Board diversity reforms: Do they matter for EU bank performance?

F. Arnaboldi, B. Casu, E. Kalotychou, and A. Sarkisyan[1]

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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 and their volatility within the first three years after their enactment. The type of reform matters, with quotas increasing return volatility more compared to affirmative actions. The effectiveness of reforms depends on a country's institutional environment. The impact on volatility is lower in countries more open to diversity, with common law system and with higher economic freedom. Finally, reforms play a bigger role in banks that have ex-ante less heterogeneous boards.

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

"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 major 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 the diversity of bank boards impact on bank performance? This paper addresses this question by employing an identification strategy that allows us to study the impact of board reforms using between country variation in the timing and the type of reforms pursued, reform approach, as well as the type of diversity supported and the country institutional background.

The board of directors is primarily responsible for monitoring managerial performance and therefore ensuring adequate returns for shareholders. To achieve these objectives, the board also has the authority to replace the firm's management when underperforming. The prevailing consensus is that more diverse boards would positively affect the corporate governance of companies, leading to better performance. 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). Veltrop et al. (2015) argue that diversity can have a detrimental effect on board effectiveness if it fosters social categorisation, resulting in groups or factions opposed to each other. In this context, gender diversity 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 rather than simply because of women's presence (Nelson, 2014).

It is important to point out that, despite the policy 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 merits of gender quotas have 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 to a deterioration in firms' operating performance (Ahern and Dittmar, 2012; Bøhren and Staubo, 2016; Garcia Lara et al., 2017). Since the financial 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, measured by stock returns. To obtain a clearer picture of the impact of reforms, we also consider the standard deviation of stock returns as a proxy for performance variability, or risk (Beltratti and Stulz, 2012). We model the impact of bank board reforms on bank returns and risk separately, as they are not necessarily linked. The impact of board reforms can manifest through different channels. A successful regulatory reform would result in higher returns and lower risk. However, a more diverse board could lead to both higher and lower returns. A more diverse board could increase returns thanks to more creativity and innovative ideas. Equally, it could decrease returns if decisions take longer as there is more conflict between board members. Similarly, increased diversity could lead to a better oversight and therefore decrease risk. On the other hand, board diversity could be achieved by electing younger or less qualified board members and, as a result, it could lead to increased volatility. In addition, it can be argued that any regulation that urges firms to enact changes to the way they are managed imposes some costs, both pecuniary and operational. These costs can affect firm performance, both in terms of lower returns

and / or increased volatility of returns. Therefore, the impact of board reform on bank risk and return is an empirical question.

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. This enables us to build a novel dataset of all diversity-related changes and assess their realised impact on the composition of listed firms' board of directors and their effectiveness. Appendix 1 summarises all our sources and details the reforms considered in the analysis.

The heterogeneity across European countries with regard to the occurrence, the timing and the type of these reforms facilitates the set-up of a treatment-based empirical approach that overcomes the endogeneity issues arising in attempting to explain the link between board diversity and bank performance. A difference-in-difference (DID) methodology is adopted as the appropriate framework to evaluate the effect of reforms on bank performance. As changes in the governance codes might take some time to be implemented at the firm level, potential changes in performance could materialise well after the reforms have become effective. We address the issue of timing and duration of the reform effect by separately scrutinising the change in bank performance in the years following the introduction of reforms as well as the cumulative effect over short- and longer-time windows. To assess the parallel trend assumption underlying our DID design, we conduct two placebo tests adopting pseudo reform years in the pre-and post-reform periods. It might be argued that the effectiveness of reforms depends on whether they are legally enforceable. We therefore examine 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. Moreover, the response of each bank to reforms could differ depending on whether a bank's board is already diverse prior to the enactment of the reform, in which case the reform would not bring much change to the structure of the board and performance of the bank. Using a bank-specific diversity index that encompasses four different aspects of diversity (gender, age, nationality and employee representation), we identify diverse and non-diverse banks prior to the reforms. Naturally, we would expect the reforms to have a stronger performance effect on less diverse banks. In the same vein, we also differentiate between banks that have a strong women and employee board representation prior to the reforms. 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 bank stock returns, and their impact is economically relevant. Their effect seems to materialise in the first three years after the enactment of the reform. On the other hand, our analysis shows that the reforms also increase stock return volatility, although the effect is more short-lived. We also find that the type of reform matters. In particular, the introduction of quotas for women and employees increases risk more compared to affirmative actions, although there is no differential impact on returns. We show that the effectiveness of reforms depends on a country's prior institutional environment. Countries more open to diversity, countries with a common law system, and countries with higher economic freedom experience lower return volatility increases post-reform. Finally, reforms are more effective for banks that have ex-ante less heterogeneous boards.

Our paper contributes to the literature in several ways. First, we add 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 performance. We contribute to 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 and its role in the adoption of rules and regulation in the banking sector, suggesting that cultural differences 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 the EU member states between 2007 and 2014. This allows us to investigate the relationship between corporate governance and bank performance at the onset of the global financial crisis (2007) and the subsequent reform period. At the EU level, the crisis prompted a comprehensive revision of the corporate governance rules already in place, either in the form of directives or in the form of national regulation, to promote a culture that does not reward excessive risk-taking. To account for all the post-crisis regulatory reforms that explicitly emphasise the importance of diversity in the boardroom, we analysed a broad set of sources, from recommendations to foster best practice to legislative changes. Our starting point for governance reforms are publications from each member state's relevant regulator. We then consulted corporate governance codes, European and international organisation reports on corporate governance. We complemented our 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 diversity in the board of directors of listed firms. The reason is twofold. 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). The identified reforms are either broad calls on diversity or in respect to specific aspects such as gender diversity, employee representation and so on. 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 classify 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. Similarly, we distinguish between reforms which explicitly 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 substantial heterogeneity in the type and timing of diversity reforms carried out by EU member states in the period under analysis. Between 2007 and 2014, we coded board diversity reforms as approved in fourteen countries. Most reforms explicitly encourage diversity, with two countries in our sample, France and Italy, imposing a gender quota. Seven countries did not undertake any 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:

$$P_{ijt} = \alpha_0 + \alpha_1 DREFORM_{jt} + \beta X_{ijt} + \varepsilon_{ijt}$$

(1)

where P_{ijt} 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 the value of one when the first diversity reform is introduced and thereafter, and 0 otherwise. The noise ε_{ijt} is assumed to be independently distributed from the k bank controls. In all regressions, we allow for serial dependence in the 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.[2] Country instead of firm fixed effects are used to control for group effects to avoid

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[2] 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

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 and benchmark banks 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. Our DID set-up therefore compares changes in bank performance following the reforms with changes in bank performance in 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 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

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markets, measured by the natural logarithm of the country's market capitalisation. The results are qualitatively similar; we, therefore, opt for country fixed effects.

