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Abstract

We examine the impact of governance reforms related to board diversity on the performance of EU banks. Using a difference-in-difference approach, we document that reforms increase bank stock returns up to two years after their introduction. We find that the impact is similar across mandatory and affirmative actions, albeit the former increase bank risk. The performance-diversity relationship varies with the type of reform. While gender diversity per se seems to have no significant influence, when women's presence is mandatory it reduces risk. The effectiveness of reforms depends on a country's institutional environment, its legal origin and its cultural openness to diversity.

Keywords: Board diversity reforms, corporate governance codes, bank performance

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"Members of boards of directors did not come from sufficiently diverse backgrounds."
(European Commission, 2010, p. 6)

1 Introduction

In the aftermath of the global financial crisis, policy makers and bank regulators started raising questions about the effectiveness of boards of financial institutions, as it became apparent that this key decision-making body did not fulfil its key role to exert monitoring over senior management and failed to identify, understand, and challenge risk-taking practices. Several shortcomings were identified in post-crisis analyses, the most common of which concerned the composition of the board of directors. The European Commission (2010) noted "*a lack of diversity and balance in terms of gender, social, cultural and educational background*" and called for strong and legally binding action from Member States and EU institutions to ensure diversity in boardrooms. Thus, a series of initiatives ensued to promote gender equality and diversity on the boards of publicly listed companies, which resulted in changes to national corporate governance codes in a number of countries. At the EU level, CRD IV (a 2013 legislative package covering prudential rules for banks) includes enhanced corporate governance rules, incorporating requirements to promote diversity in board composition.

Did the corporate governance reforms aiming at increasing diversity of bank boards impact on bank performance? This paper addresses this question by employing an identification strategy which allows us to study the impact of board reforms using between country variation in the timing and the type of reforms pursued as well as the type of diversity supported.

The prevailing consensus is that more diverse boards would positively affect the corporate governance of companies. Diversity has a number of potential benefits: board members can be selected from a wider pool of talent, which can offer a broader range of perspectives, access different resources and wider connections. Diversity is often seen as key to creativity and innovation (Hillman, 2014). On the other hand, diversity can lead to conflict, slow down decision-making, and lead to conflict of interest as different board members may be pursuing different agendas (Ferreira, 2011). Gender diversity in particular has received a great deal of interest, as a gender gap persists in the financial industry and there is growing evidence of a glass ceiling (IMF, 2018). However, whether the gender diversity of the board matters for firm performance is more controversial. Pletzer et al. (2015) present a systematic review of the literature and conclude that the relationship is consistently small and non-significant. In other words, female representation on corporate boards is not associated, positively or negatively, with firm performance. This result reinforces the view that women are neither better nor worse than men in leadership positions or at managing risks and that promoting less-gender biased hiring may lead to a mixed-gender board performing better because of the benefits of a multiplicity of views and skills (Nelson, 2014).

It is important to point out that, despite the consensus on the need for encouraging diversity, the approaches taken at the national level have varied widely, with some countries introducing mandatory quotas for gender and employee representatives, others promoting diversity more generally as an encouraged best practice. Recent evidence suggests that affirmative actions aimed at improving the participation of women and minorities in high profile roles have had little impact. IMF (2018) research highlights that, globally, women hold less than 20 per cent of board seats of banks. In addition, sanctions for non-compliance with corporate governance rules vary among EU member states. A well-researched example is the Norwegian gender quota case requiring all public limited companies to have at least 40 per cent of women on their boards of directors. After voluntary compliance failed, the requirement became regulation, with liquidation as a penalty for non-compliance. The merit of gender quotas has been intensely debated in the literature; a number of recent studies of the Norwegian case find evidence suggesting that it led to younger and less experienced boards and deterioration in firms' operating performance (Ahern and Dittmar, 2012; Bøhren and Staubo, 2016; Garcia Lara et al., 2017). Since the crisis, a number of European countries, including Belgium, France, Italy, the Netherlands, Spain, and Germany, have promoted legislation aiming to increase gender diversity on corporate boards via the imposition of quotas. This drive has been reinforced by the European Commission (2012) proposals to achieve a 40 per cent participation rate for the under-represented gender in non-executive board-member positions in publicly listed companies by 2020. However, the regulatory framework of EU member states is still very fragmented, with some countries, such as the UK, arguing against mandatory quotas.

In this paper, we evaluate the role of reforms that aim at promoting diversity on bank performance. Departing from the current literature which tends to exclude financial firms, we focus on the impact of board-related reforms on the performance of EU listed banks. Bank governance is considered to be different from that of non-financial firms primarily because of the existence of deposit insurance, implicit government guarantees, and prudential regulation (Laeven, 2013). Although there is a growing body of literature on the role of board diversity, including gender diversity (Adams and Ferreira, 2009, Hagendorff and Keasy, 2012; Berger et al., 2014; Garcia-Meca et al., 2015; Sila et al., 2016), to the best of our knowledge, this paper is the first to examine the effectiveness of reforms aiming at promoting diversity. We start our analysis with a thorough review of all the changes in corporate governance relating to board diversity in all EU member states. We analyse a comprehensive set of sources, including the industry codes of best practice, corporate governance codes, national legislation as well as EU and international organisation reports on corporate governance. We consider all types of board diversity reforms, from recommendations to foster best practice to legislative changes imposing mandatory quotas, and we code them accordingly.[2] This enables us to build a novel dataset of all diversity-related changes that have the potential to impact on the composition of listed firms board of directors.

The heterogeneity across European countries with regard to the timing and the type of these reforms facilitates the set-up of a treatment-based empirical approach that overcomes the endogeneity

[2] Appendix 1 summarises all our sources and details the reforms that we investigate.

issues arising in attempting to explain the impact of board diversity on bank performance. Our analysis examines the impact of reforms on several aspects of bank performance including returns, risk, and bank charter value. In order to ensure that the reforms are related to the recognition of the role of governance and not a response to economic difficulties or firm distress, we scrutinise the trend in bank performance in the years preceding the enactment of the reform. We examine various windows surrounding the introduction of reforms to assess the timing and duration of their effect. It might be argued that the effectiveness of reforms depends on whether they are legally enforceable. We therefore assess the role of reform approaches by distinguishing between mandatory reforms - implemented through the imposition of quotas on the proportion of minority representatives - and recommendations, implemented through affirmative actions. In addition, we examine the effect of components of reforms related to specific board diversity characteristics, such as gender and employee representation, on the performance-board diversity relationship. Finally, we examine the success of reforms across different country-level conditions such as cultural, legal, and institutional background by differentiating between countries culturally more and less open to diversity and those with common and civil law legal systems.

Using a difference-in-difference empirical framework that controls for country and time fixed effects and allows for bank-specific residual serial correlation, we find evidence that board diversity reforms impact positively on bank performance. The reforms significantly increase stock returns and their impact is economically significant. Their effect seems to occur over the first three years from the enactment of the reform. Our analysis shows that the approach taken to adopt the reforms matters for bank stock return volatility. In particular, the introduction of quotas on women and employees increases risk but there is no differential impact on returns. The effectiveness of reforms depends on a country's prior institutional environment. In countries more open to diversity, reforms reduce stock market risk and increase bank value. There is variation in the effects of reforms across civil law and common law countries. While reforms increase returns in countries of both legal origins, they reduce risk and increase value only in countries with a common law system. They are also shown to be more beneficial for banks that have ex-ante more heterogeneous boards. Finally, we find that board diversity is a significant determinant of bank performance. The relationship between board diversity and performance changes following the reforms and varies with the type of reform. We find that the presence of women on bank boards per se seems to increase risk; however, the legal enforcement of gender diversity results in women having a risk-reducing effect. The presence of employee representatives reduces bank risk, and this effect persists post employee-related reforms. Overall, our findings suggest that board diversity reinforcement improves average bank performance and strengthens the role of board diversity features.

Our paper contributes to the literature in several ways. First, we contribute to the literature on exogenous changes in corporate governance by focusing on crisis-induced regulatory changes in the banking sector. Government-induced reforms are an important tool for fostering effective board practices by requiring or encouraging firms to invest in changes that might be opposed by their controlling shareholders. From an empirical viewpoint focusing on a country-level shock to board composition that, albeit not necessarily exogenous in terms of timing or origin, is exogenous to the individual banks within

a country as its potential influence might not be aligned with shareholders' intentions, provides an identification strategy that mitigates endogeneity concerns present in the examination of the relation between board characteristics and firm value. We contribute to this strand of the literature by conducting an EU-wide analysis exploiting the cross-country heterogeneity in governance practices and focusing on the more heavily regulated banking sector. Our hand-collected sample of bank board data and corporate governance reforms across the EU facilitates the analysis of different dimensions of diversity and their effects across different institutional backgrounds. The paper closest to ours in this respect is the study by Fauver et al. (2017) who present an analysis of the impact of corporate board reforms on firm value worldwide. The authors however do not address the issue of diversity and exclude from their analysis firms in regulated industries, such as banks. We also complement the growing body of literature on the impact of national culture. A growing body research examines how national culture plays a central role in a country's adoption of rules and regulation, suggesting that cultural difference can help explain financial behaviours (see among others, Guiso et al., 2008, 2013; Gorodnichenko and Roland, 2011; Ahern et al., 2015; Eun et al., 2015, Aggarwal et al., 2016).

