

# Board Diversity and Firm Performance of Top 50 European Firms

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## Abstract

This paper examines if there is a business case for the diversity composition of the board of directors. Our sample analyzes board diversity of the top 50 European companies covering the years 2006 until 2011. This study focuses on demographic features, such as age, gender and nationality, and on cognitive features, such as educational specificities and previous work experience. The directors' human capital has been incorporated into the models in the form of Blau diversity indicators. The empirical results show no significant influence of board diversity, leading to the conclusion that board diversity does not matter for firm financial performance.

## Introduction

For a long time the firm has been seen as a “black box” where inputs have been transformed into outputs without an explanation of the processes adding value. However, today a lot of different justifications exist about the value drivers. One of the explanations considers corporate governance as a major factor influencing the profitability of the companies. The board of directors can be seen as the driving force of the company, directing it to more value creation or destruction. The empirical research has not lead to a definitive answer: Some studies show a significant influence of board composition on firm performance [1,2], while others do not find such impact [3,4]. Therefore the question remains if there is an optimal composition of the board of directors leading to more effective decision-making process.

Our main research question is whether board diversity influences firm performance. Our study covers the top 50 European companies and examines their performance over a 5-year period. We use a wide vector of diversity dimensions and test for their impact on firm performance, while controlling for company specific characteristics influencing the profitability.

The contribution of this paper is the use of a cross-country European sample, which has not been researched before. Most of the corporate governance studies have been conducted on US samples. European studies have mainly been one country studies. Furthermore the directors' characteristics, used in checking the effect of the directors on the firm performance, are broader than the diversity indicator used in current studies. The usual combination of characteristics has been gender and ethnicity [5]. This paper combines more personal features, such as age, level of education, field of education, working background, field of specialization and sector expertise, in addition to the above mentioned variables. This would enable a deeper exploration of what is the influence (if present) of each separate characteristic and will allow for a better view of the value adding characteristics of the board members.

## Theoretical framework and literature review

According to agency theory the board of directors acts as a monitoring body to restrain the opportunistic behavior of the management. This is due to the principle-agent relationship between shareholders and management [6]. The resource dependence theory, on the other hand, look at the board of directors as a valuable resource for the firm. The directors are considered to be adding-value through their personal connections with the external environment, in terms of business connections with other firms, but also relation with the money markets and access to industry-specific information [7]. In this view the board acts as a “boundary spanner” of the firm, which enlarges its network and makes it less dependent on other parties by providing it with more opportunities for acquiring the critical resources on time [8]. Therefore the diversity of the board is considered important for enhancing the firm value.

From all type of diversity indicators (cognitive and demographic) the gender composition is the one mostly under the spotlight. According to Fondas [9] the presence of women on the board of directors is considered beneficial, as it decreases the agency costs. He argues that women are a factor that diminishes the power abuse of the management and that they are inclined to gain more decision power for the board they serve on, resulting in a better consideration of the interests of the shareholders’. Moreover, Robinson and Dechant [10] note further that managing problems can become easier when there are more women in the board room, as then more perspectives are presented, leading to a wider range of possible solutions. However, the gender diversity has its costs as well. As noted by Marinova, Plantega&Remery [11], the coordination of the board may be decreased by too much gender diversity, leading to more time-consuming decision making, which may result in costs higher than the benefits of having more women. Furthermore, the negative view about women participation is backed by Earley and Mosakowski [12], who point out that usually similar beliefs are shared inside a homogenous environment, leading to enhanced level of communication inside the group.

*Hypothesis 1: Greater gender diversity results in better company performance.*

The effect of age diversity on the company performance is theoretically ambiguous [13]. They note that if the directors are older, it would mean that they have more working experience and therefore can make better decisions. On the other hand, older people may need more time to adjust to fast changing working environment, which would increase their decision making time in situations of distress for the company, leading to an overall negative firm performance. However, the authors find a positive significant value of the age coefficient in times of crisis, meaning that the positive effect of age, namely the experience of the directors, is stronger than the negative effect, adjusting harder.