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 introduce in our DID framework reform timing dummies that track the effect of the reforms in the years after they become effective. Specifically, we test whether there is a significant change in bank performance in specific years following the reform by replacing the post-reform period dummy with the set of dummy variables $DREFORM_t$, $t = (0, +1, +2)$, which equal one for the year in which the reform is enacted, 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, until the end of the sample period at time T.

2.4   The role of reform approach, national culture and bank diversity status

We then test whether the effectiveness of reforms depends on the approach taken, that is, through the imposition of quotas or affirmative actions. 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 2008 and 2011 where the government introduced quotas on the representation of employees and women respectively, and in Italy in 2012 where quotas on women were implemented.[3] All other reforms involved affirmative actions, simply encouraging board diversity.

We also examine whether the effectiveness of reforms depends on national characteristics such as a country's prior institutional environment. In doing so, we look at differences in national culture that define the extent to which a country embraces openness to diversity, the extent of economic freedom as well as the legal system and structure.

It is expected that reforms might affect some banks more than others. If a bank's board is already diverse prior to the enactment of the reform, then the reform would not bring much change to the structure of the board and performance of the bank. In this spirit, we test whether the ex-ante diversity status of banks can explain differences in the effectiveness of reforms on bank performance.

3   Sample and descriptive statistics

For all the EU countries in our sample, we collect data on their publicly listed commercial banks for the period 2007-2014. We focus on listed banks because of the assumption that these institutions are

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[3] Employee quota was introduced in France in 2008 requiring the appointment of one or more employee directors from among employee shareholders. Gender quota legislation followed in 2011, which imposed a 20% women presence in the board. The women proportion was progressively raised to 40% by 2015. In Italy, gender quotas were introduced in 2012, establishing that women would have to account for one-third of the board members.

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 impact of outliers, we apply 99 per cent winsorisation to stock return, stock return volatility, bank balance sheet and income statement data.[4] 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. Looking at performance measures, the average banks has a stock return of 4 per cent, with a yearly standard deviation of 40 per cent.

< Insert Table 2 about here >

When considering board diversity, it is important to look beyond the gender dimension.[5] Following the EBA (2017) guidelines, we distinguish four separate dimensions: (i) gender diversity; (ii) age; (iii) nationality; (iv) employee representation. Boards appear to be male-dominated, with female directors constituting only 13 per cent of the total board members. Employee representatives account for only 8 per cent of the board. On average, foreign directors form 20 per cent of board members. Directors' average age is 57 years, with the youngest board member being 35 and the oldest 69. We capture the overall level of diversity for each board of directors by constructing a bank-specific board diversity index inspired by Li and Wahid (2017) that relies on the above four aspects of diversity. These variables are converted into discrete score variables based on their respective decile within the sample distribution. The diversity index for each bank-year is computed as $BOARDDIVX_{it} = \frac{1}{40}\sum_{j=1}^{4} D_{it}^{j}$, where $j = 1,\ldots,4$ denotes the dimension of diversity and $D_{it}^{j} = (1,2,\ldots,10)$ is the decile of the jth dimension observation it

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[4] As a robustness check, we re-run all models dropping all bank observations with stock returns and volatility of stock return larger than the 1 per cent level at both tails of their distributions. Results are qualitatively similar.

[5] The EBA (2017) Guidelines, Title V, Diversity within the Management Body, state: "*The diversity policy should at least refer to the following diversity aspects: educational and professional background, gender, age and, in particular for institutions that are active internationally, geographical provenance, unless the inclusion of the aspect of geographical provenance is unlawful under the laws of the Member State*". Our choice of diversity indicators encompasses all the aspects proposed by the regulators with the exception of educational and professional background, due to data limitation. However, we use employee representation as a proxy of professional background and experience. The EBA (2017) document arguments that employee representation in the boardroom could also be seen as a positive way of enhancing diversity, as it adds a different perspective and knowledge of the internal workings of companies.

falls into. The average value of the index in our sample of banks is 0.47, with values ranging between 0.1 and 0.88, indicating a high degree of heterogeneity in the diversity of the sampled banks' boards. [6]

Looking at the bank-specific characteristics, the sample banks are relatively large, with average asset value of around 25 billion euro, and asset growth rate of 7 per cent per year. In terms of balance sheet structure, 59 per cent of the sample 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; 70 per cent of the countries adopt a civil law system and about 55 per cent have a value of the Hofstede index, our proxy for a country's openness to diversity, and of the economic freedom index, below the sample mean.

Interestingly, the reforms seem to have had the intended impact with the European banks' boards becoming more diverse in the post-reform period, as shown in Table 3.

< Insert Table 3 about here >

Table 3, Panel A, presents the test of differences in pre- and post-reform means across all diversity reforms. We focus on changes in the diversity index, treated as a gauge of the level of overall board diversity and on changes in gender diversity, the type of diversity most widely discussed. We notice a significant increase in the average fraction of women in the boards, as well as in the overall board diversity index post-reform. The average representation of women increases from 7 per cent to 14 per cent of the board, while the average of the diversity index increases from 0.41 to 0.5. In Panels B and C, we decompose the reforms into affirmative actions and mandatory reforms (gender quotas), respectively, to investigate whether banks respond differently to non-enforceable reforms. Despite the heterogeneity in both the type and the timing of reforms among the sample countries, at the pooled level, both the board diversity index and the fraction of women on the board increase after affirmative actions are adopted. A more pronounced positive effect is linked to mandatory reforms that specifically target gender diversity. The statistics reveal that the gender quotas adopted in France and Italy entail a greater increase in board diversity than the affirmative actions, which is reflected in the increased mean differential of female representation. A country-by-country breakdown of the impact of reforms on board diversity is presented in Appendix 5.

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[6] 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 between 0 and 1. 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.

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 4 reports the estimation results of Equation (1), where performance is measured by the annualised average daily stock return and risk is proxied by the standard deviation of stock return. The effect of reforms is captured by the coefficient of the post-reform period indicator. Model (1) is the baseline model, which includes the post-reform period dummy, bank-specific controls as well as country and year fixed effects. In order to disentangle the influence of reforms from other attributes and events that may affect bank performance, we next 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 reform becomes effective, and [+3, T], where T denotes the end of the sample, capturing the subsequent years after the reform. Model (3) introduces reform timing indicator variables that track the year-specific effect of the reforms. Specifically, we replace the post-reform period dummy with a set of dummies $DREFORM_t$, where $t = (0, +1, +2)$, which take the value of one for the year in which the reform becomes effective, one and two years after, respectively, and the post-reform window dummy [+3, T], which equals one for the third year and onwards after the reform becomes effective.