The remainder of the paper is organised as follows. Section 2 proposes our identification strategy. Section 3 discusses the data and the descriptive statistics. Section 4 presents the results. Finally, Section 5 concludes.

2 Identification strategy

2.1 Board diversity reforms

We begin our analysis by manually collecting information on all corporate governance reforms that took place in EU member states between 2007 and 2014. This involved analysing a broad set of sources, such as corporate governance codes, national legislation, European and international organisation reports on corporate governance. Our primary sources for governance reforms are publications from each country's relevant regulator. Not all reforms have the same impact on firm conduct: in some countries, reforms on corporate governance follow the enactment of new legislation and are therefore legally binding. In other countries, corporate governance codes establish best practices, but are not legally enforceable. We consider all types of reform, from recommendations to foster best practice to legislative changes. We complement our initial investigation of each country's changes to corporate governance practices with the analysis of the reports from the European Corporate Governance Institute (ECGI), the European Commission (EC), the European Foundation for the Improvement of Living and Working Conditions (Eurofound), the European Trade Union Institute, the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women), and the World Bank Report on the Observance of Standards and Codes (ROSC).

We focus on reforms that promote board diversity, both in general and in respect to specific aspects such as gender diversity and employee representation, for two main reasons. First, reforms on

board diversity were highly encouraged at the EU level. Secondly, diversity reforms can be uniquely and clearly identified among corporate governance reforms introduced in recent years (European Banking Authority, 2016).

We classify the board diversity reforms into: (i) mandatory quotas, if a country's regulator has chosen to impose a diversity quota (often a gender quota promoting the presence of women on boards of listed firms), and (ii) affirmative actions, if a country's regulator has chosen to actively encourage board diversity, but not to impose it. We identify the relevant changes in the countries' corporate governance codes and national legislations and the year in which these were implemented. In some countries, changes in corporate governance codes promoting diversity pre-date our sample period; in this case, the country is classified as "no reform" during the sample period. In case of more than one change, we consider the date of the earliest introduction; if a country moves from an affirmative action to a mandatory quota (e.g., Italy), both dates are considered as relevant. Further, we specifically investigate whether the reform is mandatory or simply encouraged. Similarly, we distinguish between reforms which specifically address the presence of women or employees on the board. Table 1 shows the diversity status at the beginning of the sample period and the identified reforms, by year and by country.

< Insert Table 1 about here >

There is a great heterogeneity in the type of diversity reforms carried out by EU member states in the period under analysis. Between 2007 to 2014 we coded board diversity reforms as approved in 14 countries. Most reforms explicitly encourage diversity, with two countries in our sample, France and Italy, imposing a (gender) quota. Seven countries have undergone no board diversity-related changes in their national governance codes over the sample period (namely, Cyprus, Czech Republic, Finland, Hungary, Romania, Spain, and Sweden). In five countries rules encouraging board diversity or prescribing quota were already in place before 2007; only in Romania and Cyprus board diversity was not encouraged prior to the financial crisis and no changes were made in its aftermath.

2.2 The difference-in-difference baseline model

The following difference-in-difference (DID) approach is adopted to test the average effect of diversity-related reforms on bank performance:

$$P_{ijt} = \alpha_0 + \alpha_1 DREFORM_{jt} + X_{ijt} \cdot \beta + \varepsilon_{ijt} \quad (1)$$

where P_{it} refers to the performance of bank *i* in country *j* in year *t*; X_{ijt} is a matrix containing the *k* bank-specific control variables; and $DREFORM_{jt}$ is a dummy for the post-reform period in country *j* which takes a value of one when the first diversity reform is introduced and thereafter, and 0 otherwise. The noise ε_{ijt} is assumed independently distributed from the *k* bank controls. In all regressions, we allow for

flexible error correlation structure within banks by clustering standard errors at the bank level. Our parameter of interest is α_1, where a positive estimate indicates an increase in bank performance following board reforms.

Because our setting involves multiple treatment groups and time periods, we control for year fixed effects through a full set of time dummies and for unobserved group heterogeneity by including country fixed effects.[3] Country instead of firm fixed effects are used to control for group effects to avoid the issue of unreliable estimates of the coefficients of the bank controls caused by bank fixed effects absorbing most of the variation across banks. The country and year fixed effects identify the within-country and within-year reform-induced change in bank performance between treatment banks (in reform countries) and benchmark banks (in countries with no reforms) at a given time. The treatment group comprises banks in countries that have undergone changes in their national government codes related to board diversity. The control group comprises all firms from countries without reforms as of a particular time (Fauver et al., 2017).

Our DID set-up therefore compares changes in bank performance following the board diversity reforms with changes in bank performance of countries without board diversity reforms during the same years. With this set-up, we aim to isolate the effect of board diversity reforms from other factors potentially affecting bank performance.

Our main bank performance measure is the bank the stock return (*STOCK RETURN*), computed using annualised average daily stock returns over a year. We also employ the standard deviation of the stock return (*STOCK RETURN VOLATILITY*) as a proxy for performance variability, or risk (see, among others, Beltratti and Stulz, 2012). As an additional test, following the extant literature, we use Tobin's Q (*TOBIN'S Q*) as a proxy for the bank charter value (Adams and Santos, 2006; Fauver et al., 2017). We define Tobin's Q as the ratio of the bank's market value to its book value, where the bank's market value is defined as the book value of assets minus the book value of equity plus the market value of equity and use its natural logarithm in the analysis.

To mitigate the effect of correlated omitted variable bias, we control for a set of bank-level characteristics that are typically related to bank performance (Adams and Santos, 2006; Laeven and Levine, 2009; Beltratti and Stulz, 2012; Kanagaretnam et al., 2014; Garcia-Meca et al., 2015). Specifically, we include bank size measured by the natural logarithm of total assets. We also control for the possible effect of bank growth on performance by including total asset growth. Next, we control for asset composition using the loan to asset ratio and for the quality of the loan portfolio using the loan loss

[3] In robustness checks, we control for potential omitted variable bias caused by country effects using a set of country-specific variables including: (i) the size of the economy, measured by the natural logarithm of gross domestic product per capita (Beltratti and Stulz, 2012; Kanagaretnam et al., 2014); (ii) the concentration of the banking system, measured by the Herfindahl-Hirschman Index (Laeven and Levine, 2009; Beltratti and Stulz, 2012; Kanagaretnam et al., 2014); and (iii) a proxy for a country's financial development, that is, the size of the capital markets, measured by the natural logarithm of the country's market capitalisation. The results are qualitatively similar; we, therefore, opt for country fixed effects.

provision ratio. We control for funding sources by including the deposit and short-term funding to total assets ratio. We account for the impact of capital on bank performance by including the capital to total assets ratio. Finally, we control for the bank operating efficiency proxied by the cost to income ratio. The definition and construction of the variables used in the study are reported in Appendix 2. Correlations are reported in Appendix 3.

2.3 The difference-in-difference model with time windows

When evaluating the impact of reforms of bank performance, the timing of their implementation is of particular importance. To address the concern of confounding events and other factors potentially influencing bank performance that may contaminate the effect of reforms, we introduce in our DID framework time windows surrounding the introduction of reforms. It can be argued that the main response of banks to changes in governance regulations will take place in the first three years. Hence, we split the post-reform dummy into two sub-periods of [0, +2] and [+3, T], where T denotes the end of the sample period.

Additionally, we gauge the exogeneity of the reforms by tracking their effect one year before their enactment to ensure that there is no decreasing trend in bank performance in the years leading to the reforms [-1, +2]. In doing so, we attempt to rule out the scenario that reforms are a response to economic difficulties or banking scandals rather than an outcome of the wider realisation of the importance of governance.

Finally, we introduce in our DID framework reform timing dummy variables that track the effect of the reforms exactly before and immediately after they become effective. Specifically, we test whether there is a significant change in bank performance in specific years surrounding the reform by replacing the post-reform period dummy with the set of dummy variables $DREFORM_t$, t = (-1, 0, +1, +2), which equal one for the year before the reform becomes effective, the year in which the reform becomes effective, the one and two years after the reform becomes effective, and the post-reform window dummy [+3, T], which equals one for the third year and onwards after the reform becomes effective.

