

# **Bank governance and performance: Does CEO and chair diversity matter?**

## **Abstract**

We examine whether diversity among the CEO and the chair can improve the effectiveness of bank corporate governance leading to better bank performance. We test the impact of three key diversity indicators -age, gender and past experience- on the profitability of 100 listed banks in Europe. We find that an age diversity between the CEO and the chair has a positive impact on bank profitability. Utilising a difference-in-differences (DID) analysis, we also show that the appointment of a new chair or a new CEO, which increases the age difference between the two, leads to an improvement in bank performance. We do not find consistent results for gender and experience dissimilarities. We also find that, at bank-level, the impact of age difference on performance is less significant in banks with powerful CEOs or low board independence. Similarly, at country-level, weaker legal and institutional regimes also limit this effect.

**Keywords:** Chair, CEO, diversity, corporate governance, board, banks

**JEL classification:** G3, G21, G28

## 1. Introduction

Inadequate internal corporate governance mechanisms are highlighted as one of the main causes of a mass collapse of banks during the Great Financial Crisis (GFC; Erkens et al., 2012; Berger et al., 2016). In the aftermath of the GFC, corporate governance research has expanded vastly examining internal governance mechanisms that would make banks more efficient and sound. A key area of discussion has been the influence of structure and diversity of the board on bank performance. The board is the central element of the internal corporate governance mechanism and has the ultimate responsibility for governing the bank in the best interest of shareholders, depositors, and other stakeholders.

Two key roles on the board are the Chief Executive Officer (CEO) and the Chairman (chair here onwards). The CEO is a bank's top decision-maker and is accountable to the board for the bank's performance. The chair often wields substantial power in setting the board's agenda and determining the outcome of votes, which the CEO depends on to get her/his decisions through. The chair scrutinizes and evaluates CEO's managerial behaviour, making a contribution to the effectiveness of monitoring (Adams & Ferreira, 2007). In comparison to non-financial companies, in banks it is more difficult for the chair to evaluate and monitor CEO's proposed actions due to complexity and opacity of the banks' assets, intensifying the severity of the information asymmetries (Furfine, 2001; Morgan, 2002).

In this paper, we examine whether diversity between the CEO and the chair matter for the effectiveness of corporate governance in banks. It is argued that social connections amongst board members may not be in the best interest of shareholders as it may destroy independence and monitoring capacity (Fracassi & Tate, 2012). This is because when socially connected groups proceed with decision-making, they are less likely to have fewer disagreements, reducing the likelihood of critical scrutinization of management's performance and strategy during board's decision-making progress. Relatedly, chair's social independence from the CEO is highly important

because it will lead to more cognitive conflicts between the two, resulting in an increase in the chair's monitoring capacity of the CEO. In contrast, chair's monitoring ability would weaken if he or she has stronger social ties with the CEO due to being mentally connected and similarly minded (Wagner et al., 1984; Bantel & Jackson, 1989; Harrison et al., 1998; Pelled et al., 1999).

These arguments are based on the theory of *homophily* which predicts that people who share similar demographic characteristics are likely to establish social ties (McPherson et al., 2001). Hence, there is a higher rate of personal interaction between similar people than among those dissimilar ones in the social world. In corporate governance, it is argued that demographic similarities among the members of the board may initiate social ties, which may increase the probability of affirmative interaction between them on critical board decisions (Forbes & Milliken, 1999). In contrast, social ties will be weaker if there are demographic differences between board members as they are less likely engage socially.

We examine the impact of three demographic diversity characteristics -age, gender and past experience- between the CEO and the chair on bank profitability. Age, gender and past experience differences could limit the attraction between the CEO and the chair and, therefore, breed fewer social connections. This should prompt cognitive independence of the chair resulting in better monitoring of the CEO's actions. We posit that demographic differences among the CEO and the chair could reduce the social connections between them, improving the effectiveness of bank corporate governance and, therefore, leading to better performance. We utilise an original dataset that consists of 100 listed European banks to test our hypothesis. Most of the banks in the sample are the largest in Europe in terms of market share.

We find that age differences between the CEO and the chair has a positive impact on bank profitability. We do not find consistent results for gender and past experience diversity. Using a difference-in-differences (DID) methodology, we show that the appointment of a new chair or a new CEO, which increases the age difference between them, leads to an improvement in bank profitability. We also find that, the impact of age diversity on bank profitability is less significant in

banks with powerful CEOs or low board independence. At country-level, weak legal and institutional regimes also limit this effect. As our results may be prone to various endogeneity issues, we use a variety of alternative estimators and specifications to check for robustness.

We contribute to the literature in two avenues. Firstly, we provide the first empirical evidence on the possible effects of CEO-chair demographic diversity, capturing the potential level of social ties between the two, on bank performance. The recent social networks based research suggest that conventional measures of board independence might ignore the effect of social ties between board members on corporate governance and related firm economic outcomes (Kramarz & Thesmar, 2013; Ishii & Xuan, 2014; Cooney et al., 2015). It is shown that in non-financial institutions social ties between the CEO and the chair decreases the shareholder value (Goergen et al., 2015). However little is known on how social ties may operate in corporate governance of banks where the effectiveness of governance mechanisms might be limited. A rare example is Zhou et al. (2019) providing empirical evidence that chair-CEO age dissimilarity mitigates banks' excessive risk-taking behaviour; however, they do not investigate the impact on profitability. In this context we also contribute to the literature on board diversity, which has been given relatively less attention to age and professional background diversity, among others (Baker et al., 2020).

Secondly, we contribute to the scant literature on the role of board diversity in European banks' performance by utilising a novel multi-country dataset. Following the GFC, there has been a push by regulatory authorities in Europe to mitigate the identified shortcomings of pre-crisis corporate governance practices (see, for example, EU Capital Requirements Directive (CRD) IV). They particularly aim to reform the composition of the board in order to prevent bank failures and emphasise the significance of CEO chair separation and diversity. We provide empirical evidence on CEO-chair demographic diversity and their impact on European banks' performance.