< Insert Table 4 about here >

We find that the coefficient on $DREFORM$ in Model (1) is positive and statistically significant at the 5 per cent level for stock returns suggesting that bank stock returns increase following board diversity reforms. The impact of $DREFORM$ is also economically significant, with the stock returns increasing by 15 per cent, on average, following the reforms.

The results for Model (2) confirm the significant increase of bank stock returns following 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. The results of Model (3) corroborate the absence of a long-term effect of board reforms on bank stock returns: the coefficients on $DREFORM_0$ and $DREFORM_{+1}$ are positive and significant but insignificant on $DREFORM_{+2}$.

Looking at the results for the standard deviation of stock returns, in Model (1) we find a positive and significant coefficient on $DREFORM$ suggesting that risk increases after the enactment of the reforms. The results of Model (2) suggest that the risk-increasing effect is limited to the first two years

post-reform. This is further corroborated by Model (3), where the year-by-year results confirm that the reforms' impact on stock return volatility, albeit positive and significant, is limited to the reform year and one year post-reform. This indicates that while reforms might impose costs leading to increased volatility of returns, this negative effect is short lived.

For the control variables, the results show that stock returns are higher among banks with 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, albeit risk tends to increase in the short term. However, this effect may be influenced by regulators' different approaches to implementing reforms. For example, mandatory reforms such as the imposition of quotas force all firms to comply within a pre-determined time period thereby potentially imposing higher costs. On the other hand, affirmative actions allow firms a choice as to how and when to adopt to the new rules through their existing structures. To investigate the role of the approach taken on the reform effectiveness, we augment Equation (1) with an interaction term between the post-reform period dummy (*DREFORM*) and the quota 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 5 presents the results.

< Insert Table 5 about here >

Remarkably, the findings of this analysis show that the reform approach has no significant explanatory power in relation to the effect of reforms on bank stock returns as the coefficient on the interaction term *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 introduce mandatory reforms, bank risk increases. This finding is consistent with Bøhren and Staubo (2015), who suggest that forcing radical gender balance on corporate boards through the introduction of quotas is negatively associated with firm performance. 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   Additional analysis

4.3.1   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).[7] Using data from Hofstede et al. (2010), we derive an overall index as the average of the six Hofstede dimensions and form an 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).[8] While our index is 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 a country's cultural aspects change over time, we argue that attitudes and beliefs transform over generations and therefore the overall change in national culture is slow.

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 additional impact on the effect of board diversity reforms on banks' stock returns. However, the significance of the interaction term 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

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[7] 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.

[8] 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.

diversity strengthens the effect of board diversity reforms on banks' overall 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 >

4.3.2 Legal framework

To further analyse the impact of country-level conditions on the effectiveness of board diversity reforms, we examine the country's 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 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 common law 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, the coefficient is negative and statistically significant for the standard deviation of stock return, thus suggesting that reforms decrease risk in common law counties, in contrast to the risk-increasing effect they have in civil law countries. These findings are generally consistent with prior literature and may reflect the greater uncertainty around the implementation of reforms and the relatively 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).

4.3.3 Alternative measures of national and legal system characteristics

To investigate whether national and legal system characteristics influence the impact of reforms on bank performance and risk, we test two additional measures widely used in the literature - economic freedom, and legal structure and property rights. Economic freedom may constitute a relevant factor in shaping the banking system and play a role on the impact of reforms on banks. As a proxy for economic freedom, we consider the economic freedom index reported annually by the Fraser Institute, which combines five dimensions of economic freedom: (i) size of government; (ii) legal structure and property rights; (iii) sound money; (iv) freedom to trade internationally; and (v) regulation of credit, labour, and business. The index ranges from 0 to 10, where a higher score indicates a greater economic freedom. To conduct this test, we augment Equation (1) with an interaction term between the post-reform dummy

(*DREFORM*) and the economic freedom dummy (*DFREEDOM*), which takes the value of one if a country's economic freedom index is greater than the sample mean.

Our proxy for legal structure and property rights is based on the corresponding dimension of the economic freedom index which in turn is formed by several components: (i) the rule of law; (ii) security of property rights; (iii) an independent and unbiased judiciary; and (iv) impartial and effective enforcement of the law. The legal structure and property rights dimension ranges from 1 to 10, where a higher score indicates a clearer definition and more enhanced protection of rights over financial and other assets. To conduct this test, we augment Equation (1) with an interaction term between the post-reform dummy (*DREFORM*) and the legal structure and property rights dummy (*DLEGAL*), which takes the value of one if a country's legal structure and property rights score is greater than the sample mean.

The results of both tests are reported in Table 7.

< Insert Table 7 about here >

The results confirm the positive impact of reforms on stock return and corroborate our earlier findings about the role played by national culture on the effectiveness of reforms. Board diversity reforms have a lower impact on bank performance in countries with greater economic freedom. In other words, banks in countries with low levels of economic freedom benefit more from the reform-driven corporate governance changes. Looking at the effect on risk, reforms are found to reduce stock price volatility in countries with greater economic freedom relative to countries with low levels of economic freedom, as indicated by the negative and significant coefficient of the interaction term *DREFORM* x *DFREEDOM*. Nonetheless, the magnitudes of the coefficients indicate that the overall impact of reforms on risk is negligible for banks operating in an environment of high economic freedom. The same results hold in countries with a clear definition and enhanced protection rights over financial and other assets: reforms do not increase risk, if anything, they have a beneficial effect on stock return volatility (*DREFORM* x *DLEGAL* in Table 7 - Panel B).

4.3.4   Bank board diversity pre-reform

The impact of board diversity reforms may also be influenced by the ex-ante composition of the bank's board of directors. Banks whose boards are already in line with regulatory requirements are bound to be less impacted by reforms. We expect banks with less diverse boards to be forced to implement greater board changes and therefore to exhibit greater impact of reforms on performance as diversity brings a variety of experiences and different sets of information to the boardroom (Jensen, 1993; Anderson et al., 2011).

To capture the level of board diversity in the pre-reform period, we construct a pre-reform diversity dummy (*DDIV_PRE*), which takes the value of one if the average value of the board diversity index (*BOARDDIVX*) over the two years prior to the reform exceeds a threshold. The latter is defined as the sample mean of the diversity index in 2007, which marks the beginning of our sample period, to capture

the level of diversity across EU banks' boards of directors, just before changes in board rules and regulations were triggered by the global financial crisis. The proportion of banks with above average board diversity in the pre-reform period is 31 per cent as reported in the statistics in Table 2. We then augment Equation (1) with an interaction term between the post-reform dummy (*DREFORM*) and the pre-reform board diversity dummy (*DDIV_PRE)*. The results are reported in Table 8 (Model (1)).