2.4 The reform approach and type of diversity

We then test whether the effectiveness of reforms depends on the approach taken to adopt the reforms, that is, through the imposition of quota or an affirmative action. We do so by augmenting Equation (1) with the interaction between the post-reform period dummy and a variable indicating whether the reform imposes a quota (*DQUOTA*). During our sample period we encounter two instances were quotas were implemented – in France in 2011 and in Italy in 2012; all other reforms involved affirmative actions simply encouraging board diversity.

In addition, we examine whether the type of diversity promoted matters. Our focus is primarily on gender diversity, which is the dominant call in the vast majority of diversity-oriented corporate

governance reforms, and secondarily on employee representation. We therefore identify those reforms that explicitly target gender balance and encourage employee representation on the board. We then perform the test by replacing our post-reform dummy in Equation (1) with a post-gender reform dummy variable (*DREFORMWOM*) and a post-employee reform dummy variable (*DREFORMEMPL*). The impact of reforms may depend on the ex-ante board composition. To this end, we control for banks' pre-reform board diversity features by adding *BOARDWOM* and *BOARDEMPL*, the proportion of female directors and employee representatives on the board, respectively. We then test the incremental impact of reforms on the role of board minorities by including the interaction of the post-reform dummy variable with the corresponding board diversity characteristic.

3 Sample and descriptive statistics

For all the countries in our sample, we collect data on their publicly listed commercial banks. We focus on listed banks because of the assumption that these institutions are subject to more stringent regulatory controls and compliance requirements; it also enhances cross-country comparability and augments data availability in terms of board composition; in addition, publicly listed banks share internationally adopted accounting standards; finally, the recent changes to corporate governance regulation and codes of conduct affect mostly publicly listed companies. We collect banks' stock market data from Thomson Eikon, balance sheet and income statement data from Orbis Bank Focus (Bureau van Dijk and Fitch Ratings), and corporate governance data from BoardEx. We exclude banks with missing total assets and those with less than three observations over the sample period. To mitigate the influence of outliers, we winsorise bank balance sheet and income statement data at 99 per cent of the bank-year distribution. The final sample consists of 84 publicly listed banks (620 bank-year observations) from 21 EU countries over the period of 2007-2014, which covers 60 per cent of the total assets of these countries' banking systems at the end of the sample period. Details on the sample composition are provided in Appendix 4.

Table 2 presents the descriptive statistics for the selected performance measures, board, bank-specific and country-specific characteristics for the sample. Panel A reports data on the full 2007-2014 sample period. The sample banks, on average, have a stock return of 6 per cent, with a yearly standard deviation of 41 per cent. Boards appear to be male-dominated, with female directors constituting only 13 per cent of the total board members, while employee representatives, account for only 8 per cent of the board. To capture the extent of overall diversity in a bank's board, we construct a diversity index ($BOARDDIVX$) that relies on four aspects of diversity - gender diversity, employee representation, internationalisation, and age - and ranges from 0 to 1.[4] The average value of the index in our sample of

[4] We capture the overall level of diversity for each board of directors by a bank-specific board diversity index inspired by Li and Wahid (2017). The index relies on four dimensions of diversity, that is, the fraction of women on the board, fraction of employees on the board, fraction of foreign members on the board, and coefficient of variation of board members' age. These are converted into discrete score variables $D_{it}^{j} = (1,2,\dots,10)$ based on

banks is 0.41 and 54 per cent of the banks exhibit boards that are more diverse than that of the average bank.

Looking at the bank-specific characteristics, the sampled banks are relatively large, with average asset value of around 293 billion euro, and asset growth rate of 7 per cent per year. In terms of balance sheet structure, 59 per cent of the sampled banks' assets is invested in loans; their main source of funding is deposit and short-term liabilities (67 per cent of total assets), while only around 7 per cent of their total assets is funded by equity capital.

Turning to the country-specific characteristics, mandatory reforms were implemented in 13 per cent of the sampled countries; most of the countries adopt a civil law system and have a value of the Hofstede index, our proxy for a country's openness to diversity, below the median.

Panel B of Table 2 reports the results of the test for differences in the means of performance measures between the pre- and post-reform periods. The post-reform average bank returns are significantly higher than their pre-reform counterparts, whereas risk is significantly lower.

< Insert Table 2 about here >

4 Empirical results

The main aim of our analysis is to examine the impact of board diversity reforms on bank performance.

4.1 Do board diversity reforms impact bank performance?

Table 3 reports the estimation results of Equation (1), where performance is measured by the annualised average daily stock return and the standard deviation of stock return. The effect of reforms is captured by the coefficient of the post-reform period dummy variable. Model (1) is the baseline model, which includes the post-reform period dummy, bank-specific controls as well as country and time fixed effects. In order to disentangle the influence of reforms from other attributes and events that may affect bank performance, we restrict the sample period to the years surrounding the introduction of the reforms. Specifically, Model (2) splits the post-reform period dummy into two sub-periods of [0, +2], capturing up to two years after the reforms become effective, and [+3, T], where T denotes the end of the sample, capturing the subsequent years after the reform becomes effective. Model (3) adds the year preceding the

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their respective decile of the sample distribution. The diversity index for each bank-year is computed as $BOARDDIVX_{it} = \frac{1}{40}\sum_{j=1}^{4} D_{it}^{j}$ and ranges from 0 (low diversity) to 1 (high diversity). The construction of the index meets the four criteria that have been suggested for a good diversity measure: (i) it has a zero point to represent complete homogeneity, (ii) it is positively related to diversity, (iii) it does not assume negative values, and (iv) it is bounded. In addition, the index is a suitable measure of diversity for categorical variables that are skewed in a proportion of one category (that is, gender or employee representation), as mapping onto deciles mitigates the impact of large values.

reform in the first sub-period of [-1, +2] to incorporate any anticipation effect of reforms on bank performance. Model (4) repeats the analysis in Model (3) after introducing reform timing dummy variables that track the effect of the reforms exactly before and immediately after they become effective. Specifically, we test whether there is a significant change in bank performance in specific years surrounding the reform by replacing the post-reform period dummy with the set of dummy variables $DREFORM_t$, t = (-1, 0, +1, +2), which equal one for the year before the reform becomes effective, the year in which the reform becomes effective, the one and two years after the reform becomes effective, and the post-reform window dummy [+3, T], which equals one for the third year and onwards after the reform becomes effective.

< Insert Table 3 about here >

We find that the coefficient on *DREFORM* in Model (1) is positive and statistically significant at the 10 per cent level for stock returns suggesting that bank stock returns increase following the board diversity reforms. The impact of *DREFORM* is also economically significant, with the stock returns increasing by 20 per cent, on average, following the reforms.

The results reported in Model (2) confirm the significant increase of bank stock returns following the board reforms. The findings further reveal that the response to changes in governance regulation takes place in the first three years after they become effective. Specifically, the coefficient on the post-reform window dummy $DREFORM_{[0,+2]}$ is positive and significant for stock returns whereas the coefficient on $DREFORM_{[+3,\ T]}$ is insignificant.

If the reforms were passed in response to deteriorating market conditions or banking scandals, one would expect to observe an effect prior to the reforms. The results of Model (3) provide no evidence of such an effect with the coefficient on $DREFORM_{[-1,+2]}$ emerging insignificant as opposed to the coefficient on $DREFORM_{[0,+2]}$ in Model (2). The results of Model (4) corroborate the absence of any effect the year prior to the board reforms. That is, Model (4) for stock returns shows an insignificant coefficient on the t = −1 dummy variable and a significantly positive effect on the t = 0 dummy variable. The results for the standard deviation of stock returns show positive and significant t = 0 and t = +1 dummy variables suggesting an increase in risk in the year of the reform and the subsequent year. While the insignificant coefficient on the t = −1 dummy variable for both risk and return might be attributed to the inclusion of yearly time effects, the findings of Models (3) and (4) overall suggest that the reforms largely reflect countries' recognition of the role of diversity in governance and commitment to increase diversity of banks' boards, rather than a response to their economic difficulties.

For the control variables, the results show that stock returns are higher among banks with a lower asset growth, smaller and better quality loan portfolios, and greater operating efficiency; whereas risk is higher among banks that are larger and less capitalised, hold loan portfolios of poorer quality, and operate

less efficiently. These findings are generally consistent with prior studies (Beltratti and Stulz, 2012; Kanagaretnam et al., 2014).

4.2 Reform approach

Our results thus far suggest a positive relation between board diversity reforms and bank performance. However, regulators may adopt different approaches to implementing reforms: if a country has chosen to impose a diversity quota, often a gender quota promoting the presence of women on boards of listed firms, the reform is mandatory and forces all banks to act accordingly. However, if a country has chosen to actively encourage board diversity through an affirmative action, banks can adapt new rules to their existing structure. To detect the role of the approach taken to adopt board diversity reforms on their effectiveness, we augment Equation (1) with an interaction term between the post-reform period dummy *DREFORM* and the dummy *DQUOTA* that takes the value of one when a quota is introduced. The estimated coefficient measures the incremental impact of mandatory reforms on bank performance relative to affirmative actions. Table 4 presents the results.