The remainder of this paper is organised as follows. The next section develops testable hypothesis by reviewing the relevant literature. Section 3 describes the data, variables and the methodology. We discuss our main findings in Section 4 and Section 5 concludes.

## **2. Hypothesis Development and Related Literature**

In the post-GCF period, the literature on bank corporate governance and its impact on various banking outcomes has expanded vastly. Empirical studies often examine the impact of internal governance mechanisms on bank performance and the key areas of discussion are the attributes of the board and its' members. For brevity, here we only review the relevant literature on bank board diversity (in terms of gender, competence, independence, age, and nationality). It is argued that boards with members having a variety of diverse skills, experiences and demographics performs better through superior decision making (Arfken et al., 2004; Van der Walt et al., 2006). Diversity also enhances board's independence of thought to better perform its monitoring and advising functions (Adams & Ferreira, 2009).

Empirical evidence on various board diversity indicators is often inconsistent. Related to gender diversity, some studies argue that banks with larger proportion of females on their boards perform better (Pathan & Faff, 2013; García-Meca et al., 2015) and take on less risk (Muller-Kahle & Lewellyn, 2011). Others find no significant impact of gender on performance (Nguyen et al., 2015) and a positive relationship with risk taking (Berger et al., 2016). Boards with more educational attainments are found to have a lower loan portfolio risk (Berger et al., 2016). Board's lack of financial expertise may lead to worse performance (Hau & Thum, 2009); however, there is also evidence that financial expertise may lead to excessive risk-taking (Minton et al., 2014; IMF, 2014). Banks with younger board members are found to engage in riskier activities (Grove et al., 2011; Berger et al., 2016). In contrast, others do not find an association between bank-risk taking and board age diversity (Talavera et al., 2018). Foreign directors are found to have a negative effect (Garcia et al., 2015) while a higher proportion of politically-connected directors might weaken bank performance (Carretta et al., 2012; Liang et al., 2013).

More recently, social independence of boards is also highlighted as an influential factor in the effectiveness of corporate governance. It is argued that social ties -the nonfamilial, informal

connections- between board members shape various supervisory and disciplinary actions of the board. In particular, it is argued that social ties reduce firm value as they weaken the intensity of monitoring by the board. Empirical evidence shows that in firms where there are fewer social connections, CEO pay-performance sensitivity is stronger and level of CEO compensation is lower (Hwang & Kim, 2009). In contrast, Fracassi and Tate (2012) find that stronger CEO-director ties reduce firm value and lead to more value-destroying acquisitions. Nguyen (2012) shows that when the CEO and a number of directors belong to the same social networks, the CEO is less likely to be dismissed for poor performance. Along the same lines, Lee et al. (2014) find that similarity in political orientation between independent directors and the CEO leads to lower firm value and performance. Overall, there is consistent evidence that social ties within the board may result in higher agency costs and unfavourable outcomes for shareholders.

Linking the board diversity and social independence strands of the literature, Goergen et al. (2015) argue that demographic similarities between the board members may foster social connections leading to lower performance and reduces firm value. Zhou et al. (2019) tests these arguments in a banking setting and find that a smaller Age diversity increases risk-taking behaviour. Similarly, Berger et al. (2013) shows that an external candidate is likely to be appointed to a vacancy if he/she has similar demographics to the board. They also find some evidence that social ties are associated with reduced profitability.

The relationship between demographic diversity and social ties is often explained by the theory of *homophily*, which posits that individuals who have similar demographic characteristics are likely to have more interpersonal interactions, building stronger personal and social connections (Marsden, 1987; McPherson et al., 2001; Dumas et al., 2013). In contrast, social ties will be weaker if there are demographic differences between board members as they are less likely engage socially. Similar board member demographics leading to stronger social ties may be problematic for a sound corporate governance mechanism because such relationships may result in more affirmative interaction when decisions are made (Forbes & Milliken, 1999).

Age is one of the most important demographic characteristics that shape individual's attitude and behaviour (Taylor, 1975; Rhodes, 1983; Chevalier & Ellison, 1999; Hong et al., 2000; Buccioli & Miniaci, 2011; Yim, 2013; Serfling, 2014). Age continuously aggregates all possible changes in demography attributes of people in the life cycle. The evidence shows that ageing creates a salient basis for group categorization (Stangor et al., 1992). Thus, aging-related difference limits individuals' social connection as individuals tend to be attracted to the others who are a similar age in the social organisation. We argue that the CEO and the chair are less likely to be mentally connected due to age difference, and test the following hypothesis accordingly:

**H1.** *Age diversity between the CEO and the chair will lead to less social ties that will result in better bank performance*

Gender is another discernible demographic that relates to the development of social ties. The social construction of gender and gender roles influences social tie composition for men and women (Lorber 1994). As a result of their gender, from early years of childhood, women and men are set on different paths, including different expectations for social interactions (Lorber 1994; Bulcroft et al., 1996). Women often have a greater number of social ties than men (Antonucci & Akiyama 1987; Antonucci et al., 1998; McLaughlin et al. 2010). Based on these arguments and prediction of *homophily* we form the following hypothesis:

**H2.** *Gender diversity between the CEO and the chair will lead to less social ties that will result in better bank performance*

Third demographic we consider is the previous work experience. Pfeffer (1983) argue that socialisation will be most effective when members are more homogeneous due to their similarity of background, joint experience, and shared perspective, which provide a common vocabulary and the basis for mutual understanding. We argue that having a similar work experience will breed more social connections and test the following hypothesis:

**H3.** *Diversity between the previous work experiences of the CEO and the chair will lead to less social ties that will result in better bank performance*

### 3. Data and methodology

#### 3.1. Sample

The sample includes 100 publicly listed European banks from 16 countries<sup>1</sup>, covering a 10-year period between 2005 and 2014. We hand-collect board characteristics data from annual reports and websites of the banks, supplemented by BoardEX and Bloomberg databases. Financial data is resourced from Bankfocus and Datastream. We restrict the sample to commercial banks that have a licence to collect deposits. The final sample is comprised of an unbalanced sample of 807 bank-year observations. Due to missing data in some variables, the number of observations in reported estimations vary. Furthermore, in some cases we observe CEO duality (in 77 bank-year observations) which reduces the sample size.