< Insert Table 8 about here >

The findings support our expectations that banks whose boards are already in line with regulatory requirements are less impacted by reforms, as suggested by the significant and negative coefficients on the interaction term *DREFORM* x *DDIV_PRE*. For banks with ex-ante more diverse boards, the effect of reforms on performance remains positive, but less economically relevant, whereas the effect on risk is virtually zero.

In addition, we examine the impact of reforms on banks that are already more diverse in two specific aspects - gender and employee representation. We introduce two dummies (*DWOM_PRE* and *DEMPL_PRE*) that capture gender and employee representation on the sample banks' boards directly before the reform. Following the same approach, *DWOM_PRE* takes the value of one if the fraction of women on the board of directors (*BOARDWOM*) over the two years prior to the reform is above the sample mean of 2007. Similarly, *DEMPL_PRE* takes the value of one if the fraction of employees on the board of directors (*BOARDEMPL*) over the two years prior to the reform is above the sample mean of 2007. We expect banks with less diverse boards in terms of gender and employee representation to be forced to implement greater changes and therefore to experience a greater impact of reforms on their performance. The results are reported in Table 8 (Models (2) and (3)).

The results indicate that the extent of women representation in the board does not affect the effectiveness of reforms. However, banks that already have a higher than average proportion of employees on board emerge as less affected by reforms. Overall the findings point towards a more notable effect of reforms in banks that do not "comply" with diversity calls.

4.3.5 Parallel trend assumption

The parallel trend assumption states that, in the absence of treatment, the average change in the dependent variable would have been the same for the treatment and control groups. To assess the validity of the parallel trend assumption underlying our DID design, following Fauver et al. (2017), we conduct two tests using pseudo reform years during both the pre- and post-diversity reform periods. In our sample, the reform year varies depending on the country under scrutiny. We design a placebo test that accounts for these differences through the construction of a country-specific dummy for the post-pseudo reform period which takes the value of one in the year when the pseudo reform is introduced and thereafter (*DREFORM*). The pseudo reform year should be as far as possible from the year of the actual reform (T) in order to avoid event-induced contamination in the pseudo reform samples, but on the other hand it should allow enough observations to assess any significant changes in the dependent variable. The

first placebo test restricts the analyses to the pre-reform periods and sets the pseudo reform effective year as four years prior to the actual reform year. The second placebo test restricts the analyses to the post-reform periods and sets the pseudo reform year as three years after the actual reform effective year. Given that our sample covers the period from 2007-2014 adopting a T-4 and T+3 windows ensures an adequate trade-off between event-induced contamination and treatment identification.[9] The results of the two placebo tests are reported in Table 9.

< Insert Table 9 about here >

We find no evidence of changes in firm value subsequent to the pseudo reform years. The coefficients on the pseudo reform dummy are all insignificant at conventional levels in both tests. Thus, these findings suggest that, in the absence of treatment, our treatment and control samples exhibit a similar trend in stock returns and volatility of stock returns.

4.3.6   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 10.

< Insert Table 10 about here >

Overall, reforms do not seem to impact banks' charter value. 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 positive impact on banks with ex-ante more diverse boards as suggested by the positive and significant coefficient on the interaction term *DREFORM* x *DDIV_PRE* in Model (5). This

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[9] Given that our sample period covers 8 years and that reforms have been generally introduced soon after the financial crisis, we consider a 4-year window for the first placebo test. As our sample is shorter on the other end (2014 marks the end of the sample period), we consider a shorter window of T+3 in order to have enough post-pseudo reform observations. In addition, as the results of the analysis reported in Table 4 show that the impact of reform is short-lived (no effect in the T+3 window in any specification), a shorter time window facilitates the identification of the effect of reforms on treated banks. We have also run the placebo test with a T+4 window (unreported due to space constraints) and the results are largely unchanged.

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 value of board diversity reforms for EU banks in the wake of the global financial crisis. Our analysis has important implications for the banking sector in the light of on-going reforms of corporate governance. Overall, our results show the reforms had the intended impact, as diversity in bank boards has increased over the sample period. Reforms, and subsequent changes in board composition, have had a positive impact of bank stock return, albeit typically accompanied by an increase in volatility in the short term.

Using a difference-in-difference approach, we document that reforms increase bank stock returns and their volatility, and that this effect materialises in the first three years after the reforms become effective. We find that the type of reforms matters. While the impact of reforms on bank stock returns is similar across diversity quotas and affirmative actions, the introduction of quotas increases bank risk. 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. Interestingly the impact of reforms on stock return volatility is lower in countries more open to diversity, countries with a common law system and countries with higher economic freedom. These results are robust to various specifications. Finally, the reforms appear to entail a stronger valuation effect on banks that ex-ante have less diverse boards.

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	2008 and 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

This 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 takes the value of 0 when board diversity is not addressed in the national corporate governance codes and/or in national legislation; 1 when board diversity is encouraged in the national corporate governance codes and / or in national legislation; and 2 when board diversity is mandatory (e.g., a diversity quota) in the national corporate governance codes and / or in national legislation.

Table 2 Descriptive statistics

	No. of Obs.	Mean	Std. Dev.	Min	Max
Performance measures					
STOCK RETURN	636	0.04	0.59	-1.64	2.11
STOCK RETURN VOLATILITY	636	0.40	0.21	0.04	1.22
TOBIN'S Q	635	0.41	1.00	-0.12	4.83
Board characteristics					
BOARDWOM	566	0.13	0.11	0	0.6
BOARDEMPL	566	0.08	0.13	0	0.6
BOARDNATMIX	538	0.20	0.20	0	0.8
BOARDAGE	566	57.46	4.48	35.8	69.5
CVBOARDAGE	566	0.15	0.05	0.01	0.90
BOARDDIVX	538	0.47	0.17	0.1	0.88
DDIV_PRE	538	0.31	0.46	0	1
Bank-specific characteristics					
TOTAL ASSET	645	24.84	1.98	20.20	28.36
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
DFREEDOM	645	0.46	0.50	0	1
DLEGAL	645	0.50	0.50	0	1

The table reports the descriptive statistics for the variables used in the analysis for the full sample period 2007-2014 (number of observations, mean, standard deviation, minimum and maximum values). Definitions of all the variables are provided in Appendix 2.