*Hypothesis 2: The higher the average age of the directors, the better the performance of the company*

For the other types of diversity (level of education, field of education, socio-economic background, field of expertise and sector of expertise), the literature is rather thin. A few examples are Simons and Pelled [14], who report positive impact of educational level on the company financial results, and Rose [4], who found no significant effect of the type of education of the board members on the performance of the company. He conjectures that board effectiveness “does not require any specific educational background”, but is more related to having a university degree and build in human capital from previous work experience.

Albeit the small amount of empirical results, the theoretical framework used for the gender diversity is applicable to the other types of diversity as well. Generally, diversity is expected to be beneficial for the performance of the company [15], mainly due to the resource based view [16]. The positive view of board diversity as an important resource is further developed by Carter et al. [5], who argues that each director has a unique set of information that can enable the managers to perform better, due to the function of the directors not only to supervise, but also to advice the management about their working choices. However, there is a limit for the positive influence. After a certain level, diversity acts as an obstacle for decision making [8]. Based on the above, we can hypothesize:

*Hypothesis 3: A more diverse board in terms of nationality representation will influence the performance of the company*

*Hypothesis 4: A more diverse board in terms of the level and field of education of the directors will influence the performance of the company*

*Hypothesis 5: A more diverse board in terms of primary background, sector expertise and functional field of the directors will influence the performance of the company*

## **Data and Methodology**

### **Data**

The sample considered consists of the top 50 companies of the Financial Times list of top 500 European companies for the year 2006. The companies involved in the Banking and Finance sector have been excluded due to 1) their financial expertise, which is considered influential for the financial indicators, which would be the dependent variable; and 2) the bank crisis in the period considered (namely 2006 - 2010) as the performance of this sector will be different compared to the other sectors of the economy, mainly as a result of this external influence. Therefore, considering that it is impossible to disentangle the internal and external causes and draw conclusions about the significance of the different factors, this sector has been excluded from the sample. Our final data set consists of 40 companies.

For the companies included in the research, the structure of their corporate governance has been re-build for each year in the time frame 2006 - 2010, i.e. each director participating in the board of directors (and the supervisory board in the case of two tier system) has been listed with his personal characteristics and work details. The aim of this data collection is to enable the computation of diversity indicators for each firm year, based on the different personal features. The information about the directors has been retrieved manually from the annual reports of the companies. Where information was missing, external data bases have been used, such as Amadeus and LinkedIn, as well as online published biographies.

The following data about each company has been collected: (a) Name of the company; (b) Country of origin of the company ; (c) Corporate structure – the company has a one-tier corporate governance structure or a two-tier structure; (d) CEO-duality – shows if the roles of the CEO and the Chairman are held by the same person; (e) Stock price performance – From DataStream, adjusted for stock splits and dividends; (f) Total assets – A proxy for firm size. The data is obtained from Thomson ONE Banker; (g) Leverage ratio – Total debt as a percentage of total assets. From Thomson ONE Banker; and (h) Industry – is a variable showing the industry in which the company operates. As the number of companies is quite limited and not all industries are represented, a coding scheme accounting for the main industries involved has been used. The

variable has been divided into the following categories: 1) Oil, gas producers and mining activities; 2) Pharmaceuticals and biotechnology; 3) Retailing industry; 4) Telecommunication; and 5) Other.