#### 3.2. Dependent and independent variables

We employ two proxies of bank performance as Return on Average Assets (*ROAA*) and Return on Average Equity (*ROAE*) (Berger et al., 2010; Pathan & Faff, 2013; García-Meca et al., 2015). *ROAA* is net income before interest and tax over the average book value of total assets and *ROAE* is net income before interest and tax over the average book value of total equity.

We follow Goergen et al. (2015) and Zhou et al. (2019) to measure the differences in age between the CEO and the chair. We calculate the *Age diversity* as the chair's age minus the CEO's age. We also use the absolute value of *Age diversity* ( $|Age\ diversity|$ ) capturing the age difference without considering which direction from zero the difference lies. We also use a dummy variable to capture the possible impact of a very large age difference. *Age diversity20* is a dummy variable that equals to 1 if the age difference between chair and CEO is larger than or equal to 20 years, 0 otherwise. Strauss and Howe (1997) defines a 20 years age difference (or more) as a generational gap between two individuals. For gender difference we use a dummy variable, *Gender diversity*, which

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<sup>1</sup>Austria, Belgium, Denmark, Germany, Finland, France, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, Switzerland and the UK.



equals to 1 if the CEO and the chair are different genders, 0 otherwise. Similarly, *Industry experience diversity* aims to capture the differences in the past industrial experience. It equals to 1 if the CEO and the chair are from different industrial backgrounds, 0 otherwise.

We employ *Board size*, *Board independence* and *Busy board* to proxy for the board characteristics. Independent variables *CEO tenure*, *CEO education*, *Chair tenure*, *Ex-CEO*, *Busy chair*, *CEO change* and *Chair change* capture CEO and chair specific attributes. We use *Antidirector Rights' Index* (La Porta et al., 1998), *Judicial System Efficiency* (La Porta et al., 1998) and *Common Law* to capture the legal environment of the relevant countries. We also control for *Bank size*, *Bank risk level*, and macroeconomic environment using *GDP growth* and *Public Debt* variables. For brevity, we do not describe the control variables here and provide the definitions in Appendix A.

### 3.3. Empirical model

We estimate the below baseline model following the literature (Laeven & Levine, 2009; Berger et al., 2014; Minton et al., 2014; Elyasiani & Zhang, 2015; Zhou et al., 2019):

$$\begin{aligned}
Bank\ Performance_{i,t} = & \beta_0 + \beta_1 Age\ diversity_{i,t} + \beta_2 Gender\ diversity_{i,t} + \beta_3 Industrial\ experience\ diversity_{i,t} \\
& + \sum_{j=1}^J \beta_j \times Chair\ characteristics_{j,i,t} + \sum_{h=1}^H \beta_h \times CEO\ characteristics_{h,i,t} \\
& + \sum_{s=1}^{S-1} \beta_s \times Board\ characteristics_{s,i,t} + \sum_{k=1}^{K-1} \beta_k \times Bank\ characteristics_{k,i,t} \\
& + \sum_{l=1}^{L-1} \beta_l \times Macro\ indicators_{l,i} + \sum_{z=1}^{Z-1} \beta_z \times Legal\ environment\ indicators_{z,i} + \sum_{y=1}^{Y-1} \beta_y \times Year_{i,y} \\
& + \mu_i + e_{i,t}
\end{aligned}$$

where;

$i$  and  $t$  denotes bank and time, respectively. The dependent variables *ROAA* and *ROAE* are used for bank performance,  $\mu$  denotes bank fixed effects and  $e$  denotes the residual error term. We utilise a panel data fixed effects estimator which helps to control for unobserved heterogeneity that is

constant over time. We assume that bank-specific effects that do not vary over time may be correlated with the explanatory variables. In addition, we include year fixed effects to account for the influence of aggregate trends and capture variation in performance that is not attributed to explanatory variables.

### 3.4. Descriptive statistics

We present descriptive statistics in Table 1. The mean *ROAA* and *ROAE* are 1.02 and 7.93%, respectively. Average of *Age diversity* is 7.8 years. The average age difference between chair and CEO, measured by  $|Age\ diversity|$ , is 10 years. A generational age difference is observed in 13.3% of the cases. We observe different gender between the chair and the CEO only in 3% of the cases. Previous industry experience differs in 31% of the observations. The average CEO and chair tenure are 6 and 5.5 years, respectively. The chair is the former CEO in 14% of the observations. Chairs hold directorships in other companies in 69% of the cases. Changes to the CEO and the chair are observed in 12% of the observations. The percentage of the board where at least 50% directors hold more than two directorships with other firms is 89%. The mean of board size is 15, and, on average, 63% of directors are independent.

[Insert Table 1]

## 4. Results

### 4.1. Fixed effects estimations

We present results for *ROAA* in Table 2. We find that all age diversity variables are positive and statistically significant. A larger age difference between the CEO and the chair enhances bank performance in terms of *ROAA*. We do not find gender and industrial experience diversity to be significant determinants of *ROAA*. The results for *ROAE* are presented in Table 3. Similar to *ROAA* results, we find that all age diversity variables carry a positive sign, but with stronger statistical significance. It seems the impact of age difference between the CEO and the chair is

more observable when *ROAE* is employed as a performance indicator. We do not find a significant impact of gender and industrial experience differences on banks' *ROAE*. We also find consistent and significant coefficients for some of the control variables in Table 2. We find that *ROAA* is lower in banks where CEO is educated to a doctorate level (*CEO education*), if the chair is the previous CEO (*Ex CEO*), and holds positions in other companies (*Busy Chair*).

Results indicate that CEO-chair demographic diversity, especially in terms of age, can enhance bank performance. These findings could be explained by the predictions of *homophily* that a larger age difference reduces the likelihood of strong social ties between the CEO and the chair. Weaker social ties would lead to an enhanced independence of the chair to monitor the performance of the CEO. Our findings are in-line with Goergen et al.'s (2015) conclusions for non-financial firms.