< Insert Table 4 about here >

The findings of this analysis show that the reform approach adopted has no impact on the effect of reforms on bank stock returns as the coefficient on the interaction dummy *DREFORM* x *DQUOTA* is insignificant. Nonetheless, it does emerge positive and statistically significant for the standard deviation of stock return, suggesting that the introduction of quota increases the volatility of stock returns. In other words, when regulators do not allow flexibility in introducing reforms, bank risk increases. This finding is consistent with Bohren and Staubo (2015), who suggest that forcing radical gender balance on corporate boards through the introduction of quota is negatively associated with firm performance as a result of a strong upward shift in board independence which is a much more widespread property among female directors than among male directors. The authors argue that a firm performs worse the more its post-reform board gender mix deviates from its optimal pre-reform level.

4.3 Reinforcement of specific board diversity characteristics

Among the various board diversity reforms that have been implemented in the wake of the financial crisis, reforms promoting gender diversity and employment representation have been predominant. Given the importance of these two specific types of reforms, we investigate their effect on the relationship between board diversity and bank performance. We perform this analysis by estimating Equation (1), where we replace our post-reform dummy with a post-gender reform dummy variable *DREFORMWOM* and a post-employee reform dummy variable *DREFORMEMPL*. We control for the board diversity features by adding *BOARDWOM* and *BOARDEMPL,* the proportion of female directors and employee representatives on the board, respectively, in the equation. We test the incremental impact of reforms on the role of board minorities by further including the interaction of the post-reform dummy

variable with the corresponding board diversity characteristic. We also present an aggregate version of the model, which includes the generic diversity reform and the overall diversity index.

The results of this analysis are reported in Table 5. Model (1) presents the estimated effects of reforms on performance broken down by type of reform. The coefficients on the interaction terms show the incremental impact of the specific reform on the effect of the relevant board diversity feature. That is, *DREFORMWOM* x *BOARDWOM* measures the incremental performance impact of women on the board in the period following gender diversity reforms. Likewise, *DREFORMEMPL* x *BOARDEMPL* measures the incremental impact of employees on the board in the period following employee representation reforms. Model (2) is the aggregate model with the bank diversity index and the post-reform interaction term *DREFORM* x *BOARDDIVX*. The coefficient on the interaction term shows the incremental impact of aggregate board diversity in the post-reform period.

< Insert Table 5 about here >

Model (1) shows that gender- and employee-related reforms only affect bank risk. Looking at gender diversity, we find positive coefficients on *BOARDWOM* and *DREFORMWOM* and a negative coefficient on their interaction term for the standard deviation of stock returns. These findings suggest that while the presence of women on board and gender reforms per se increase bank risk, their enforcement is beneficial, that is, greater gender diversity of boards leads to lower risk when it is legally imposed by corporate governance codes. This result is in line with recent IMF (2018) research, which finds that, all else being equal, banks with higher female representation on their board have, on average, a greater distance-to-default. In other words, it appears that women could have a more stabilising effect if there are proportionally more of them among board members. Turning to employee representation, we find that the coefficient on *BOARDEMPL* is significantly negative for the standard deviation of stock return, whereas the coefficients on *DREFORMEMPL* and the interaction term are insignificant. This suggests that presence of employee representatives on board reduces bank risk, and this risk-reducing effect is not influenced by the introduction of employee-related reforms.

Model (2) corroborates the beneficial role of board diversity on bank performance, as the board diversity index emerges significant for stock return. It further confirms the significance of reforms for bank stock returns, however the estimated negative coefficient on the interaction dummy suggests that the influence of board diversity decreases following reforms albeit still positive and significant overall.

4.4 Additional analyses

4.4.1 National culture

We next examine whether the effectiveness of board diversity reforms is driven by national culture. In so doing, we build upon a stream of the literature that focuses on the links between national culture and financial decision-making (Kanagaretnam et al., 2011; Kanagaretnam et al., 2014).

In particular, we look at whether reforms are more successful in countries with cultural backgrounds that are more welcoming to diversity. Differences in cultural origins define national attitudes towards diversity in general and may be able to explain part of the heterogeneity in the effectiveness of board diversity reforms. We capture a country's openness to diversity using the six cultural dimensions proposed by Hofstede (1983) - power distance, individualism, masculinity, uncertainty avoidance, long-term orientation, and indulgence - and viewed as good indicators of the extent to which a society supports diversity (Newbury and Yakova, 2006; Chakrabarty, 2009).[5] Using data from Hofstede et al. (2010), we derive an overall index as the average of the six Hofstede dimensions and form a Hofstede dummy variable, which takes the value of one if the value of the Hofstede index is above the sample mean (higher national openness to diversity) and zero otherwise (lower national openness to diversity).[6]

To conduct the test, we augment Equation (1) with an interaction term between the post-reform dummy *DREFORM* and the Hofstede dummy *DHOF* that takes the value of one for countries more open to diversity. The results are reported in Panel A of Table 6.

We find that national culture has no impact on the effect of board diversity reforms on banks' stock returns. However, the significance of the interaction indicator variable for the standard deviation of stock returns suggests a positive incremental effect of reforms in countries more open to diversity, that is, in these countries, reforms decrease bank risk. Countries' cultural traits are of fundamental importance for the quality of formal institutions and for the effective implementation of reforms, even in societies as highly developed as the EU member states (Gutmann and Voigt, 2018). Cultural traits enhancing equality, independence from political influence or individual status have also been proved to be conducive to economic growth (Voigt et al., 2015). This finding suggests that a country's openness to diversity strengthens the effect of board diversity reforms on bank performance and is, therefore, an important factor to be considered when assessing the impact of reforms (Frijins et al., 2016).

< Insert Table 6 about here >

4.4.2 Legal framework

To further analyse the impact of country-level conditions on the effectiveness of board diversity reforms, we examine the legal origin. An extensive literature starting with La Porta et al. (1997) supports the view that the legal framework adopted by a country is an important factor in explaining investor

[5] For instance, a society that welcomes individualism, long-term orientation, and indulgence in the form of deviations from strict social norms is associated with a greater support of diversity. In contrast, a society where masculinity, power concentration, and uncertainty avoidance prevail is considered to be less open to diversity.

[6] The values of our Hofstede index range from 0 to 100, with higher values indicating countries more open to diversity. For power distance, masculinity, and uncertainty avoidance, greater openness to diversity is indicated by lower values; hence we use (100 – Dimension's value) when constructing the Hofstede index. While our index represents a snapshot of a country's cultural openness to diversity at a particular point in time (that is, at the beginning of our sample period) and cultural aspects change over time, attitudes and beliefs transform over generations and therefore the overall change in national culture is slow.

protection and capital market development. La Porta et al. (1998) find that civil laws give investors weaker legal rights than common laws, supporting the idea that legal systems matter for corporate governance and that firms have to adapt to the limitations of the legal systems that they operate in. More recently, Koirala et al. (2018) find that in countries with a weaker market mechanism of corporate governance (such as civil law countries), corporate governance reforms substitute the weaker market forces of corporate scrutiny and stimulate value-enhancing risk-taking behaviour.

To examine the impact of board diversity reforms across different legal origins, we augment Equation (1) with an interaction term between the post-reform dummy *DREFORM* and the dummy *DCOM* that indicates the country's legal framework by taking the value of one for common law countries (Kanagaretnam et al., 2014; Fauver at al., 2017). Table 6, Panel B presents the results.

We find that the impact of reforms on banks' stock returns is similar in civil and common law countries as the coefficient on interaction term *DREFORM* x *DCOM* is insignificant. However, it the coefficient for the standard deviation of stock return is negative and statistically significant, thus suggesting that reforms decrease risk in common law counties in contrast to the risk-increasing effect they have in civil law countries (positive and statistically significant coefficient on *DREFORM).* These findings are generally consistent with prior literature and may reflect the greater uncertainty around the implementation of reforms and the relative poorer quality of investor protection institutions in civil law countries which prevent firms in those countries from accruing the full benefits of the reforms (Fauver et al., 2017; Koirala et al., 2018).

4.4.3 Bank board diversity

The effectiveness of board diversity reforms may also be influenced by the ex-ante composition of the bank's board of directors, as more heterogeneous boards are likely to be more welcoming to reforms. Indeed, diversity brings a variety of experiences and different sets of information to the boardroom (Jensen, 1993; Anderson et al., 2011).