Table 3 Pre- and post-reform board diversity

	Pre-reform		Post-reform		
Panel A: All reforms	*No. of Obs.*	*Mean*	*No. of Obs.*	*Mean*	Difference in Means
BOARDDIVX	166	0.41	255	0.5	0.09***
BOARDWOM	171	0.07	276	0.14	0.07***
Panel B: Affirmative actions					
BOARDDIVX	111	0.44	177	0.53	0.09***
BOARDWOM	161	0.09	144	0.15	0.06***
Panel C: Mandatory reforms					
BOARDDIVX	67	0.33	66	0.46	0.13***
BOARDWOM	82	0.06	60	0.17	0.11***

The table reports the summary statistics (number of observations, mean, and differences in means) for the board diversity variables used in the analysis for countries where reforms were implemented during the sample period. Panel A compares board diversity measures before and after all types of reforms promoting diversity. Panel B reports the statistics for countries where affirmative actions aimed at encouraging diversity were introduced. Panel C reports the statistics for countries where gender diversity quotas were introduced. The t-statistics for the mean differential 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 impact of board diversity reforms on bank performance

	STOCK RETURN			STOCK RETURN VOLATILITY		
	Model (1)	Model (2)	Model (3)	Model (1)	Model (2)	Model (3)
DREFORM	0.1466**			0.0457**		
	(2.36)			(2.00)		
DREFORM$_{[0;+2]}$		0.1473**			0.0459**	
		(2.45)			(2.01)	
DREFORM$_{[+3;T]}$		-0.0320	-0.0856		-0.0071	-0.0175
		(-0.29)	(-0.75)		(-0.21)	(-0.46)
DREFORM$_0$			0.1817**			0.0513**
			(2.54)			(2.07)
DREFORM$_{+1}$			0.1533*			0.0497*
			(1.81)			(1.95)
DREFORM$_{+2}$			0.0265			0.0214
			(0.35)			(0.65)
SIZE	-0.0088	-0.0094	-0.0097	0.0240***	0.0238***	0.0238***
	(-0.54)	(-0.57)	(-0.59)	(3.27)	(3.28)	(3.28)
ASSET GROWTH	-0.1710	-0.1750	-0.1730	0.0105	0.0093	0.0094
	(-1.56)	(-1.55)	(-1.53)	(0.19)	(0.17)	(0.17)
LOAN / ASSET	-0.2761***	-0.2625**	-0.2570**	-0.0652	-0.0612	-0.0600
	(-2.73)	(-2.51)	(-2.41)	(-1.36)	(-1.31)	(-1.29)
DEPOSIT / ASSET	-0.1054	-0.1304	-0.1453	0.0763	0.0689	0.0661
	(-0.64)	(-0.77)	(-0.84)	(1.01)	(0.95)	(0.91)
EQUITY / ASSET	0.2978	0.3288	0.3246	-0.7271*	-0.7179*	-0.7182*
	(0.29)	(0.32)	(0.32)	(-1.99)	(-1.97)	(-1.98)
LOAN LOSS PROVISION / LOANS	-9.0943***	-9.7288***	-9.7111***	6.4881***	6.3005***	6.3037***
	(-3.55)	(-3.89)	(-3.93)	(6.12)	(5.90)	(5.85)
COST / INCOME	-0.4769***	-0.4902***	-0.5175***	0.2448***	0.2409***	0.2359***
	(-2.73)	(-2.74)	(-2.84)	(4.41)	(4.41)	(4.27)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Obs.	620	620	620	620	620	620
Adjusted R-squared	0.458	0.463	0.465	0.595	0.599	0.599

The table reports the results of the effects of board diversity reforms (*DREFORM)* on bank stock returns *(STOCK RETURN*) and risk *(STOCK RETURN VOLATILITY)*. Model (1) presents the baseline results; Model (2) splits the post-reform period into two post-reform windows [0,+2] and [+3,T], where T denotes the end of the sample period; Model (3) considers separately the effect of the reforms in the years following their introduction (0, +1, +2) and [+3,T], where T denotes the end of the sample period. Variables are winsorised at the 99% level of the bank-year distribution. The t-statistics 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 reform approach: Quota vs. affirmative action

	STOCK RETURN	*STOCK RETURN VOLATILITY*
DREFORM	0.1391*	0.0302
	(1.98)	(1.20)
DREFORM x *DQUOTA*	0.0283	0.0582**
	(0.28)	(1.99)
SIZE	-0.0090	0.0237***
	(-0.55)	(3.26)
ASSET GROWTH	-0.1702	0.0119
	(-1.55)	(0.22)
LOAN / ASSET	-0.2737***	-0.0603
	(-2.66)	(-1.26)
DEPOSIT / ASSET	-0.1104	0.0659
	(-0.65)	(0.86)
EQUITY / ASSET	0.3349	-0.6508*
	(0.32)	(-1.78)
LOAN LOSS PROVISION / LOANS	-9.1865***	6.2986***
	(-3.56)	(5.82)
COST / INCOME	-0.4686**	0.2619***
	(-2.61)	(4.67)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Clustered SE (bank)	Yes	Yes
No. of Obs.	620	620
Adjusted R-squared	0.457	0.598

The table reports the results of the impact of the reform approach on the effect of board diversity reforms on bank 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. Variables are winsorised at the 99% level of the bank-year distribution. The t-statistics 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	0.1764**	0.1127***
	(2.44)	(4.43)
DREFORM x *DHOF*	-0.0236	-0.1612***
	(-0.21)	(-4.73)
SIZE	-0.0098	0.0223***
	(-0.58)	(3.14)
ASSET GROWTH	-0.1530	0.0272
	(-1.41)	(0.53)
LOAN / ASSET	-0.2746***	-0.0683
	(-2.90)	(-1.55)
DEPOSIT / ASSET	-0.0367	0.0441
	(-0.24)	(0.63)
EQUITY / ASSET	-0.2897	-0.5708
	(-0.32)	(-1.56)
LOAN LOSS PROVISION / LOANS	-10.4613***	5.2950***
	(-3.81)	(4.92)
COST / INCOME	-0.4422**	0.2535***
	(-2.49)	(4.66)
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	0.1345**	0.0709***
	(2.01)	(3.31)
DREFORM x *DCOM*	0.0774	-0.1612***
	(0.49)	(-3.26)
SIZE	-0.0082	0.0227***
	(-0.50)	(3.17)
ASSET GROWTH	-0.1726	0.0138
	(-1.57)	(0.26)
LOAN / ASSET	-0.2769***	-0.0634
	(-2.74)	(-1.35)
DEPOSIT / ASSET	-0.1035	0.0723
	(-0.62)	(0.98)
EQUITY / ASSET	0.2585	-0.6452*
	(0.25)	(-1.81)
LOAN LOSS PROVISION / LOANS	-8.8802***	6.0418***
	(-3.50)	(5.67)
COST / INCOME	-0.4808***	0.2528***
	(-2.75)	(4.50)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Clustered SE (bank)	Yes	Yes
No. of Obs.	620	620