[Insert Table 2 and Table 3]

#### **4.2. Difference in differences estimations**

We test the reliability of our results by employing a DID methodology. In particular, we are interested in whether an increase in diversity caused by new appointments of chairs or CEOs would lead to performance differences. In this setting we only use the age diversity as we can capture more variability in the data using age in comparison to gender or past industrial experience. We set *treatment* as a dummy variable that equals to 1 if the CEO-chair age difference is increased by the appointment of a new CEO or a new chair or both, 0 otherwise. *ROAA* and *ROAE* are the change in bank performance around the year of appointment. We exclude the appointment year itself, and consider the change in *ROAA* and *ROAE* between one year before and one year after the appointment year. We expect that a new appointment increasing the age diversity would lead to more intensive monitoring of the CEO by the chair and, therefore, enhance bank performance after the appointment.

Results are presented in Table 4. In columns 1-5, we estimate the models with selected control variables. We find that the coefficient of *treatment* is positive and significant (at 1% level). This finding shows an improvement in performance when there is an increase in age diversity after appointments, in comparison to the control group of banks that did not experience such change. In column 6 we control for all variables and results remain similar.

[Insert Table 4]

### 4.3. Robustness checks for endogeneity

We address the potential endogeneity issues that are common in corporate governance studies. Two types of endogeneity problems may arise. First, CEO and chair time-invariable attributes might be significantly correlated to the measures of the CEO-chair demographic differences. For example, CEO's and chair's prior industrial experience or educational background might influence the selection of a new CEO or chair, and these attributes might be correlated with dissimilarity measures. Following Goergen et al. (2015), to address potential unobserved heterogeneity and endogenous matching, we use chair-firm and CEO-firm fixed effects and re-run our estimations. Results are presented for selected models in Table 5 Panel A (chair-firm) and Panel B (CEO-firm). We find that our earlier findings are still valid.

[Insert Table 5]

Dynamic endogeneity, in which the past firm performance might impact on both current board structure and firm performance, could be another concern, generating inconsistent and biased estimations. We apply a two-step system GMM estimator to control for potential dynamic endogeneity issues (Arellano & Bond, 1991; Wintoki et al., 2012). There could potentially be dynamic endogeneity issues as past bad bank performance could lead to a change in current board structure, which in-turn will have an effect on current CEO-chair age difference. Results are presented in Table 6 Panel A for *ROAA* and Panel B for *ROAE*. We still find significant and positive coefficients for age diversity measures. In some specifications, gender and industrial

experience diversity are significant and positively related to performance. However, these results are not consistent across models.

[Insert Table 6]

#### **4.4. Accounting for the financial crisis period**

It is argued that the workload of board directors during the GFC increased as more strategic managerial decisions were needed to be made (Li et al., 2014). As board members can only devote limited time to perform their role, there could have been a trade-off between the monitoring and advisory roles during the GFC. During such periods CEOs' need more advice and monitoring (De Jonghe & Öztekin, 2015; Goergen et al., 2015). For example, to meet the bank capital regulatory requirements, bank managers need to adjust their capital structure more quickly; therefore, requiring more advice from the board to make managerial decisions. Overall, in exceptional circumstances such as the GFC, the chair is less likely to enhance the monitoring of the CEO, but dedicate more time to the role of advisor. During crisis periods cognitive conflicts and costly communication problems caused by diversity may be counterintuitive and have a negative impact on performance. Goergen et al. (2015) finds that age differences between the chair and the CEO reduces board monitoring, and have a negative impact on non-financial firms' value and profitability during the GFC

To explore the effect of the GFC on the link between CEO-chair age diversity and bank performance, we introduce a dummy variable (*Financial Crisis*) indicating the financial crisis period of 2007-2008. We also interact *Financial Crisis* with the age diversity variables. Results are reported in Table 7. We find that coefficients of age diversity variables remain positive and significant both for *ROAA* and *ROAE*. We do not find the interaction variables to be significant. It seems that CEO-chair differences matter less in terms of bank performance during the crisis, as probably the monitoring declines during these periods and advisory role of the chair becomes more important.

[Insert Table 7]

#### 4.5. Accounting for corporate governance quality

We are also interested in whether the relationship we have identified between CEO-chair diversity and bank performance is affected by corporate governance quality. We use two indicators to test the impact of these differences on *ROAA* and *ROAE* in cases where there is a powerful CEO or the board is more independent. We postulate that this impact could be limited when there is an entrenched CEO, and when the board is more independent. We hypothesize that CEOs with a tenure longer than 7 years are more powerful. Hence, we divide the sample into two sub-groups based on CEO power. We argue that enhanced monitoring performance resulting from CEO-chair diversity may be weakened by the powerful CEO. We present results in Table 8 Panel A. For *ROAA* we find that the variable *age diversity*<sub>20</sub> is significant in both sub-groups. However, the effect is larger in banks where the CEO has less power. For *ROAE*, we find that the variable *age diversity* is significant only in banks where CEO is not powerful.

Similarly, the impact of CEO-chair demographic diversity on bank performance may be shaped by board independence. We hypothesize that this effect would be less in banks where board independence is low. We divide the sample into two sub-groups by the level of board independence using the median value of *Independence*. We present results in Table 8 Panel B. We find that both for *ROAA* and *ROAE* CEO-chair age diversity is only significant for the sub-group where board independence is high. These findings indicate that corporate governance quality may shape the effect of CEO-chair age diversity on bank performance.