The overall level of diversity for each board of directors is captured by the bank-specific board diversity index ($BOARDDIVX$). We define banks as having higher board heterogeneity (diversity) if their board diversity index exceeds the sample mean and create a board diversity indicator variable *DDIV* that takes the value of one for banks with more diverse boards. We then augment Equation (1) with *DREFORM* x *DDIV*, an interaction term between the post-reform dummy *DREFORM* and the board diversity dummy *DDIV*, to test whether the impact of board reforms is different for banks with more heterogeneous boards. The results are reported in Table 7.

< Insert Table 7 about here >

We find that the impact of reforms on performance is similar across banks with different degree of board diversity, as suggested by the insignificant coefficient on the interaction term *DREFORM* x *DDIV*.

4.4.4 Alternative dependent variable

To further examine the impact of board diversity reforms on bank performance, we supplement our analysis by examining the impact of reforms on bank value. If reforms are beneficial for bank performance, we expect them to be positively associated with bank charter value. We capture bank charter value using a proxy for Tobin's Q (Adams and Santos, 2006; Fauver et al., 2017). We define Tobin's Q (*TOBIN'S Q*) as the ratio of the bank's market value to its book value, where the bank's market value is defined as the book value of assets minus the book value of equity plus the market value of equity and use its natural logarithm as our dependent variable. We then repeat the analysis in Tables 4, 6, and 7 by replacing the dependent variable with Tobin's Q. The results are reported in Table 8.

< Insert Table 8 about here >

We find a positive incremental effect of reforms in countries more open to diversity as suggested by the significant coefficient on the interaction term *DREFORM* x *DHOF* in Model (3); that is, in these countries reforms increase bank value. We also find that while reforms appear to have no impact in countries adopting a civil law framework they significantly enhance bank value in countries with a common law system as suggested by the significant coefficient on the interaction term *DREFORM* x *DCOM* in Model (4). Finally, we find that reforms have a greater impact on banks with more diverse boards as suggested by the significance of the interaction term *DREFORM* x *DDIV* in Model (5). This finding is consistent with Ahern and Dittmar (2012) and Matsa and Miller (2013). As far as bank charter value is concerned, the more diverse range of knowledge and perspective in the boardroom offered by cultural diversity outweigh, on average, the negative aspects.

5 Conclusion

We examine the performance impact of board diversity reforms for EU banks in the wake of the global financial crisis. Using a difference-in-difference approach, we document that reforms increase bank stock returns, and that this effect materialises in the first three years after the reforms become effective. The performance impact of reforms is similar across diversity quotas and affirmative actions, albeit the former increase bank risk. Further analysis shows that the performance-diversity relationship may vary with the type of reform. While gender diversity per se seems to have a risk-increasing effect, greater presence of female directors on board reduces bank risk when it is legally reinforced. We also find that the effectiveness of reforms depends on a country's prior institutional environment and, in particular, its cultural openness to diversity and legal origin. Finally, the reforms appear to have stronger valuation impact for banks that ex-ante have more diverse boards. Our analysis has important implications for the banking sector in the light of on-going reforms of corporate governance codes.

Table 1 Board diversity reforms

	2007 diversity status (1)	*Changes 2007-2014 (2)*		*2014 diversity status (3)*
		First board diversity reform	*Introduction of mandatory quotas*	
Austria	0	2009		1
Belgium	0	2009		1
Cyprus	0			0
Czech Republic	1			1
Denmark	0	2008		1
Finland	1			1
France	1	2008	2011	2
Germany	0	2009		1
Greece	0	2011		1
Hungary	2			2
Ireland	0	2013		1
Italy	0	2011	2012	2
Lithuania	0	2010		1
Malta	0	2014		1
Netherlands	0	2008		1
Poland	0	2010		1
Portugal	0	2012		1
Romania	0			0
Spain	2			2
Sweden	2			2
United Kingdom	0	2010		1

The table presents board diversity reforms by country. Column (1) reports the diversity status in 2007; Column (2) reports the year in which the reform becomes effective; and Column (3) reports the diversity status in 2014. The diversity status can take a value of 0 when board diversity is not addressed in the national corporate governance code and/or in national legislation, 1 when board diversity is encouraged in the national corporate governance code and/or in national legislation and 2 when board diversity is mandatory (e.g., a diversity quota) in the national corporate governance code and/or in national legislation.

Table 2 Descriptive statistics

Panel A: Sample summary statistics (2007-2014)					
	No. of Obs.	*Mean*	*Std. Dev.*	*Min*	*Max*
Performance measures					
STOCK RETURN	636	0.06	0.77	-2.00	9.44
STOCK RETURN VOLATILITY	636	0.41	0.25	0.01	3.20
TOBIN'S Q	635	0.42	1.05	-0.14	7.48
Board characteristics					
BOARDWOM	566	0.13	0.11	0.00	0.60
BOARDEMPL	566	0.08	0.13	0.00	0.60
BOARDDIVX	645	0.41	0.22	0	0.88
DDIV	645	0.54	0.50	0	1
Bank-specific characteristics					
TOTAL ASSET	645	292.88	510.64	0.21	2586.70
ASSET GROWTH	641	0.07	0.16	-0.24	0.81
LOAN / ASSET	645	0.59	0.19	0.07	0.85
DEPOSIT / ASSET	645	0.67	0.15	0.25	0.92
EQUITY / ASSET	645	0.07	0.03	0.01	0.16
LOAN LOSS PROVISION / LOANS	632	0.01	0.01	0.00	0.06
COST / INCOME	642	0.61	0.17	0.34	1.50
Country-specific characteristics					
DQUOTA	645	0.13	0.34	0	1
DCOM	645	0.15	0.36	0	1
DHOF	629	0.44	0.50	0	1

Panel B: Pre- and post-reform performance					
	Pre-reform		*Post-reform*		*Difference in means*
	No. of Obs.	*Mean*	*No. of Obs.*	*Mean*	
STOCK RETURN	330	-0.09	306	0.22	0.30***
STOCK RETURN VOLATILITY	330	0.42	306	0.39	-0.02*

The table reports descriptive statistics for variables used in the analysis. Panel A reports the statistics for the full sample period 2007-2014 (number of observations, mean, standard deviation, minimum and maximum values). Panel B reports statistics (number of observations, mean, and mean differential) for performance measures of banks before and after the reforms, with the test for the equality of means reported in the last column. Definitions of the variables are provided in Appendix 2.

Table 3 The impact of board diversity reforms on bank performance

	STOCK RETURN				*STOCK RETURN VOLATILITY*			
	Model (1)	*Model (2)*	*Model (3)*	*Model (4)*	*Model (1)*	*Model (2)*	*Model (3)*	*Model (4)*
DREFORM	0.2062*				0.0322			
	(1.93)				(1.23)			
$DREFORM_{[0;+2]}$		0.2096*				0.0330		
		(1.98)				(1.26)		
$DREFORM_{[+3;T]}$		-0.0521	-0.1420	-0.1707		-0.0277	-0.0021	0.0022
		(-0.40)	(-1.12)	(-1.11)		(-0.65)	(-0.05)	(0.04)
$DREFORM_{[-1;+2]}$			0.1072				0.0534	
			(1.13)				(1.59)	
$DREFORM_{-1}$				-0.0252				0.0507
				(-0.34)				(1.57)
$DREFORM_{0}$				0.2618*				0.0717*
				(1.71)				(1.81)
$DREFORM_{+1}$				0.1796				0.0728*
				(1.27)				(1.84)
$DREFORM_{+2}$				-0.0069				0.0460
				(-0.07)				(0.90)
SIZE	-0.0353	-0.0360	-0.0372	-0.0329	0.0255***	0.0253***	0.0251***	0.0237***
	(-1.11)	(-1.13)	(-1.14)	(-1.00)	(3.43)	(3.45)	(3.44)	(3.22)
ASSET GROWTH	-0.2659*	-0.2712*	-0.2637*	-0.2533*	0.0079	0.0067	0.0117	0.0056
	(-1.87)	(-1.84)	(-1.82)	(-1.77)	(0.14)	(0.12)	(0.21)	(0.10)
LOAN / ASSET	-0.2367**	-0.2184*	-0.2147*	-0.2128*	-0.0876	-0.0834	-0.0848	-0.0829
	(-2.07)	(-1.80)	(-1.78)	(-1.72)	(-1.57)	(-1.55)	(-1.58)	(-1.58)
DEPOSIT / ASSET	-0.3380	-0.3709	-0.3855	-0.3776	0.1051	0.0975	0.0848	0.0761
	(-1.23)	(-1.30)	(-1.30)	(-1.25)	(1.23)	(1.20)	(1.03)	(0.94)
EQUITY / ASSET	-0.4157	-0.3732	-0.5196	-0.2149	-0.7761**	-0.7662*	-0.7492*	-0.7996**
	(-0.26)	(-0.24)	(-0.33)	(-0.13)	(-2.01)	(-1.99)	(-1.92)	(-2.02)