Adjusted R-squared	0.458	0.607

The table reports the results of the effect of different country-level institutional characteristics on the impact of board diversity reforms on bank stock returns *(STOCK RETURN)* and risk *(STOCK RETURN VOLATILITY)*. The model in Panel A includes the interaction between the post-diversity reform dummy (*DREFORM*) and the country-specific Hofstede dummy (*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 0 otherwise (lower national openness to diversity). The model in Panel B includes the interaction between the post-diversity reform dummy (*DREFORM*) and the legal background dummy (*DCOM*), which takes the value of 1 for countries with a common law framework and 0 for countries with a civil law framework. Variables are winsorised at the 99% level of the bank-year distribution. The t-statistics 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 Additional effect of country-level conditions: Economic freedom and legal framework

Panel A: Economic freedom index

	STOCK RETURN	*STOCK RETURN VOLATILITY*
DREFORM	0.2078***	0.0941***
	(3.12)	(3.92)
DREFORM x *DFREEDOM*	-0.1311*	-0.1038***
	(-1.75)	(-3.96)
SIZE	-0.0098	0.0232***
	(-0.60)	(3.25)
ASSET GROWTH	-0.1694	0.0117
	(-1.54)	(0.22)
LOAN / ASSET	-0.2743***	-0.0638
	(-2.66)	(-1.40)
DEPOSIT / ASSET	-0.1230	0.0623
	(-0.73)	(0.86)
EQUITY / ASSET	0.3953	-0.6499*
	(0.38)	(-1.82)
LOAN LOSS PROVISION / LOANS	-9.6172***	6.0742***
	(-3.83)	(5.73)
COST / INCOME	-0.4594***	0.2587***
	(-2.65)	(4.49)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Clustered SE (bank)	Yes	Yes
No. of Obs.	620	620
Adjusted R-squared	0.460	0.609

Panel B: Legal system and property rights

	STOCK RETURN	*STOCK RETURN VOLATILITY*
DREFORM	0.1826***	0.0996***
	(2.68)	(3.81)
DREFORM x *DLEGAL*	-0.0855	-0.1281***
	(-1.03)	(-4.00)
SIZE	-0.0093	0.0233***
	(-0.57)	(3.27)
ASSET GROWTH	-0.1679	0.0151
	(-1.53)	(0.29)
LOAN / ASSET	-0.2743***	-0.0624
	(-2.67)	(-1.36)
DEPOSIT / ASSET	-0.1164	0.0598
	(-0.69)	(0.86)
EQUITY / ASSET	0.3759	-0.6101*
	(0.36)	(-1.71)
LOAN LOSS PROVISION / LOANS	-9.4758***	5.9167***
	(-3.73)	(5.67)
COST / INCOME	-0.4807***	0.2392***
	(-2.72)	(4.38)
Country fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Clustered SE (bank)	Yes	Yes
No. of Obs.	620	620
Adjusted R-squared	0.458	0.613

The table reports the results of the effect of different country-level institutional characteristics on the impact of board diversity reforms on bank stock returns *(STOCK RETURN)* and risk (*STOCK RETURN VOLATILITY*). The model in Panel A includes the interaction between the post-diversity reform (*DREFORM*) dummy and the economic freedom index dummy (*DFREEDOM*) which takes the value of 1 if a country's economic freedom index is above the sample mean (higher economic freedom) and 0 otherwise (lower economic freedom). The model in Panel B includes the interaction between the post-diversity reform dummy (*DREFORM*) and the legal structure dummy (*DLEGAL*) which takes the value of 1 the legal system and protection of property rights index is above the sample mean (higher protection of persons and their rightfully acquired property) and 0 otherwise (lower national protection of persons and their rightfully acquired property). Variables are winsorised at the 99% level of the bank-year distribution. The t-statistics 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 The effect of pre-reform bank board diversity status

	STOCK RETURN			STOCK RETURN VOLATILITY		
	Model (1)	Model (2)	Model (3)	Model (1)	Model (2)	Model (3)
DREFORM	0.1842**	0.1556**	0.1654**	0.0825***	0.0727***	0.0871***
	(2.62)	(2.18)	(2.38)	(2.73)	(2.64)	(3.16)
DREFORM x DDIV_PRE	-0.1416*			-0.0741**		
	(-1.81)			(-2.35)		
DREFORM x DWOM_PRE		-0.0244			-0.0308	
		(-0.34)			(-1.03)	
DREFORM x DEMPL_PRE			-0.0771			-0.1064***
			(-0.79)			(-4.08)
SIZE	-0.0130	-0.0105	-0.0117	0.0269***	0.0247***	0.0232***
	(-0.87)	(-0.67)	(-0.73)	(3.79)	(3.34)	(3.21)
ASSET GROWTH	-0.1854	-0.1628	-0.1603	0.0328	0.0332	0.0364
	(-1.50)	(-1.36)	(-1.34)	(0.59)	(0.64)	(0.70)
LOAN / ASSET	-0.2233**	-0.2155**	-0.2235**	-0.1133**	-0.0819	-0.0926*
	(-2.09)	(-2.07)	(-2.12)	(-2.14)	(-1.51)	(-1.77)
DEPOSIT / ASSET	-0.1331	-0.068	-0.0842	0.0369	0.0451	0.0225
	(-0.82)	(-0.42)	(-0.52)	(0.48)	(0.60)	(0.31)
EQUITY / ASSET	1.2669	0.6898	0.5507	-0.9400**	-0.9399**	-1.1340***
	(0.98)	(0.60)	(0.45)	(-2.43)	(-2.53)	(-3.40)
LOAN LOSS PROVISION / LOANS	-11.3635***	-10.6957***	-10.7991***	6.6971***	6.6771***	6.5209***
	(-4.28)	(-3.99)	(-4.05)	(5.66)	(5.72)	(5.87)
COST / INCOME	-0.5421***	-0.5219***	-0.5253***	0.2714***	0.2600***	0.2550***
	(-2.94)	(-2.90)	(-2.93)	(4.63)	(4.41)	(4.43)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE (bank)	Yes	Yes	Yes	Yes	Yes	Yes
No. of Obs.	525	552	552	525	552	552
Adjusted R-squared	0.451	0.458	0.459	0.611	0.601	0.611