[Insert Table 8]

#### 4.6. The role of legal and institutional environment

The legal and institutional systems at country-level are considered as an important external monitoring mechanisms to deal with stakeholders' conflicts and reduce agency cost in corporate governance (Bathala & Rao, 1995; Booth et al., 2002). Certain legal systems may provide more protection for shareholders and creditors. For instance, common law countries have the strongest

protection for outside investors, whereas civil law countries have the weakest (La Porta et al., 2000). Overall, high-level legal and institutional protection for shareholders might improve board's monitoring performance at bank-level. In European countries where the legal system is relatively weaker, the positive impact of chair-CEO demographic diversity on bank performance could be rendered as bank governance would be less enforced by the external legal and institutional environment. Hence, we expect that the impact of CEO-chair age diversity on performance would be less significant in countries where legal protection is weaker for shareholder. We estimate our models by dividing the countries as weak and strong legal systems for shareholder protection. First, we divide the sample using *Antidirector Rights' Index* (La Porta et al., 1998) and create two sub-samples above and below the median value. Second, we divide the sample into two groups using *Judicial System Efficiency* (La Porta et al., 1998) based on the median value. Results for *Antidirector Right' Index* is presented in Table 9 Panel A. We find that the positive effect of CEO-chair age dissimilarity on *ROAE* is insignificant in countries where investor protection is low. However, in terms of *ROAA* we confirm our initial results in both sub-groups. In Table 9 Panel B we present results for the *Judicial System Efficiency*. Both for *ROAA* and *ROAE*, we do not observe a significant coefficient for CEO-chair age diversity variables in countries where judicial system efficiency is low. Overall, these results suggest that the effect of CEO-chair age diversity on performance could also be shaped by various country-level legal and institutional settings.

[Insert Table 9]

## 5. Conclusion

We examine whether demographic diversity matter for the effectiveness of corporate governance in banks. We approach this relationship through the argument of demographic similarities' capacity for developing social ties among board members. In particular, our focus is the demographic differences between the CEO and the chair. We examine the impact of three key demographic diversity indicators -age, gender and past experience- between the CEO and the chair on bank performance. We argue that CEO-chair demographic diversity could improve the effectiveness of bank corporate governance, leading to better bank performance. We test this hypothesis examining 100 listed European banks.

We find that age diversity between the CEO and chair have a positive impact on bank performance, measured by profitability. Utilising a DID analysis, we also show that the appointment of a new chair or a new CEO, which increases the age difference, leads to an improvement in bank performance. We do not find consistent results for gender and experience diversity. We also find that, the impact of age diversity on bank performance is less significant in banks where the CEO is powerful or the board independence is low. At country-level, weak legal and institutional regimes also limit this effect.

Findings of our paper partially supports the policy and regulation of the EU bank governance linked to the EU's CRD IV relating to diversity of bank boards. CRD IV recommends greater board diversity in banks to effectively monitor management, and, therefore contribute to improved risk oversight and resilience of institutions. Our findings on age diversity between the CEO and chair supports the recommendation as diversity leads to better performance in banks. In contrast, our findings do not provide evidence on the effect of gender diversity, which is specifically highlighted by CRD IV. Cross-country level evidence provided in this paper is also relevant to other economic regions' and countries' policy makers.



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## Appendix A: Definitions of Variables

Variable	Definition
Return on asset (ROAA)	The ratio of net income before interest and tax to the average book value of total assets.
Return on equity (ROAE)	The ratio of pre-tax operating income to the average book value of total equity.
Age diversity	The chair's age minus the CEO's age.
Age diversity	Absolute value of Age Diversity
Age diversity <sub>20</sub>	Equals to 1 if the age difference between the CEO and the chair is more than, or equal to, 20 years, 0 otherwise.
Gender diversity	Equals to 1 if the genders of the CEO and the chair are different, 0 otherwise.
Industry experience diversity	Equals to 1 if the previous industry experience of the CEO and the chair is different, 0 otherwise.
CEO education	Equals to 1 if the CEO has a PhD degree, 0 otherwise.
CEO tenure	Total number of years the CEO served as CEO.
Ex-CEO	Equals to 1 if the chair has worked as the CEO previously in the same bank, 0 otherwise.
Chair tenure	Total number of years that the chair kept the position as the board's chair.
Busy chair	Equals to 1 if busy directors constitute more than 50% percentage of the board directors, 0 otherwise.
CEO change	Equals to 1 if CEO is changed at a certain year, 0 otherwise.
Chair change	Equals to 1 if the chair is changed at a certain year, 0 otherwise.
Board size	The total number of the directors.
Independence (%)	The percentage of outside directors on the board.
Busy board	Equals to 1 if more than 50% of board directors have director roles in other companies, 0 otherwise
Total assets (log)	The natural logarithm of the total asset (book value) at the end of the fiscal year.
Total risk	Standard deviation of bank's daily stock price of the current (t) and the following year (t + 1).
GDP real growth (%)	Yearly GDP growth rate of the country where the bank's headquarter is located.
Public debt (%)	The ratio of public debt to GDP in the country where the bank's headquarter is located.
Antidirector rights' index	Indicator of legal mechanisms for investor protection in the country where the bank's headquarter is based (La Porta et al., 1998).
Common law	Equals to 1 if a country has common law legal tradition, 0 otherwise.
Judicial system efficiency	Judicial System Efficiency index of the country where the bank's headquarter is based (La Porta et al., 1998)

**Table 1: Descriptive statistics**

<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>Std.Dev.</b>	<b>Min</b>	<b>Max</b>
Return on asset (ROAA)	759	1.03	1.68	-6.68	14.73
Return on equity (ROAE)	761	7.94	10.62	-37.09	27.91
Age diversity	720	7.80	9.70	-30.00	32.00
Age diversity	715	10.03	7.42	0.00	32.00
Age diversity <sup>20</sup>	715	0.13	0.34	0.00	1.00
Gender diversity	716	0.31	0.46	0.00	1.00
Industry experience diversity	800	0.15	0.36	0.00	1.00
CEO education	800	0.15	0.36	0.00	1.00
CEO tenure	796	6.04	5.11	1.00	27.00
Ex-CEO	763	0.17	0.38	0.00	1.00
Chair tenure	762	5.56	4.78	1.00	27.00
Busy chair	763	0.70	0.46	0.00	1.00
CEO change	762	0.12	0.32	0.00	1.00
Chair change	766	0.12	0.33	0.00	1.00
Board size	805	15.26	6.61	3.00	39.00
Independence (%)	805	0.63	0.17	0.13	0.96
Busy board	807	0.89	0.32	0.00	1.00
Total assets (billion USD)	479	340.81	642.98	153.48	279.98
Total risk	774	0.02	0.02	0.00	0.21
GDP real growth (%)	800	0.03	0.05	-1.12	0.11
Public debt (%)	480	71.09	33.42	19.20	177.07
Antidirector rights' index	798	2.57	1.38	0.00	5.00
Common law	803	0.12	0.33	0.00	1.00
Judicial system efficiency	798	8.97	1.39	5.50	10.00