LOAN LOSS PROVISION / LOANS	-9.7520***	-10.7524***	-10.9069***	-10.8979***	6.4751***	6.2432***	6.2400***	6.3516***
	(-3.23)	(-3.51)	(-3.60)	(-3.65)	(5.48)	(5.10)	(5.03)	(5.09)
COST / INCOME	-0.6033***	-0.6254***	-0.6820***	-0.6517***	0.2457***	0.2406***	0.2241***	0.2154***
	(-3.10)	(-3.09)	(-3.38)	(-3.04)	(3.83)	(3.82)	(3.52)	(3.47)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Obs.	620	620	620	620	620	620	620	620
Adjusted R-squared	0.317	0.324	0.319	0.328	0.508	0.512	0.514	0.516

The table reports the results of the effects of board diversity reforms on bank performance proxied by two measures related to stock returns *(STOCK RETURN*) and risk (*STOCK RETURN VOLATILITY*). Model (1) presents the baseline results for the effects of board diversity reforms; Model (2) splits the post-reform period into the post-reform windows [0,+2] and [+3,T], where T denotes the end of the sample period; Model (3) considers the reform windows [-1,+2] and [+3,T]; Model (4) considers separately the effect of the reforms in the years around their introduction (-1, 0, +1, +2). Bank-specific characteristics are winsorised at 99% of the bank-year distribution. The t-statistics are calculated using standard errors clustered at the bank level are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. Definitions of the variables are provided in Appendix 2.

Table 4 The effect of reform approach: Quota vs. affirmative action

	STOCK RETURN	*STOCK RETURN VOLATILITY*
DREFORM	0.2092*	0.0171
	(1.88)	(0.60)
DREFORM x *DQUOTA*	-0.0110	0.0558*
	(-0.11)	(1.81)
SIZE	-0.0352	0.0252***
	(-1.11)	(3.42)
ASSET GROWTH	-0.2662*	0.0091
	(-1.88)	(0.16)
LOAN / ASSET	-0.2375**	-0.0833
	(-2.07)	(-1.49)
DEPOSIT / ASSET	-0.3361	0.0954
	(-1.21)	(1.10)
EQUITY / ASSET	-0.4302	-0.7031*
	(-0.27)	(-1.81)
LOAN LOSS PROVISION / LOANS	-9.7156***	6.2910***
	(-3.21)	(5.24)
COST / INCOME	-0.6064***	0.2616***
	(-3.04)	(4.03)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Clustered SE (bank)	Yes	Yes
No. of Obs.	620	620
Adjusted R-squared	0.316	0.509

The table reports the results of the impact of the reform approach on the effect of board diversity reforms on bank performance proxied by two measures related to stock returns *(STOCK RETURN*) and risk (*STOCK RETURN VOLATILITY*). The model includes the interaction between the post-diversity reform dummy and the quota dummy, *DREFORM* x *DQUOTA*, which takes the value of 1 if the reforms are mandatory rather than affirmative actions. Bank-specific characteristics are winsorised at 99% of the bank-year distribution. The t-statistics are calculated using standard errors clustered at the bank level are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. Definitions of the variables are provided in Appendix 2.

Table 5 The effect of the type of diversity and the diversity-performance relation

	STOCK RETURN		*STOCK RETURN VOLATILITY*	
Model	*Model (1)*	*Model (2)*	*Model (1)*	*Model (2)*
DREFORM		0.3556***		0.0757***
		-2.95		-2.26
DREFORMWOM	0.161		0.0616*	
	-1.25		-1.68	
DREFORMEMPL	0.0722		0.0241	
	-0.3		-0.53	
BOARDDIVX		0.5518***		0.0639
		-2.86		-1.06
BOARDWOM	-0.2199		0.2218*	
	(-0.58)		-1.82	
BOARDEMPL	1.0867		-0.3248**	
	-1.22		(-2.46)	
DREFORM x *BOARDDIVX*		-0.3954**		-0.1008
		(-1.99)		(-1.60)
DREFORMWOM x *BOARDWOM*	-0.0276		-0.3488*	
	(-0.06)		(-1.87)	
DREFORMEMPL x *BOARDEMPL*	-0.3823		-0.1609	
	(-0.38)		(-0.81)	
TOTAL ASSET	-0.0461	-0.038	0.0269***	0.0239***
	(-1.28)	(-1.17)	(3.54)	-3.1
ASSET GROWTH	-0.2815*	-0.2680*	0.0260	0.0006
	(-1.80)	(-1.91)	(0.45)	-0.01
LOAN / ASSET	-0.1666	-0.1888	-0.1097*	-0.0842
	(-1.46)	(-1.45)	(-1.71)	(-1.50)
DEPOSIT / ASSET	-0.3290	-0.2689	0.0878	0.0935
	(-1.14)	(-1.08)	(1.06)	-1.11
EQUITY / ASSET	-0.1182	-0.0226	-1.1183***	-0.8267**
	(-0.06)	(-0.01)	(-2.74)	(-2.11)
LOAN LOSS PROVISION / LOANS	-11.2418***	-10.5074***	6.4531***	6.4165***
	(-3.55)	(-3.60)	(4.99)	-5.44
COST / INCOME	-0.6937***	-0.5624***	0.2674***	0.2386***
	(-3.52)	(-3.13)	(3.84)	-3.73
Country fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes
Clustered SE (bank)	Yes	Yes	Yes	Yes
No. of Obs.	552	552	552	552
Adjusted R-squared	0.303	0.363	0.512	0.54

The table reports the results of the effects of different types of board diversity reforms on bank performance proxied by two measures related to stock returns *(STOCK RETURN*), and risk (*STOCK RETURN VOLATILITY*) and of the effect of board diversity characteristics on performance before and after the reforms. Model (1) includes a dummy capturing the type of reform (gender or employee), two board diversity features (proportion of women or employees on the board) and an interaction term between the reform type dummy (*DREFORMWOM* or *DREFORMEMPL*) and the relevant diversity variable (*BOARDWOM* and *BOARDEMPL*). Model (2) considers the effect of the overall level of diversity on the board pre- and post-reforms and includes the post-reform period dummy (*DREFORM*), the board diversity index (*BOARDDIVX*), and their interaction. Bank-specific characteristics are winsorised at 99% of the bank-year distribution. The t-statistics are calculated using standard errors clustered at the bank level are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. Definitions of the variables are provided in Appendix 2.

Table 6 The effect of country-level conditions: National culture and legal framework

Panel A: National culture: Openness to diversity		
	STOCK RETURN	*STOCK RETURN VOLATILITY*
DREFORM	0.2479**	0.1059***
	(2.06)	(3.64)
DREFORM x *DHOF*	0.0016	-0.1664***
	(0.02)	(-4.76)
SIZE	-0.0322	0.0222***
	(-1.01)	(3.04)
ASSET GROWTH	-0.2028	0.0182
	(-1.56)	(0.32)
LOAN / ASSET	-0.2549**	-0.0890*
	(-2.46)	(-1.70)
DEPOSIT / ASSET	-0.1861	0.0650
	(-0.78)	(0.81)
EQUITY / ASSET	-1.2070	-0.6868*
	(-0.87)	(-1.75)
LOAN LOSS PROVISION / LOANS	-12.0157***	5.3970***
	(-3.73)	(4.44)
COST / INCOME	-0.5184***	0.2464***
	(-2.76)	(3.97)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Clustered SE (bank)	Yes	Yes
No. of Obs.	604	604
Adjusted R-squared	0.334	0.526

Panel B: Legal framework: Common law vs. civil law		
	STOCK RETURN	*STOCK RETURN VOLATILITY*
DREFORM	0.2002*	0.0586**
	(1.80)	(2.36)
DREFORM x *DCOM*	0.0381	-0.1673***
	(0.25)	(-3.36)
SIZE	-0.0350	0.0241***
	(-1.10)	(3.31)
ASSET GROWTH	-0.2667*	0.0111
	(-1.88)	(0.19)
LOAN / ASSET	-0.2372**	-0.0855
	(-2.07)	(-1.54)
DEPOSIT / ASSET	-0.3369	0.1003
	(-1.22)	(1.20)
EQUITY / ASSET	-0.4344	-0.6941*
	(-0.27)	(-1.84)
LOAN LOSS PROVISION / LOANS	-9.6478***	6.0178***
	(-3.19)	(5.12)
COST / INCOME	-0.6053***	0.2544***
	(-3.11)	(3.92)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Clustered SE (bank)	Yes	Yes
No. of Obs.	620	620

Adjusted R-squared	0.316	0.518

The table reports the results of the effect of different country-level institutional characteristics on the impact of board diversity reforms on bank performance proxied by two measures related to stock returns *(STOCK RETURN*) and risk (*STOCK RETURN VOLATILITY*). The model in Panel A includes the interaction between the post-diversity reform dummy and the country-specific Hofstede dummy, *DREFORM* x *DHOF*, which takes the value of 1 if the sum of the six Hofstede dimensions of national culture is above the sample mean (higher national openness to diversity) and zero otherwise (lower national openness to diversity). The model in Panel B includes the interaction between the post-diversity reform dummy and the legal background dummy, *DREFORM* x *DCOM*, which takes the value of 1 for countries which adopt a common law framework and zero for countries which adopt a civil law framework. Bank-specific characteristics are winsorised at 99% of the bank-year distribution. The t-statistics are calculated using standard errors clustered at the bank level are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. Definitions of the variables are provided in Appendix 2.