The data about each director contains the following information:

a) Demographics: (i) Gender – the gender of each director has been determined; (ii). Year of birth – the year of birth of each director has been taken from the annual reports and in the cases missing from other biographical data found online; (iii) Nationality – this variable shows the nationality of the directors. It has been determined as the above variables mainly from the annual reports and other online available biographies of directors.

b) Board specificities: (i) First time of appointment as a director – a separate variable, showing since when the director is part of the corporate governance bodies of the company; (ii) Board membership – it shows if the director has executive or non-executive functions.

c) Education specificities: (i) Level of education – The information has been derived from the data given in the annual reports or if lacking, from online published biographies. This variable has been divided into five categories: 1) Lower than bachelor; 2) Bachelor or equivalent; 3) Master; 4) PhD and 5) Other; (ii) Field of education – the field of education of each board member has been derived from their biographical data. The data has been separated into 10 categories, namely 1) (Business) economics and management; 2) Prestigious MBA; 3) Law; 4) Engineering or technical education; 5) Natural sciences; 6) Medicine; 7) Computer science (IT); 8) Other social sciences; 9) Other humanities; and 10) Other.

d) Background specificities: (i) Primary background - information about the primary background of each director has been collected. This is the socioeconomic sphere where the board member has worked before. It could be 1) Business; 2) Politics; 3) Government; 4) Non for profit (NGO); or 5) Academics; (ii) Functional field of expertise –The variable has been divided into 13 functional fields; (iii) Sector of expertise – it is the sector of the economy where the director has worked before. The variable is divided into 11 different industries.

## Variables

Based on the data collected, the following variables have been developed and used in the econometric models.

(a) Abnormal Buy-and-Hold return – represents firm financial performance calculated on an annual basis. It is the difference between the BHR of the individual stock and the BHR of the benchmark market index (the European Eurostoxx index):  $ABHR_{j,t} = BHR_{j,t} - BHR_{indx,t}$ , where  $j$  stands for the company name,  $t$  for the year considered and  $indx$  for the Eurostoxx index.

(b) Diversity indicators for the directors' gender, nationality, level and field of education, primary background, sector expertise and functional field, have been derived. They have the form of a Blau indicator [17], which measures the degree of heterogeneity. The maximum value of the indicator is 1, which means completely heterogeneous. The minimum value is 0, which means full homogeneity. The Blau indicator is  $B = 1 - \sum_{k=1}^k \left( \frac{Nk}{n} \right)^2$ , where B is the Blau indicator number, n is the number of observations, k indicates the category, and Nk is the number of directors in the category considered (for example, 2 accountants). The age diversity is represented by the mean age and the coefficient of variation (CoV) of the directors' age. The participation of women has also been acknowledged by a dummy variable, indicating if there is a

woman on the board of directors or not. The variable has a value of 0 if there is no women participation and a value of 1 when there is at least one woman

In addition to the diversity indicators based on the characteristics of the directors, variables characterizing the structure of the board have been included in the models: (a) CEO-duality – as a dummy variable, where 0 means there is no CEO-duality and the positions are hold by different people, and 1 otherwise; (b) Board tier – as a dummy variable, equal to 0 if it is one-tier system and 1 otherwise; (c) Monitoring – the proxy for it is the percentage of non-executives sitting on the corporate governance board(s). Furthermore, control variables for the characteristics of the firm have been added to the models as well: (i) Firm size – approximated by total assets of the company. The variable is included in the form of a natural logarithm; (ii) Leverage – represented by a ratio of total debt as a percentage of total assets

We also tested for correlation between our variables. There was no problematic correlation between any two variables, which enables their inclusion all together in the same model, according to multicollinearity test standards (Table available upon request).

## Model

The models are estimated as cross-sectional regressions, employing the OLS technique. However, as the data has the characteristics of panel data, dummy variables for time and company are incorporated into each model. This enables statistical analysis of the data set obtained from simple cross sectional commands. Furthermore, all models have been tested for heteroskedasticity and they rejected the null hypothesis of homoskedasticity. Therefore they have been corrected for it with robust standard errors. All of the models include control variables for board structure (such as board size) and company characteristics (such as industry). All board characteristics have been taken with a lag of one year in comparison to the financial performance variable in order to account appropriately for the effect of the board on the performance of the company [5].