The table reports the results of the effect of the pre-reform level of board diversity on the impact of board diversity reforms on bank stock returns *(STOCK RETURN)* and risk *(STOCK RETURN VOLATILITY)*. Model (1) includes the interaction between the post-diversity reform dummy(*DREFORM*) and the board diversity dummy (*DDIV_PRE*) which takes the value of 1 if the average value of a bank's board diversity index over the two years prior to the reform is above the sample mean of 2007 (higher diversity) and 0 otherwise (lower diversity). Model (2) includes the interaction between the post-diversity reform dummy (*DREFORM*) and the pre-reform gender diversity dummy (*DWOM_PRE*) which takes the value of 1 if the average fraction of women on a bank's board over the two years prior to the reform is above the sample mean of 2007 (higher gender diversity) and 0 otherwise (lower gender diversity). Model (3) includes the interaction between the post-diversity reform dummy (*DREFORM*) and the pre-reform employee representation dummy (*DEMPL_PRE*) which takes the value of 1 if the average fraction of employees on a bank's board over the two years prior to the reform is above the sample mean of 2007 (higher employee representation) and 0 otherwise (lower employee representation). Variables are winsorised at the 99% level of the bank-year distribution. The t-statistics 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 9 The impact of board diversity reforms on bank performance - Pseudo adoption years

	Placebo test – Pre-reform		Placebo test – Post-reform	
	STOCK RETURN	*STOCK RETURN VOLATILITY*	*STOCK RETURN*	*STOCK RETURN VOLATILITY*
DREFORM	0.0426	0.036	0.0911	-0.0291
	(0.19)	(0.95)	(1.17)	(-1.13)
SIZE	-0.0113	0.0212**	-0.0025	0.0135**
	(-0.62)	(2.58)	(-0.13)	(2.07)
ASSET GROWTH	-0.0515	-0.0234	-0.1832	0.0075
	(-0.29)	(-0.22)	(-1.21)	(0.15)
LOAN / ASSET	-0.3009**	-0.0439	-0.1075	-0.0306
	(-2.43)	(-0.67)	(-0.66)	(-0.49)
DEPOSIT / ASSET	-0.0971	0.0461	-0.1157	-0.0474
	(-0.41)	(0.50)	(-0.38)	(-0.46)
EQUITY / ASSET	1.6163	-1.0273**	-0.854	-0.5584
	(1.15)	(-2.46)	(-0.47)	(-1.18)
LOAN LOSS PROVISION / LOANS	-10.9719***	4.8468**	-11.7939***	4.2434***
	(-4.32)	(-2.43)	(-3.86)	(2.84)
COST / INCOME	-0.5193***	0.2114***	-0.7007**	0.2595***
	(-3.51)	(2.69)	(-2.09)	(2.75)
Country fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes
Clustered SE (bank)	Yes	Yes	Yes	Yes
No. of Obs.	321	321	368	368
Adjusted R-squared	0.511	0.624	0.296	0.574

The table reports the results of placebo tests using pseudo adoption years on bank stock returns *(STOCK RETURN)* and risk *(STOCK RETURN VOLATILITY)*. The first placebo test restricts the analysis to the country pre-reform periods and sets the pseudo reform effective year as 4 years prior to the actual reform effective year. The second placebo test restricts the analyses to the country post-reform periods and sets the pseudo reform effective year as 3 years after the actual reform effective year. Variables are winsorised at the 99% level of the bank-year distribution. The t-statistics 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 10 Alternative dependent variable: Tobin's Q

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
DREFORM	0.0276	0.0305	-0.1469	-0.0773	-0.1959
	(0.32)	(0.32)	(-1.58)	(-1.07)	(-1.66)
DREFORM x DQUOTA		-0.0108			
		(-0.11)			
DREFORM x DHOF			0.4219**		
			(2.36)		
DREFORM x DCOM				0.6712**	
				(2.17)	
DREFORM x DDIV_PRE					0.5307***
					(3.16)
SIZE	-0.0022	-0.0021	0.0103	0.0031	-0.0212
	(-0.05)	(-0.05)	(0.24)	(0.07)	(-0.48)
ASSET GROWTH	0.7601***	0.7598***	0.7604***	0.7462***	0.7805***
	(3.13)	(3.13)	(3.19)	(3.21)	(3.26)
LOAN / ASSET	0.2042	0.2033	0.2371	0.1970	0.4731
	(0.59)	(0.60)	(0.69)	(0.58)	(1.22)
DEPOSIT / ASSET	0.1394	0.1413	0.2722	0.1558	0.2273
	(0.35)	(0.35)	(0.66)	(0.40)	(0.45)
EQUITY / ASSET	2.3308	2.3167	2.0182	1.9901	2.8308
	(0.84)	(0.83)	(0.73)	(0.75)	(0.74)
LOAN LOSS PROVISION / LOANS	3.8741	3.9092	5.3116	5.7317	6.6695
	(0.78)	(0.77)	(0.96)	(1.25)	(1.20)
COST / INCOME	0.8549	0.8517	0.8465	0.8216	0.9692
	(1.61)	(1.61)	(1.58)	(1.57)	(1.63)
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	525
Adjusted R-squared	0.538	0.537	0.548	0.546	0.539

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 0 otherwise (lower national openness to diversity). Model (4) presents the results adding *DREFORM* x *DCOM*, the interaction between the diversity reform dummy and the common law dummy which takes the value of 1 for countries with a common law framework and 0 for countries with a civil law framework. Model (5) presents the results adding *DREFORM* x *DDIV_PRE*, the interaction between the diversity reform dummy and the bank-specific pre-reform board diversity dummy (*DDIV_PRE*) which takes the value of 1 if the average value of a bank's board diversity index over the two years prior to the reform is above the sample mean of 2007 (higher diversity) and 0 otherwise (lower diversity). Variables are winsorised at the 99% level of the bank-year distribution. The t-statistics 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.

Country	Year			
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	Annualised average daily stock return	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 – Book value of 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
Reform 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
DREFORM$_{[0; +2]}$	Post-diversity reform window dummy equal to 1 for the year the first diversity reform is introduced (t=0) and two subsequent years (t=(+1, +2)), and 0 otherwise	Authors' calculation
DREFORM$_{[+3; T]}$	Post-diversity reform window dummy equal to 1 for year three after the first diversity reform is introduced (t=3) and subsequent years, and 0 otherwise	Authors' calculation
DREFORM$_t$;	Post-diversity reform timing dummy equal to 1 for the year the first diversity reform is introduced (t=0), one year after the reform (t=1), and two years after the reform (t=2), and 0 otherwise	Authors' calculation
DQUOTA	Quota dummy equal to 1 if a mandatory reform is introduced, and 0 otherwise	Authors' calculation
Board characteristics		
BOARDWOM	Fraction of women on the board	Authors' calculation using BoardEx data
BOARDEMPL	Fraction of employees on the board	Authors' calculation using BoardEx data
BOARDNATMIX	Fraction of foreign members on the board	Authors' calculation using BoardEx data
BOARDAGE	Average age of board members	Authors' calculation using BoardEx data
CVBOARDAGE	Coefficient of variation of board members' age = Standard deviation of board members' age / BOARDAGE	Authors' calculation using BoardEx data
BOARDDIVX	Board diversity index = (1) The board diversity variables (*BOARDWOM*, *BOARDEMPL*, *BOARDNATMIX*, and *CVBOARDAGE*) are converted into discrete variables ranging from 1 to 10 based on the decile of the sample distribution they fall into (with 1 being the bottom and 10 the top decile); (2) the diversity index for each bank-year is computed as $BOARDDIVX_{it} = \frac{1}{40} \sum_{j=1}^{4} D_{it}^j$. The index ranges from 0 (low diversity) to 1 (high diversity).	Authors' calculation using BoardEx data
DDIV_PRE	Pre-reform board diversity dummy equal to1 if the average value of the board diversity index over the two years prior to the reform is above the sample mean of 2007 (higher board diversity), and 0 otherwise (lower board diversity)	Authors' calculation using BoardEx data
DWOM_PRE	Pre-reform gender diversity dummy equal to 1 if the average fraction of women on the board over the two years before the reform is above the sample mean of 2007 (higher board gender diversity), and 0 otherwise (lower board gender diversity)	Authors' calculation
DEMPL_PRE	Pre-reform employee representation dummy equal to 1 if the average fraction of employees on the board over	Authors' calculation