Table 7 The effect of bank board diversity status

	STOCK RETURN	*STOCK RETURN VOLATILITY*
DREFORM	0.1866*	0.0522**
	(1.97)	(2.00)
DREFORM x *DDIV*	0.0382	-0.0291
	(0.57)	(-1.41)
SIZE	-0.0325	0.0248***
	(-1.00)	(3.31)
ASSET GROWTH	-0.2511*	0.0025
	(-1.78)	(0.04)
LOAN / ASSET	-0.2386**	-0.0893
	(-2.08)	(-1.63)
DEPOSIT / ASSET	-0.3081	0.0902
	(-1.15)	(1.07)
EQUITY / ASSET	-0.2488	-0.8307**
	(-0.15)	(-2.11)
LOAN LOSS PROVISION / LOANS	-9.8700***	6.4814***
	(-3.34)	(5.45)
COST / INCOME	-0.5886***	0.2374***
	(-3.11)	(3.78)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Clustered SE (bank)	Yes	Yes
No. of Obs.	620	620
Adjusted R-squared	0.317	0.511

The table reports the results of the effect of the current level of bank diversity in the board on the impact of board diversity reforms on bank performance proxied by two measures related to stock returns *(STOCK RETURN*), and risk (*STOCK RETURN VOLATILITY*). The model includes the interaction between the post-diversity reform dummy and the bank-specific board diversity dummy (*DDIV*), which takes the value of 1 if the value of the board diversity index is above the sample mean, and zero otherwise. Bank-specific characteristics are winsorised at 99% of the bank-year distribution. The t-statistics are calculated using standard errors clustered at the bank level are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. Definitions of the variables are provided in Appendix 2.

Table 8 Alternative dependent variable: Tobin's Q

	Model (1)	*Model (2)*	*Model (3)*	*Model (4)*	*Model (5)*
DREFORM	0.0175	0.0112	-0.1645*	-0.0895	-0.1389
	(0.20)	(0.11)	(-1.68)	(-1.19)	(-1.19)
DREFORM x DQUOTA		0.0237			
		(0.22)			
DREFORM x DHOF			0.4499**		
			(2.45)		
DREFORM x DCOM				0.6836**	
				(2.22)	
DREFORM x DDIV					0.3111***
					(2.67)
SIZE	-0.0048	-0.0049	0.0084	0.0005	-0.0135
	(-0.11)	(-0.11)	(0.19)	(0.01)	(-0.32)
ASSET GROWTH	0.8335***	0.8341***	0.8363***	0.8194***	0.8271***
	(3.02)	(3.02)	(3.06)	(3.08)	(3.17)
LOAN / ASSET	0.2019	0.2039	0.2319	0.1946	0.2322
	(0.58)	(0.58)	(0.66)	(0.56)	(0.67)
DEPOSIT / ASSET	0.1018	0.0976	0.2465	0.1184	0.1987
	(0.25)	(0.24)	(0.59)	(0.30)	(0.51)
EQUITY / ASSET	2.2134	2.2445	1.8902	1.8664	2.0897
	(0.78)	(0.79)	(0.67)	(0.69)	(0.75)
LOAN LOSS PROVISION / LOANS	2.5662	2.4890	3.9040	4.4582	3.5004
	(0.50)	(0.47)	(0.69)	(0.93)	(0.69)
COST / INCOME	0.8546	0.8616	0.8508	0.8208	0.8663
	(1.60)	(1.63)	(1.58)	(1.56)	(1.61)
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Clustered SE (bank)	Yes	Yes	Yes	Yes	Yes
No. of Obs.	620	620	604	620	620
Adjusted R-squared	0.524	0.523	0.533	0.531	0.531

The table reports the results of the effects of board diversity reforms on bank performance proxied by a measure related to valuation (Tobin's Q) and various interaction dummies that capture different country- or bank-level characteristics. Model (1) presents the baseline results for the effects of board diversity reforms. Model (2) presents the results adding *DREFORM* x *DQUOTA*, the interaction between the diversity reform dummy and the quota dummy, which takes the value of 1 if the reforms are mandatory rather than affirmative actions. Model (3) presents the results adding *DREFORM* x *DHOF*, the interaction between the diversity reform dummy and the country-specific Hofstede dummy which takes the value of 1 if the sum of the six Hofstede dimensions of national culture is above the sample mean (higher national openness to diversity) and zero otherwise (lower national openness to diversity). Model (4) presents the results adding *DREFORM* x *DCOM*, the interaction between the diversity reform dummy and the legal background dummy, which takes the value of 1 for countries, which adopt a common law framework and zero for countries which adopt a civil law framework. Model (5) presents the results adding *DREFORM* x *DDIV*, the interaction between the general diversity reform dummy and the bank-specific board diversity dummy (*DDIV*), which takes the value of 1 if the value of the board diversity index is above the sample mean and zero otherwise. Bank-specific characteristics are winsorised at 99% of the bank-year distribution. The t-statistics are calculated using standard errors clustered at the bank level are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. Definitions of the variables are provided in Appendix 2.

Appendix 1 Reforms promoting diversity in board of directors of listed firms

Country	*First board diversity reform*	*Type of board diversity reform*			*Sources*
	Year	*Gender*	*Employees*	*Other*	
Austria	2009	Yes		Yes	The Austrian Code of Corporate Governance is based on the provisions of the Austrian corporation law, securities law and capital markets law as well as on the principles set out in the OECD Principles of Corporate Governance.
Belgium	2009	Yes		Yes	The Belgian Code of Corporate Governance is based on the existing Belgian legislation applicable to companies, in particular the provisions of the Belgian Code on Companies and financial law applicable to listed companies.
Cyprus					The 2009 Corporate Governance Code issued by the Cyprus Stock Exchange Council is enriched by developments both in current Cypriot business practice as well as international practice.
Czech Republic					The 2004 Corporate Governance Code is based on the OECD Principles and it is drawn up by the Securities Commission in cooperation with experts of the British Know How Fund.
Denmark	2008	Yes	Yes	Yes	The Recommendations on Corporate Governance comply with Danish and EU company law, OECD's Principles of Corporate Governance and recognised best practice. The recommendations are based on, and supplement, company law and stock exchange regulation, and such rules and regulations are presumed known.
Finland					The 2008 Corporate Governance Code, issued by the Board of the Securities Market Association, takes into account changes in regulation and international development.
France	2008	Yes	Yes	Yes	The Recommendations on Corporate Governance, which constitutes the AFEP-MEDEF Code, is the reference code pursuant to the Act No. 2008-649 of 3 July 2008 containing various provisions adapting company law to Community law and amending Articles L. 225-37 and L. 225-68 of the French Commercial Code.
Germany	2009	Yes		Yes	The German Corporate Governance Code contains internationally and nationally recognised standards for good and responsible governance.
Greece	2011	Yes			The SEV Corporate Governance Code is based on Law 3873/2010, which incorporates into Greek legislation EU Directive 2006/46/EC4.
Hungary					The 2008 Corporate Governance Recommendations are considered to be an addition to relevant Hungarian legislation (predominantly Act IV of 2006 on business associations) and are prepared by the Corporate Governance Committee of the Budapest Stock Exchange.

Ireland	2013		Yes	The Corporate Governance Code for Credit Institutions and Insurance firms became effective.
Italy	2011	Yes	Yes	The Supervisory Provisions Concerning Bank Organisation and Corporate Governance is based on the Italian reform of company law and takes into account the most recent developments in the legislative framework for corporate organisation and governance, the transposition of the new prudential rules for banks, as well as the relevant principles and guidelines developed at national and international level.
Lithuania	2010			The Corporate Governance Code gives specific consideration to similar codes, standards and principles adopted by other states and international organisations.
Malta	2014	Yes		The Corporate Governance Manual for directors of investment companies and collective investment schemes became effective.
Netherlands	2008	Yes	Yes	The Dutch corporate governance code is part of a larger system, formed by Dutch and European legislation and case law on corporate governance.
Poland	2010			The Code of Best Practice for WSE Listed Companies draws upon the tradition of Polish corporate governance, developed by a range of individuals and institutions in the financial market with a significant expert and practical contribution by the Best Practices Committee and in the course of discussions with the Institute for Market Economy Research.
Portugal	2012			The Portuguese Government adopted a Resolution of Council of Ministers to increase, in the public and private sectors, the participation of women in the management bodies of the companies which complements the Comissão do Mercado de Valores Mobiliários Corporate Governance Code.
Romania				The Corporate Governance Code of 2009 contains certain recommendations that are supplementary provisions to legal obligation under the laws of Romania (e.g. Companies Act, the Accounting Act, the Capital Market Act).
Spain				The Corporate Governance Code, revised in 2013, is based on the Ley del Mercado de Valores, and on the relevant principles and practices at international level.
Sweden				The Swedish Corporate Governance Code was updated in 2008 and it is based on the Swedish Companies Act which came into force on 1 January 2006.
United Kingdom	2010	Yes		The new version of the UK Code on Corporate Governance became effective.