The model testing the main hypothesis, which states that a more diverse board in terms of directors' characteristics will influence firm performance, look as follows:

$$BHR_i = \alpha + \delta_{1,k} Board\ diversity_{i,k} + \delta_{2,j} Board\ structure_{i,j} + \delta_3 Size_i + \delta_4 Leverage_i + \delta_5 Industry\ dummies + \delta_6 Company\ dummies + \delta_7 Time\ dummies$$

where BHR is the abnormal buy-and-hold return for company  $i$  in the sample for the year after the independent variables have been measured; Board diversity represents the different Blau-diversity indicators  $k$ , namely demographic and cognitive diversity indicators, for company  $i$ ; Board structure represents the board structure characteristics  $j$ , namely size, percentage of non-executive directors and CEO-duality for company  $i$ ; Size is the size of company  $i$ , represented by the natural log of total assets; Leverage is the leverage level of company  $i$ ; Industry dummies are the dummies controlling for the different industries, where the sample companies operate; Company dummies are dummies representing the different sample companies, included in order to replicate panel data; and Time dummies are dummies representing the different sample years, included in order to replicate panel data. In this specification the structure of the board has been used as a control variable and the main focus is on the diversity of the board. The null hypothesis tested is that Board diversity does not influence company performance ( $\delta_1 = 0$ ).

## Results

### Demographic diversity

The first group of models, namely models 1 to 5 (table available upon request), considers the demographic diversity of the directors. The models control for 1) board structure, in terms of board size, percentage of non-executives and CEO-duality; and 2) company specific characteristics, such as firm size, firm leverage and industry dummies. The diversity indicators, namely the diversity in terms of age, nationality and the gender of the directors are considered first in simplistic models, in order to explore the link (if present) between performance and the separate indicators alone, and then jointly to check if overall demographic board diversity matters. As outlined above, the age diversity is represented by both the mean age and the coefficient of variation. The two variables show insignificant influence on the performance of the company, both considered separately in a simple regression (models 1 and 2) or together jointly (model 3). This provides no evidence for the assumption that older directors have more life experience and therefore are prone to better decision making, as argued in the literature review of this paper. Furthermore, this also does not prove that younger directors are more flexible and better performers in fast changing environment, which was the case of the years 2006 – 2010, due to the financial crisis. Looking at the diversity indicators for gender and nationality, no significant influence emerges as well, when they are considered separately in model 4 and model 5. Moreover, in a joint consideration of all types of demographic diversity, namely model 11 (see appendix), no variable showed any significant influence, meaning that a proof for the (alternative) hypothesis that directors' demographic diversity influence company performance was not found. In conclusion, considering this type of personal characteristics did not lead to any insights of what increases firm performance.

### Cognitive diversity

Cognitive diversity is the human capital diversity of the directors. It is represented in terms of diversity in education specificities (level and field) and previous working experience (socio-economic sphere, functional field of expertise and sector of expertise). The procedure used for determining their influence is the same as the one used for the demographic diversity, namely consideration of the indicators one by one separately (models 6 to 10; table available upon request) and then all of them together (model 12, see appendix). None of the models showed any significant effect of the cognitive characteristics on the performance of the company, leading to a conclusion that the (alternative) hypothesis of effect of this type of diversity cannot be proven as well, leading to the conclusion that cognitive diversity does not have a business case. This is in line with the findings of Rose [4], who concludes that in order the directors to do their job properly they do not need to have any specific educational background, for example. However, he suggests that previous sector might be significant, which is not the case here.