**Table 2: ROAA**

This table presents fixed effect regression results of bank performance on CEO-chair demographic differences, CEO and chair characteristics, board characteristics, bank characteristics, macroeconomic and legal environment variables. All variables are defined in Appendix A. The constant is included in all regressions, but not reported. \*\*\*, \*\*, \*, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Age diversity	0.0066 (2.09)			0.0059* (2.99)		
Age diversity		0.0285** (4.05)			0.0278** (3.88)	
Age diversity20			0.6776*** (7.70)			0.6441** (5.66)
Gender diversity				0.4004 (4.03)	0.5534 (4.27)	0.5253 (4.30)
Industry experience diversity				0.0571 (0.42)	0.1048 (0.66)	0.0906 (0.72)
CEO education	-0.0921** (-3.36)	-0.1741*** (-7.35)	-0.1537** (-3.82)	-0.1572* (-3.11)	-0.2592** (-5.18)	-0.2357*** (-7.36)
CEO tenure	-0.0141** (-3.72)	-0.0139** (-3.56)	-0.0063 (-2.16)	-0.0129* (-2.62)	-0.0130** (-3.23)	-0.0048 (-1.32)
Ex CEO	-0.3330** (-5.28)	-0.2605** (-3.25)	-0.3124** (-4.74)	-0.3158** (-3.75)	-0.2335 (-2.20)	-0.2891** (-3.62)
Chair tenure	0.0285 (1.35)	0.0303 (1.11)	0.0269 (1.11)	0.0335 (1.72)	0.0371 (1.47)	0.0331 (1.52)
Busy chair	-0.1221 (-1.58)	-0.1721* (-2.57)	-0.1701* (-2.58)	-0.1296 (-2.03)	-0.1780** (-3.54)	-0.1764** (-3.46)
CEO change	-0.3166* (-2.44)	-0.2870 (-2.35)	-0.2824 (-2.11)	-0.3211* (-2.52)	-0.3075* (-2.57)	-0.2903 (-2.23)
Chair change	-0.0000 (-0.00)	0.0034 (0.03)	-0.0123 (-0.10)	0.0067 (0.05)	0.0159 (0.13)	-0.0031 (-0.02)
Board size (log)	0.3683* (2.52)	0.3344* (2.53)	0.3945* (2.52)	0.3375 (2.13)	0.2915 (1.98)	0.3505 (2.12)
Independence	-1.8456 (-1.71)	-1.7783 (-1.76)	-1.8312 (-1.73)	-1.8374 (-1.70)	-1.7758 (-1.74)	-1.8206 (-1.71)
Busy board	-0.3267 (-1.22)	-0.3068 (-1.25)	-0.3242 (-1.32)	-0.3112 (-1.13)	-0.2903 (-1.14)	-0.3065 (-1.19)
Total assets (log)	-1.0019* (-2.40)	-1.0165* (-2.38)	-0.9983 (-2.34)	-1.0060* (-2.41)	-1.0204* (-2.38)	-1.0030 (-2.35)
Total risk	2.7646 (1.41)	3.1162 (1.44)	3.1020 (1.49)	2.7395 (1.42)	3.0653 (1.46)	3.0341 (1.49)
GDP real growth	1.3816** (4.38)	1.4135** (4.98)	1.3628** (3.69)	1.3948** (4.75)	1.4241** (5.50)	1.3785** (4.02)
Antidirector rights' index	0.2984** (3.56)	0.4074*** (5.91)	0.3371** (4.36)	0.2998** (3.30)	0.4013** (5.66)	0.3316** (4.02)
Common law	-2.1095*** (-6.80)	-2.3860*** (-7.58)	-2.1741*** (-6.69)	-2.0905*** (-6.17)	-2.3282*** (-6.84)	-2.1284*** (-6.13)
Judicial system efficiency	0.0289 (1.13)	0.0094 (0.46)	0.0051 (0.17)	0.0291 (1.10)	0.0104 (0.50)	0.0066 (0.21)
Fixed effects	Bank,Year	Bank,Year	Bank,Year	Bank,Year	Bank,Year	Bank,Year
Number of observations	646	651	646	646	646	646
Within R-squared	0.201	0.193	0.199	0.199	0.193	0.198

