**Model 2**	**Model 3**
L. Female	0.955***		
	(0.096)		
L.FemSB		0.798***	
		(0.129)	
L.FemMgtB			0.852***
			(0.025)
Impaired Loans/Gross Loans	-0.001	0.0001	-0.003***
	(0.001)	(0.001)	(0.001)
ROA	-0.016**	-0.027	0.015***
	(0.008)	(0.033)	(0.004)
B.Size	0.008**		
	(0.004)		
SB.Size		0.017**	
		(0.008)	
Mgt.B.Size			-0.003***
			(0.001)
INED	0.116**	0.401**	
	(0.057)	(0.201)	
CEO/Chair	-0.022		
	(0.042)		
LnTA	-0.005	0.033**	0.003
	(0.008)	(0.015)	(0.002)
Bank Age	0.0004	-0.001	-0.001***
	(0.004)	(0.0004)	(0.0003)
Total Capital Ratio	0.001	0.006**	0.001***
	(0.001)	(0.003)	(0.0002)
List Dummy	-0.061	-0.122	-0.028**
	(0.053)	(0.108)	(0.013)
lnGDP	-0.022	-0.015	-0.005
	(0.022)	(0.037)	(0.006)
Power Distance	0.001	0.004**	-0.0003
	(0.001)	(0.002)	(0.0002)
Disclosure Index	-0.004	-0.010	0.001
	(0.011)	(0.025)	(0.001)
Enforcement Index	-0.003	0.032	0.007***
	(0.004)	(0.020)	(0.001)
Overseas Branches	0.032	0.027	0.024**
	(0.052)	(0.101)	(0.012)
Law	-0.053		
	(0.046)		
Constant	0.196	-0.330	-0.035
	(0.204)	(0.440)	(0.091)
Time dummy	Yes	Yes	Yes
Bank type	Yes	Yes	Yes
Wald test *p.value*	0.000	0.000	0.000
Arellano-Bond test for AR(1) *p.value*	0.000	0.016	0.039
Arellano-Bond test for	0.799	0.418	0.927

AR(2) *p.value*			
Hansen test *p.value*	0.940	0.922	0.986

L. Female: lagged proportion of female directors sitting on the board of directors; L.FemaleSB: lagged proportion of female directors sitting on the supervisory board; L.FemaleMgtB: lagged proportion of female directors sitting on the management board ROA: ratio of net income divided by the average of the two most recent years of total assets. Impaired Loans/Gross Loans (%): The ratio of impaired loans/gross loans as a proxy for financial fragility; B.Size: total number of directors sitting on the board directors; SB.Size: total number of directors sitting on the supervisory board; Mgt.B.Size: total number of directors sitting on the management board; INED: proportion of independent non-executive directors; CEO/Chair: dummy variable takes the value of 1 where the role of the CEO and Chairman are conducted by the same person, and zero otherwise; LnTA: natural logarithm of bank total assets as a proxy for bank size; BankAge: bank age calculated as the number of years since bank foundation; ListDummy: dummy variable takes the value of 1 if the bank is privately held and 0 otherwise; lngdp: natural logarithm of gross domestic product in euros ;Total capital ratio: capital ratio as a regulatory requirement in banking sector; Power Distance: A dimension from Hofstede's culture framework (2001) to control for the cultural differences across EU countries; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise; Overseas Branches: dummy variable takes the value of 1 if a bank has overseas branch(es) and 0 otherwise as a proxy for internationalisation; Law: dummy variable takes the value of 1 if the respective banks headquarter is located in a common law country and 0 otherwise. ***, **, and * indicates significance at the 1%, 5% and 10% levels respectively. Clustered robust standard errors are present.

Figure 1: Average Proportion of Female Directors sitting on European Banks with Unitary Boards by Country

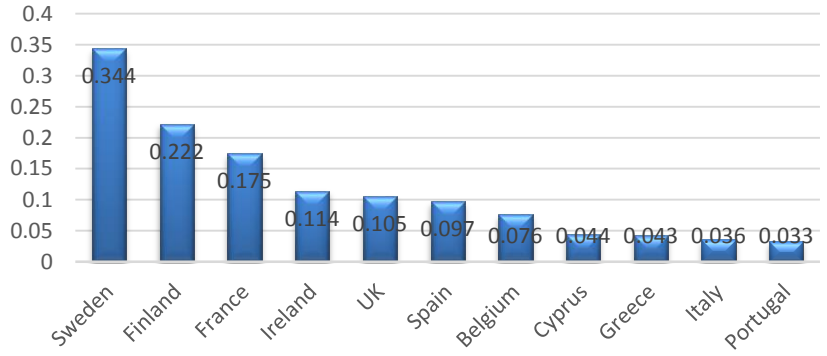

Figure 2: Average Proportion of Female Directors sitting on European Banks with Unitary Boards 2004-2012

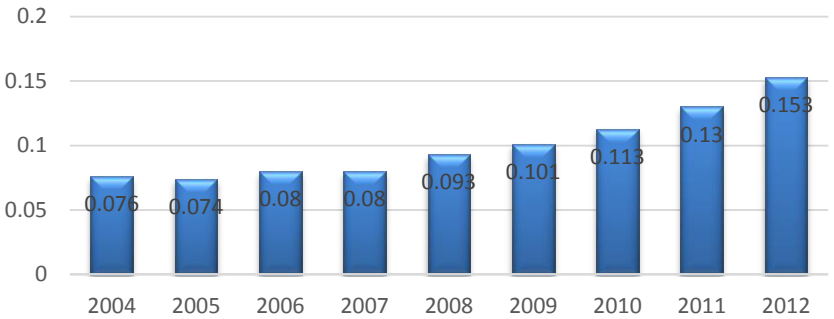

Figure 3: Average Proportion of Female Directors sitting on European Banks with Dual Boards by Country

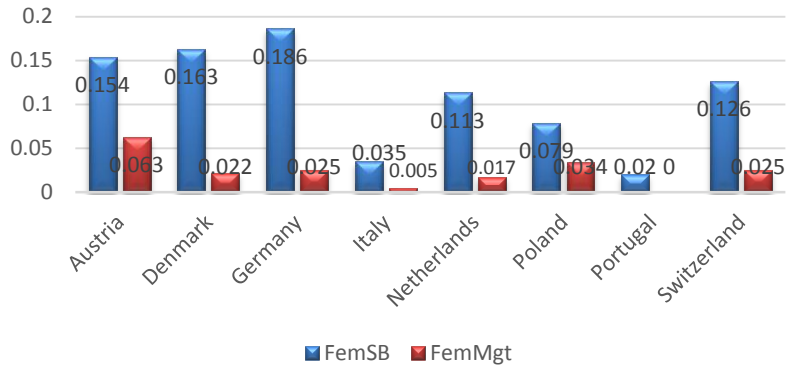

Figure 4: Average Proportion of Female Directors sitting on European Banks with Dual Boards 2004-2012