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the two years before the reform is above the sample
mean of 2007 (higher board employee representation),
and 0 otherwise (lower board employee representation)

Bank-specific characteristics

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 characteristics

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 0 otherwise (lower national openness to diversity)	Authors' calculation using the Hofstede Insight data
DCOM	Common law dummy equal to 1 if a country has a common law legal system, and 0 if a country has a civil law legal system	Authors' calculation using: CIA; Commonwealth network; NYU Law Global; Hatzimihail (2013)
DFREEDOM	Economic freedom dummy equal to 1 if the economic freedom index is above the sample mean (higher economic freedom), and 0 otherwise (lower economic freedom)	Authors' calculation using: The Fraser Institute (2018)
DLEGAL	Legal structure dummy equal to 1 if the legal system and protection of property rights index is above the sample mean (higher protection of persons and their rightfully acquired property), and 0 otherwise (lower protection of persons and their rightfully acquired property)	Authors' calculation using: The Fraser Institute (2018)

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

	STOCK RETURN	STOCK RETURN VOLATILITY	TOBIN'S Q	SIZE	ASSET GROWTH	LOAN/ASSET	DEPOSIT/ ASSET	EQUITY/ASSET	LOAN LOSS PROVISION/LOANS	COST/IN COME	BOARDWOM	BOARDEMPL
STOCK RETURN	1											
STOCK RETURN VOLATILITY	-0.0457	1										
	0.2503											
TOBIN'S Q	-0.0535	0.1606*	1									
	0.1781	0.0000										
SIZE	0.0130	0.2772*	0.0820*	1								
	0.7430	0.0000	0.0389									
ASSET GROWTH	-0.0719*	-0.1822*	0.1414*	-0.2196*	1							
	0.0704	0.0000	0.0004	0.0000								
LOAN/ASSET	-0.0670*	-0.0234	0.0266	-0.2297*	-0.0290	1						
	0.0911	0.5559	0.5029	0.0000	0.4631							
DEPOSIT/ASSET	0.0011	-0.1400*	0.0627	-0.6158*	0.0644	0.3610*	1					
	0.9781	0.0004	0.1143	0.0000	0.1034	0.0000						
EQUITY/ASSET	0.0645	-0.2692*	-0.0250	-0.4732*	0.0495	0.2987*	0.4406*	1				
	0.1044	0.0000	0.5290	0.0000	0.2108	0.0000	0.0000					
LOAN LOSS PROVISION/LOANS	-0.0129	0.3557*	0.2060*	-0.0665*	-0.1412*	0.2157*	0.2098*	0.1059*	1			
	0.7477	0.0000	0.0000	0.0947	0.0004	0.0000	0.0000	0.0077				
COST/INCOME	-0.1893*	0.2842*	0.1133*	0.0615	-0.1113*	-0.2427*	-0.1729*	-0.2660*	0.0371	1		
	0.0000	0.0000	0.0043	0.1197	0.0049	0.0000	0.0000	0.0000	0.3527			
BOARDWOM	0.0912*	-0.0900*	-0.0462	0.2730*	-0.0589	-0.1441*	-0.2796*	-0.2270*	-0.1100*	-0.0456	1	
	0.0300	0.0322	0.2728	0.0000	0.1619	0.0006	0.0000	0.0000	0.0095	0.2802		
BOARDEMPL	0.0804*	-0.1950*	-0.2531*	0.0742*	-0.0826*	-0.2193*	-0.0208	-0.2078*	-0.1928*	0.0783*	0.3055*	1
	0.0559	0.0000	0.0000	0.0776	0.0494	0.0000	0.6222	0.0000	0.0000	0.0635	0.0000	

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 2.

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.

Appendix 5: Pre- and Post-reform board diversity characteristics by country

Panel A: Affirmative actions

	BOARDDIVX				BOARDWOMEN			
	No. of Obs.	Mean.	No. of Obs.	Mean.	No. of Obs.	Mean	No. of Obs.	Mean.
	Pre-affirmative action reform		*Post-affirmative action reform*		*Pre-affirmative action reform*		*Post-affirmative action reform*	
Austria	10	0.68	29	0.69	10	0.11	30	0.12
Belgium	6	0.34	13	0.45	6	0.07	13	0.11
Germany	8	0.64	24	0.65	8	0.13	24	0.17
Denmark	3	0.54	17	0.58	3	0.16	29	0.18
Greece	16	0.38	9	0.35	19	0.10	6	0.13
Ireland	12	0.42	4	0.43				
Lithuania	0		3	0.41				
Malta	1	0.30	1	0.10	2	0.06	1	0.00
Netherlands	15	0.47	27	0.47				
Poland	20	0.36	10	0.41				
Portugal	18	0.39	34	0.52	18	0.10	35	0.18
United Kingdom	10	0.68	29	0.69	10	0.11	30	0.12

Panel B: Mandatory reforms

	BOARDDIVX				BOARDWOMEN			
	No. of Obs.	Mean	No. of Obs.	Mean	No. of Obs.	Mean	No. of Obs.	Mean
	Pre-mandatory reform		*Post-mandatory reform*		*Pre-mandatory reform*		*Post-mandatory reform*	
France	10	0.54	33	0.51	20	0.17	25	0.21
Italy	57	0.30	33	0.41	62	0.03	35	0.15

The table reports summary statistics (number of observations and mean) for board diversity variables used in the analysis for countries where reforms were implemented during the sample period. Panel A reports the statistics by countries where affirmative actions aimed at encouraging diversity and gender diversity were approved. Panel B reports the statistics by countries where mandatory reforms introducing gender quotas were implemented. Definitions of the variables are provided in Appendix 2.

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