### Overall board diversity

The last model, model 13 (see appendix), combines both types of board diversity together (demographic and cognitive), while controlling for board structure and firm specific characteristics. This model tests the central (null) hypothesis of the paper, namely that Board diversity does not influence company performance ( $\delta_1 = 0$ ). The statistical tests fail to reject the null hypothesis, leading to the conclusion that overall board diversity do not matter for firm performance. Furthermore, the results show no significant influence of the separate diversity indicators considered alone, *ceteris paribus* on all other diversity indicators. These findings are in

contradiction of the Resource based view, which led to expectations for a positive influence of the board diversity on the performance of the company. However, the empirical research is rather thin and also quite ambiguous. As outlined in the theoretical framework and the literature review, there are some positive and some negative results. Therefore our conclusion of no business case for Board diversity may contradict theory, but could be also a representation of reality.

## Conclusion

The purpose of this study was to research more fully the drivers of value creation, steaming from the corporate governance bodies. It empirically tested if there is a business case for the board composition, by considering the top 50 European companies for 2006 and considered their structure in the following 5 years, making in total a sample of 200 firm years. It looked at the organization of their board in terms of the directors diversity, while controlling for the structure of the board, the size of the company, its leverage and industry of operations.

The empirical tests of, the directors' personal traits, both demographic (age, gender and nationality) and cognitive (level of education and previous work experience) proved no statistical significance as well. These resulted in no prove for the business case of the board composition, however, it does not mean that the board composition does not matter for the efficiency of the decision making of the board. It only states that there is no evidence for better financial performance measured by the abnormal buy-and-hold returns above a market index benchmark.

Nevertheless, the limitations of this research should be taken into account when the results are reviewed. First of all, the sample size is quite limited. This means that there may be a pattern, which is not clearly distinguishable due to the small number of observations. Second, there is a possible endogeneity of the independent variables, meaning that there could be a causality problem, which would make the OLS an inappropriate technique for unbiased estimation.

However, even though these limitations are present, there are still contributions to the board diversity literature. The most important one is the recognition that there are more diversity indicators, than just age and gender. This study also shows that a cross-country comparison can be obtained and companies operating in a common international market, as the European market, can be considered together.

Further research on a bigger sample of European companies including the enlarged list of diversity indicators implemented here might be able to reveal links, which are not clearly distinguishable due to the limitations of the paper. Furthermore, an improvement of the research technique, which tests for endogeneity and accounts for it, may also improve the results. This would be beneficial for policy implications of supranational institutions, such as the European Union and its work related to encouraging diversity in the common labor market.

## References

1. Campbell, K., and Minguez-Vera, A., 2008. Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics* 83, 435-451.
2. Carter, D.A., Simkins, B.J., and Simpson, W.G., 2003. Corporate Governance, Board Diversity and Firm Value, *The Financial Review* 38(1), 33-53.
3. Randøy, T., Thomsen, S., and Oxelheim, L., 2006. A Nordic Perspective on Corporate Board Diversity, Nordic Innovation Centre, Oslo, available at: <http://www.nordicinnovation.net/>