**Table 3: ROAE**

This table presents fixed effect regression results of bank performance on CEO-chair demographic differences, CEO and chair characteristics, board characteristics, bank characteristics, macroeconomic and legal environment variables. All variables are defined in Appendix A. The constant is included in all regressions, but not reported. \*\*\*, \*\*, \*, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Age diversity	0.1032*** (7.14)			0.1053*** (9.22)		
Age diversity		0.1564*** (9.09)			0.1588*** (9.83)	
Age diversity20			1.2912 (2.29)			1.4079** (4.39)
Gender diversity				-1.8841 (-0.88)	-1.7854 (-0.85)	-1.8258 (-0.80)
Industry experience diversity				-0.0748 (-0.07)	-0.1522 (-0.16)	-0.1311 (-0.14)
CEO education	1.6754 (0.89)	1.4029 (0.79)	1.6288 (0.96)	1.9687 (1.53)	1.6762 (1.37)	1.9062 (1.72)
CEO tenure	0.2642 (1.55)	0.3255 (1.97)	0.3224 (2.16)	0.2590 (1.49)	0.3193 (1.90)	0.3180 (2.10)
Ex CEO	-0.5436 (-0.57)	-0.5173 (-0.47)	-0.8274 (-0.87)	-0.5897 (-0.54)	-0.5642 (-0.48)	-0.8786 (-0.84)
Chair tenure	-0.0355 (-0.25)	-0.0767 (-0.54)	-0.0652 (-0.44)	-0.0597 (-0.33)	-0.1000 (-0.55)	-0.0884 (-0.46)
Busy chair	-0.5849* (-2.63)	-0.6227* (-3.06)	-0.6274* (-3.00)	-0.5592 (-2.35)	-0.6025* (-2.76)	-0.6108* (-2.71)
CEO change	-1.0854 (-1.15)	-1.0507 (-1.14)	-0.9823 (-0.94)	-1.0521 (-1.03)	-1.0773 (-1.09)	-0.9448 (-0.83)
Chair change	0.0653 (0.06)	0.1278 (0.12)	-0.0262 (-0.02)	0.0458 (0.04)	0.1193 (0.11)	-0.0472 (-0.04)
Board size (log)	0.4175 (0.64)	0.1741 (0.19)	0.6135 (1.05)	0.5335 (0.62)	0.3023 (0.27)	0.7402 (0.94)
Independence	-5.0123 (-0.81)	-4.3819 (-0.73)	-4.9028 (-0.79)	-5.0658 (-0.83)	-4.4517 (-0.75)	-4.9488 (-0.80)
Busy board	-0.5960 (-0.53)	-0.5818 (-0.55)	-0.6074 (-0.56)	-0.6851 (-0.69)	-0.6553 (-0.70)	-0.6859 (-0.70)
Total assets (log)	0.3555 (0.73)	0.2347 (0.45)	0.4099 (0.82)	0.3767 (0.73)	0.2481 (0.46)	0.4268 (0.82)
Total risk	39.5721 (1.88)	38.6818 (1.80)	39.1421 (1.88)	39.6834 (1.93)	39.1088 (1.87)	39.3437 (1.94)
GDP real growth	2.5055 (0.48)	2.3920 (0.46)	2.2719 (0.48)	2.4246 (0.48)	2.3305 (0.46)	2.1967 (0.48)
Antidirector rights' index	1.9045*** (8.62)	1.7593** (5.63)	1.6606** (5.22)	1.8902*** (6.71)	1.7662** (4.97)	1.6641** (4.68)
Common law	-19.1492*** (-9.85)	-19.0648*** (-8.25)	-18.4700*** (-7.94)	-19.1733*** (-8.93)	-19.1345*** (-7.85)	-18.5486*** (-7.67)
Judicial system efficiency	0.8469 (0.88)	0.7946 (0.81)	0.7763 (0.77)	0.8456 (0.88)	0.7878 (0.80)	0.7721 (0.76)
Fixed effects	Bank,Year	Bank,Year	Bank,Year	Bank,Year	Bank,Year	Bank,Year
Number of observations	643	648	643	643	643	643
Within R-squared	0.330	0.332	0.334	0.328	0.330	0.332

**Table 4: Difference in differences**

This table presents OLS difference in differences estimations results of bank performance. In all estimations we control, but not report, for CEO, chair, board and bank characteristics, and macroeconomic and legal environment variables. All variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank level and year. \*\*\*, \*\*, \*, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	ROAA			ROAE		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.0129*** (4.69)	0.0119*** (4.17)	0.0128*** (4.44)	0.0944*** (3.21)	0.0745** (2.48)	0.0728** (2.24)
CEO characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Chair characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Board characteristics	No	Yes	Yes	No	Yes	Yes
Bank characteristics	No	No	Yes	No	No	Yes
Macroeconomic variables	No	No	Yes	No	No	Yes
Legal environment	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	481	481	429	491	491	439



**Table 5: Estimations with chair-bank and CEO-bank fixed effects**

This table presents chair-bank (Panel A) and CEO-bank (Panel B) fixed effect regression results of bank performance. In all estimations we control, but not report, for CEO, chair, board and bank characteristics, and macroeconomic and legal environment variables. All variables are defined in Appendix A. The constant is included in all regressions, but not reported. \*\*\*, \*\*, \*, denote statistical significance at the level of 1%, 5%, 10%, respectively.

**Panel A: Chair-bank fixed effects**

	ROAA		ROAE	
	(1)	(2)	(3)	(4)
Age diversity			0.1053*** (9.22)	
Age diversity		0.0278** (3.88)		0.1588*** (9.83)
Age diversity <sup>20</sup>	0.6441** (5.66)			
Gender diversity	0.4004** (4.03)	0.5253** (4.30)	-1.7854 (-0.85)	-1.8258 (-0.80)
Industry experience diversity	0.0571 (0.42)	0.0906 (0.72)	-0.1522 (-0.16)	-0.1311 (-0.14)
Fixed effects	Year, Chair	Year, Chair	Year, Chair	Year, Chair
Number of observations	646	646	643	643
Within R-squared	0.199	0.198	0.330	0.332

**Panel B: CEO-bank fixed effects**

	ROAA		ROAE	
	(1)	(2)	(3)	(4)
Age diversity			0.1053*** (9.22)	
Age diversity		0.0278** (3.88)		0.1588*** (9.83)
Age diversity <sup>20</sup>	0.6441** (5.66)			
Gender diversity	0.4004** (4.03)	0.5253** (4.30)	-1.7854 (-0.85)	-1.8258 (-0.80)
Industry experience diversity	0.0571 (0.42)	0.0906 (0.72)	-0.1522 (-0.16)	-0.1311 (-0.14)
Fixed effects	Year, CEO	Year, CEO	Year, CEO	Year, CEO
Number of observations	646	646	643	643
Within R-squared	0.199	0.198	0.330	0.332

**Table 6: GMM regressions with ROAA and ROAA**

This table contains results of the dynamic, two-step system Generalized Method of Moments (GMM) regressions of bank performance. In all estimations we control, but do not report, for CEO, chair, board and bank characteristics, and macroeconomic and legal environment variables. All variables are defined in Appendix A. The system GMM includes two sets of regressions. We use the year dummies as strictly exogenous variables. The GMM style variables are set as age diversity, gender diversity, industry experience diversity, Board size, Board independence and Total assets as well as dependent variables. The macroeconomic variables of GDP real growth and Public debt are set as strictly exogenous variables. \*\*\*, \*\*, \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