Data are from the European Corporate Governance Institute (ECGI), the European Commission (EC), the World Bank Report on the Observance of Standards and Codes (ROSC), and publications from each country's relevant regulator.

Appendix 2 Variable definitions

	Definition	Source
Performance measures		
STOCK RETURN	Daily stock return (annual average)	Datastream (now Thomson Eikon)
STOCK RETURN VOLATILITY	Standard deviation of *STOCK RETURN* (t, t-1, t-2)	Authors' calculation using Datastream data (now Thomson Eikon)
TOBIN'S Q	Tobin's Q = (Total assets – Equity + Market value of equity) / Total assets. In the estimation we use the natural logarithm.	Author's calculation using Bankscope (now Orbis Bank) and Datastream (now Thomson Eikon) data
Board structure variables		
BOARDWOM	Fraction of women on the board	Authors' calculation using Boardex data
BOARDEMPL	Fraction of employees on the board	Authors' calculation using Boardex data
BOARDDIVX	Board diversity index based on the fraction of women on the board, fraction of employees on the board, fraction of foreign members on the board and the board members' age variation,	Authors' calculation using Boardex data
DDIV	Board diversity dummy assigned the value of 1 if the value of the board diversity index is above the sample mean (higher bank board diversity) and zero otherwise (lower bank board diversity)	Authors' calculation using Boardex data)
Bank-specific variables		
TOTAL ASSET	Total assets (euro billions)	Bankscope (now Orbis Bank)
SIZE	Ln(*TOTAL ASSET*)	Authors' calculation using Bankscope (now Orbis Bank) data
ASSET GROWTH	Total asset growth	Authors' calculation using Bankscope (now Orbis Bank) data
LOAN / ASSET	Loan ratio = Gross loans to total assets	Authors' calculation using Bankscope (now Orbis Bank)data
DEPOSIT / ASSET	Deposit ratio = Deposit and short-term funding to total assets	Authors' calculation using Bankscope (now Orbis Bank) data
EQUITY / ASSET	Equity to total assets	Bankscope (now Orbis Bank)
LOAN LOSS PROVISION / LOANS	Quality of loan portfolio = Loan loss provisions to gross loans	Authors' calculation using Bankscope (now Orbis Bank) data
COST / INCOME	Cost to income ratio	Bankscope (now Orbis Bank)
Country-specific variables		
DREFORM	Post-diversity reform dummy equal to 1 when the first diversity reform is introduced and thereafter, and 0 otherwise (*)	Authors' calculation using: European Corporate Governance Institute (ECGI), the European Commission (EC), the European Foundation for the Improvement of Living and Working Conditions (Eurofound), the European Trade Union Institute, the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women), the World Bank Report on the Observance of Standards and Codes (ROSC), and publications from each country's relevant regulator
DQUOTA	Dummy equal to 1 if country has approved mandatory reforms and 0 otherwise	Authors' calculation
DHOF	Hofstede dummy = (1) For each country in the sample the total value of the six Hofstede dimensions of national culture (i.e., (100 - power distance), individualism, (100 - masculinity), (100 - uncertainty avoidance), long-term orientation, and indulgence) is derived; (2) the Hofstede dummy is assigned the value of 1 if the derived value is above the sample mean (higher national openness to diversity) and zero otherwise (lower national openness to diversity)	Authors' calculation using the Hofstede Insight data
DCOM	Dummy equal to 1 if country has a common law legal system and 0 otherwise	Authors' calculation using: CIA; Commonwealth network; NYU Law Global; Hatzimihail (2013)
DREFORMWOM	Post-women reform dummy equal to 1 when the first reform on gender diversity is introduced and thereafter, and 0 otherwise	Authors' calculation
DREFORMEMPL	Post-employee reform dummy equal to 1 when the first reform on employee representation is introduced and thereafter, and 0 otherwise	Authors' calculation

Reform timing variables		
$DREFORM_{[0;\ +2]}$	Post-diversity reform window dummy equal to 1 if the first diversity reform is introduced in years (t, t-1, t-2) and 0 otherwise	Authors' calculation
$DREFORM_{[-1;\ +2]}$	Pre/Post-diversity reform window dummy equal to 1 if the first diversity reform is introduced in years (t+1, t, t-1, t-2) and 0 otherwise	Authors' calculation
$DREFORM_{[+3;\ T]}$	Post-diversity reform window dummy equal to 1 if the first diversity reform is introduced in years (< t+3) and 0 otherwise	Authors' calculation
$DREFORM_{t;}$	Reform timing dummy indicating the year before or after the introduction of the reform, where t takes the values of (-1, 0, +1, +2)	Authors' calculation

The table defines the variables used in the study and the source of the data. (*) first introduction during the sample period (same thereafter).

Appendix 3 Correlation matrix

	TOBIN'S Q	*STOCK RETURN*	*STOCK RETURN VOLATILITY*	*SIZE*	*ASSET GROWTH*	*LOAN/ASSET*	*DEPOSIT/ASSET*	*EQUITY/ASSET*	*LOAN LOSS PROVISION/LOANS*	*COST/INCOME*	*BOARDWOM*	*BOARDEMPL*
TOBIN'S Q	1											
STOCK RETURN	-0.052	1										
	0.193											
STOCK RETURN VOLATILITY	0.1276*	0.1424*	1									
	0.001	0.000										
SIZE	0.0773*	-0.010	0.2459*	1								
	0.052	0.804	0.000									
ASSET GROWTH	0.1478*	-0.0818*	-0.1862*	-0.2196*	1							
	0.000	0.039	0.000	0.000								
LOAN/ASSET	0.030	-0.038	-0.021	-0.2297*	-0.029	1						
	0.449	0.339	0.596	0.000	0.463							
DEPOSIT/ASSET	0.0664*	0.007	-0.1274*	-0.6158*	0.064	0.3610*	1					
	0.094	0.855	0.001	0.000	0.103	0.000						
EQUITY/ASSET	-0.025	0.046	-0.2535*	-0.4732*	0.050	0.2987*	0.4406*	1				
	0.531	0.251	0.000	0.000	0.211	0.000	0.000					
LOAN LOSS PROVISION/LOANS	0.1949*	-0.016	0.2968*	-0.0665*	-0.1412*	0.2157*	0.2098*	0.1059*	1			
	0.000	0.692	0.000	0.095	0.000	0.000	0.000	0.008				
COST/INCOME	0.1039*	-0.1763*	0.2552*	0.062	-0.1113*	-0.2427*	-0.1729*	-0.2660*	0.037	1		
	0.009	0.000	0.000	0.120	0.005	0.000	0.000	0.000	0.353			
BOARDWOM	-0.045	0.058	0.0781*	0.2730*	-0.059	-0.1441*	-0.2796*	-0.2270*	-0.1100*	-0.046	1.000	
	0.287	0.165	0.063	0.000	0.162	0.001	0.000	0.000	0.010	0.280		
BOARDEMPL	-0.2466*	0.1064*	-0.1788*	0.0742*	-0.0826*	-0.2193*	-0.021	-0.2078*	-0.1928*	0.0783*	0.3055*	1
	0.000	0.011	0.000	0.078	0.049	0.000	0.622	0.000	0.000	0.064	0.000	

The table reports correlations for the regressors used the analysis. * indicates significant at 10 per cent level. Definitions of the variables are provided in Appendix 1.

Appendix 4 Sample composition by country in 2014

Country	*Number of banks*	*Number of bank-year observations*
Austria	5	40
Belgium	3	19
Cyprus	3	22
Czech Republic	1	8
Denmark	5	40
Finland	2	14
France	8	64
Germany	4	32
Greece	3	21
Hungary	1	8
Ireland	2	16
Italy	13	103
Lithuania	1	8
Malta	1	8
Netherlands	1	8
Poland	7	54
Portugal	4	31
Romania	1	8
Spain	6	44
Sweden	5	40
United Kingdom	8	57
Total	84	645

The table shows the number of banks in the sample and the number of bank-year observations by country under study.

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