4. Rose, C. 2007. Does female board representation influence firm performance? The Danish evidence. *Corporate Governance: An International Review* 15(2), 404 – 413.
5. Carter, D. A., D'Souza, F., Simkins, B. J. and Simpson, W.G., 2010. The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review* 18(5), 396-414.
6. Aguilera, R.V., Filatotchev, I., Gospel, H. and Jackson, G., 2008. An organizational approach to comparative corporate governance: Costs, contingencies, and complementarities. *Organization Science* 19(3), 475-494.
7. Van der Walt, N., and Ingle, C., 2003. Board dynamics and the influence of professional background, gender, and ethnic diversity of directors. *Corporate governance* 11(3), 218-234
8. Engelen, P.J., G. van der Laan and A. van den Berg. 2012. Board Diversity as a Shield during the Financial Crisis, in Boubaker, S., Nguyen, B.D., and Nguyen, D.K. (eds.), *Corporate Governance. Recent Developments and New Trends*, Springer Publishers.
9. Fondas, N., 2000. Women on board of directors: Gender bias or power threat? in R. J. Burke and M. C. Mattis (eds), *Women in management: International Challenges and Opportunities*, 171 – 177. Dordrecht: Kluwer Academic.
10. Robinson, G. and Dechant, K., 1997, Building a Business Case for Diversity, *Academy of Management Executive* 11, 21–30.
11. Marinova, J., Plantenga, J., and Remery, C., 2010. Gender diversity and firm performance: Evidence from Dutch and Danish boardrooms. *Discussion paper series / Tjalling C. Koopmans Research Institute*, nr.10-03, 28p.
12. Earley, P. C. and Mosakowski, E., 2000. Creating Hybrid Team Cultures: An Empirical Test of Transnational Team Functioning. *Academy of Management Journal* 43, 26–49.
13. Francis, B., Hasan, I., and Wu, Q., 2012. Do corporate boards affect firm performance? New evidence from the financial crisis. *Discussion paper / Bank of Finland Research*.
14. Simons, T. and Pelled, L., 1999. Understanding Executive Diversity: More than Meets the Eye. *Human Resource Planning* 22, 49–51.
15. Erhardt, N., Werbel, J., Shrader, C., 2003. Board of director diversity and firm financial performance. *Corporate Governance: An International Review* 11, 102-111.
16. Watson, E., Kumar, K. and Michaelsen, L., 1993. Cultural Diversity's Impact on Interaction Process and Performance: Comparing Homogeneous and Diverse Task Groups. *Academy of Management Journal* 36, 590–603.
17. Blau, P. M.: 1977, *Inequality and Heterogeneity*. New York: Free Press.

## Appendix

Table1: Impact of board diversity on firm performance

Variable	Model 11	Model 12	Model 13
<b>Demographic diversity</b>			
<b>Mean age</b>	0.0062361 (0.0200034)		0.0082715 (0.0224753)
<b>Age cov</b>	-0.2015844 (1.30199)		-0.0168483 (1.48839)
<b>Gender</b>	-0.411092 (0.3558939)		-0.4609526 (0.4065424)
<b>Nationality</b>	-0.2559143 (0.2511771)		-0.2585894 (0.2661043)
<b>Cognitive diversity</b>			
		0.0935606 (0.345948)	0.0659566 (0.4005151)
<b>Level of education</b>			
<b>Field of education</b>		-0.0197885 (0.6066765)	0.1554212 (0.6230343)
<b>Background</b>		-0.1939993 (0.2487377)	-0.2661172 (0.2615156)
		0.0108052 (0.7080509)	-0.1633839 (0.7477064)
<b>Functional field of expertise</b>		-0.0123354 (0.5720196)	0.1720311 (0.6244364)
<b>Sector of expertise</b>			
<b>Board structure</b>			
<b>Board size</b>	-0.0269074* (0.0145748)	-0.0215336 (0.0144929)	-0.0250193 (0.0159776)
<b>Percentage of non-executives</b>	-0.9787736* (0.5414179)	-0.7340734 (0.5000374)	-0.9199349 (0.5663592)
<b>CEO-duality</b>	0.1343331 (0.1036132)	0.1197417 (0.1080399)	0.1449352 (0.110999)
<b>Other controls</b>			
<b>Firm size</b>	-0.3206148* (0.1683779)	-0.3156779* (0.1642178)	-0.3347521* (0.1737823)
<b>Firm leverage</b>	0.0110178* (0.0056781)	0.010762* (0.0057262)	0.0113719* (0.0058987)
<b>Industry dummies</b>	yes	yes	yes
<b>N</b>	195	195	195
<b>R<sup>2</sup></b>	0.2674	0.2608	0.2699

Legend: Dependent variable: Abnormal Buy-and-Hold Returns. All independent variables are lagged one period from the dependent variable. The first number in each cell is the regression coefficient. The number in parenthesis is the standard error. All standard errors are robust. \* indicates  $p < 0.10$ ; \*\* indicates  $p < 0.05$ ; \*\*\* indicates  $p < 0.01$ . The tables not included are available upon request.