**Panel A: ROAA**

	(1)	(2)
ROAA <sub>(t-1)</sub>	0.3959*** (32.16)	0.3829*** (30.52)
Age diversity		0.0180*** (6.73)
Age diversity <sub>20</sub>	0.3674*** (8.37)	
Gender diversity	-0.1266 (-0.69)	0.4224* (1.74)
Industry experience diversity	0.1512** (2.09)	0.1720*** (2.69)
Number of observations	560	560
Arellano-Bond test AR(1) (P-value)	0.00	0.00
Arellano-Bond test AR(1) (P-value)	0.63	0.63
Sargan test for overidentification restrictions (P-value)	0.00	0.00
Hansen test for overidentification restrictions (P-value)	0.98	0.91
Diff-in-Hansen test GMM (P-value)	0.87	0.98

**Panel B: ROAE**

	(1)	(2)
ROAE <sub>(t-1)</sub>	0.3778*** (21.98)	0.3109*** (4.32)
Age diversity		0.3837*** (4.95)
Age diversity <sub>20</sub>	0.0758*** (3.53)	
Gender diversity	5.8671*** (3.36)	-3.3453 (-0.37)
Industry experience diversity	-1.0556* (-1.70)	8.8733*** (4.74)
Number of observations	549	549
Arellano-Bond test AR(1) (P-value)	0.00	0.00
Arellano-Bond test AR(1) (P-value)	0.49	0.50
Sargan test for overidentification restrictions (P-value)	0.00	0.00
Hansen test for overidentification restrictions (P-value)	0.99	0.41
Diff-in-Hansen test GMM (P-value)	0.91	0.64

**Table 7: Financial crisis**

This table presents fixed effect regression results of bank performance. In all estimations we control, but do not report, for CEO, chair, board and bank characteristics, and macroeconomic and legal environment variables. All variables are defined in Appendix A. The constant is included in all regressions, but not reported. \*\*\*, \*\*, \*, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	ROAA		ROAE	
	(1)	(2)	(3)	(4)
Age diversity			0.0975*** (6.45)	
Age diversity * Financial crisis			0.0694 (0.73)	
Age diversity		0.0273** (4.11)		0.1619*** (18.29)
Age diversity  * Financial crisis		0.0035 (0.41)		-0.0227 (0.19)
Age diversity20	0.6316*** (-6.59)			
Age diversity20 * Financial crisis	0.1582 (-0.62)			
Gender diversity	0.3968** (4.42)	0.5308** (4.79)		
Industry experience diversity	0.0555 (0.42)	0.1039 (0.67)		
Financial crisis	-0.5372 (-1.59)	-0.6741 (-1.76)	-12.6554** (-5.35)	-11.9117** (-4.03)
Fixed effects	Bank,Year	Bank,Year	Bank,Year	Bank,Year
Number of observations	646	646	643	643
Within R-squared	0.203	0.211	0.328	0.332

**Table 8: CEO power and board independence**

This table presents results of subsample fixed effect regression for bank performance. In all estimations we control, but do not report, for CEO, chair, board and bank characteristics, and macroeconomic and legal environment variables. The constant is included in all regressions, but not reported. \*\*\*, \*\*, \*, denote statistical significance at the level of 1%, 5%, 10%, respectively.

**Panel A: Powerful versus weak CEO**

	ROAA		ROAE	
	Weak CEO	Powerful CEO	Weak CEO	Powerful CEO
Age diversity			0.3677*** (8.57)	0.6046 (2.13)
Age diversity20	1.4529*** (6.33)	0.8426** (2.07)		
Gender diversity	0.5545 (2.31)		-1.6931 (-0.40)	
Industry experience diversity	0.6376 (1.51)		2.4884 (0.99)	
Fixed effects	Bank,Year	Bank,Year	Bank,Year	Bank,Year
Number of observations	191	136	189	132
Within R-squared	0.213	0.455	0.473	0.207

**Panel B: High versus low board independence**

	ROAA		ROAE	
	High independence	Low Independence	High independence	Low Independence
Age diversity			0.0729** (6.84)	0.0776 (1.57)
Age diversity20	0.3396** (3.20)	1.2781 (1.14)		
Gender diversity	0.0485 (0.12)	0.0000 (0.00)	-0.4339 (-0.14)	2.5665 (0.38)
Industry experience diversity	0.4526* (2.79)	0.1475 (0.53)	1.1992 (0.59)	-4.9418*** (-12.30)
Fixed effects	Bank,Year	Bank,Year	Bank,Year	Bank,Year
Number of observations	471	121	275	368
Within R-squared	0.149	0.275	0.463	0.262

**Table 9: Legal environment**

This table presents results of subsample fixed effect regression for bank performance. In all estimations we control, but do not report, for other CEO-chair differences, CEO, chair, board and bank characteristics, and macroeconomic variables. The constant is included in all regressions, but not reported. \*\*\*, \*\*, \*, denote statistical significance at the level of 1%, 5%, 10%, respectively.

<b>Panel A: Antidirector Rights' Index</b>				
	ROAA		ROAE	
	Weak Investor Protection	Strong Investor Protection	Weak Investor Protection	Strong Investor Protection
Age diversity			0.0729** (-6.84)	0.0776 (-1.57)
Age diversity20	0.4550*** (-10.28)	0.6905** (-4.11)		
Fixed effects	Bank,Year	Bank,Year	Bank,Year	Bank,Year
Number of observations	263	383	275	368
Within R-squared	0.077	0.281	0.463	0.262
<b>Panel B: Judicial System Efficiency</b>				
	ROAA		ROAE	
	Low Judicial System Efficiency	High Judicial System Efficiency	Low Judicial System Efficiency	High Judicial System Efficiency
Age diversity			0.1320* (3.09)	0.1322 (2.52)
Age diversity20	0.8359** (4.11)	0.2177 (0.32)		
Number of observations	405	241	412	231
Within R-squared	0.224	0.254	0.328	0.409