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**How does the diversity of a firm's Board of Directors affect its
performance and strategy?**

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Abstract

In this paper the effect of board diversity on financial performance and strategies is investigated. Abnormal revenue growth and market capitalization are used as financial performance proxies and M&A and debt-to-equity as proxies for strategies. Moreover, a diversity score index is created that rates the diversity actions of the companies of the dataset. Results indicate a positive relationship between board diversity and financial performance and M&A strategies. However, it is found that there is a negative relationship between board diversity and leverage strategies. The results suggest that firms can benefit from increasing the diversity in the workplace. On the one hand, companies and board of directors will need to reconsider their recruiting processes, the diversity trainings they provide as well as the culture of the company. On the other hand, the governments need to establish regulations which are in favour of workplace diversity. Finally, this paper should inspire researchers to investigate further the topic of diversity by for instance studying the relationship between patents and firm diversity.

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Abbreviations

1. AEX- Amsterdam Exchange Index
2. BOD- Board of Directors
3. CAC 40 - French stock market index
4. CEO- Chief Executive Officer
5. FTSE 100- Financial Times Stock Exchange 100 Index
6. GDP- Gross Domestic Product
7. IT- Information Technology
8. M&A- Mergers and Acquisitions
9. OLS- Ordinary Least Square Regression
10. R&D- Research and Development
11. ROA- Return on Assets
12. ROI- Return on Investments
13. SPI- Swiss performance Index

Chapter 1- Introduction

The Board of Directors (BOD) constitutes the core of every organization and business corporation. This committee usually consists of an average of 11 people whose main purpose is to supervise the activities of the whole organization. The members of the board represent the organization and reflect their values on the firm as a whole. Thus, the composition of the board is directly associated with the strategies a firm follows and the firm's overall performance. As evidence has shown that, board diversity has benefits towards the whole organization (Goudestein, Gautam and Boeker, 1994). The topic of my thesis will study whether diversity on the board of directors of a company affects its performance. Diversity in the workforce is defined as a set of similar or different characteristics such as gender, age, nationality, language, professional qualification or different perception and attitude as defined by Saxena (2014). However, diversity is not only limited to a company's employees, but it appears on the Board of Directors as well.

This research aims to estimate the effect of board diversity on firm performance. This is because the Board of directors of a company significantly impacts a firm for several reasons. First, the more diverse a board is, the representation of the marketplace increases, which leads to a better understanding of what the clients of a company need. Then, as previously mentioned, diversity can result from different points of views and perspectives which leads to a wide range of solutions and strategies. Finally, diversity boosts the reputation of a company which in turn attracts more diverse talents which could increase the firm's profits. Reputation in other words can be referred to as public's cumulative judgement as defined by Fombrun and Shanley (1990). According to the findings of a paper written by Bear et al. (2010), there is a positive relationship between female presence and a company's reputation. Thus, we can assume that a more gender diverse board results in a better firm reputation and this in its turn results in better performance. Additionally, according to the signaling theory, a firm's board signals to the market organizational validity of the company as described in the paper written by Certo (2003).

There are extensive academic literature reports that explore the topic of BOD diversity. Despite the existing literature a lot of papers are focusing on the same performance measures which lead to similar findings. Also, countries like the United States and China have been thoroughly explored but European countries like the Netherlands, United Kingdom, France, and Switzerland have remained out of the scope until now. Additionally, many papers focus only on the relationship between BOD diversity and firm performance but have not touched upon the subject of what sort of strategies a diverse BOD is more likely to engage at. Then, different techniques such as a weighted average diversity score as well as more recent data are used which make this paper more scientifically relevant.

An important regulation that was originally first published in 2014 and is continuously being updated by the European regulatory authorities is the Central Securities Depositories Regulation (CSDR). The most recent updates of the CSDR includes an equal opportunity clause which concerns all companies regardless of the industry. This requires companies to expand their employee diversity as well as highlights equal pay requirements and gender equality. This proves the social relevance of this paper since the results of it are directly associated with policies that are already implemented or will be in the future.

Nowadays, a lot of companies have still not integrated diversity neither in the board of directors or the culture of their firms. A possible explanation for this could be that integrating diversity is very costly. From internal company trainings to completely integrate a more diverse culture in a firm, can not only take a lot of time but also requires a lot of resources. Also, for some industries that have always been male, or female dominated it is even harder to breakthrough. Some companies are not willing to spend time and funds if they do not know what the return of investment will be.

Through the results of this research a lot of firm level choices as well as government policies will be affected. First, on the firm level it will stimulate companies change their approach when it comes to diversity. This might appear in changes in the recruitment and hiring process of future employees with more diverse backgrounds. Another outcome could be encouraging companies to introduce more educational trainings on diversity and inclusion for the current employees. Lastly, it will encourage companies to create an inclusive company culture where the importance of diversity would be promoted. When focusing on government policies

regarding firm diversity a lot can be done. Initially policies about ensuring gender diversity in the workplace will be enhanced. Subsequently, policies which ensure equal opportunities and compensation towards everyone will be set in place.

Chapter 2- Theoretical Framework

2.1 Historical Background

Diversity has always been and remains to this day a significant topic of discussion that sparks debate even in the most companies. Discrimination has always existed towards woman, people of color as well as for people of different religions. People struggle fitting in a working environment for years coping with either direct racism which resulted in them not being hired or indirect by not being able to earn the same salary as others. The topic of workforce diversity first started being discussed in the early 1960s. The first efforts in eliminating discrimination happened when John F. Kennedy decided to introduce the Equal Pay Act of 1963. This amendment was indented to eliminate the wage gap that existed between men and women and prohibit employers in discriminate workers based on their gender (EEOC, 2023). Later on, in 1987, a study from Hudson University was published which made predictions about the workforce of the US in the 21st century. The study emphasizes on the fact that there will be a continuous feminization in the workforce of the US which will reach a high of 47% of the workforce being women (Johnston, 1987). This was one of the first studies to mention the shift of the scales in the workforce. Moreover, the author touches upon the issue of minorities slowly joining the workforce in the US. More recently, following the events in the US concerning George Floyd and the MeToo movement the topic of diversity and inclusion has been discussed a lot in companies. For many of firms, diversity and inclusion has been set as a top priority which highlights the importance of the topic. Moreover, there has been plenty of company regulations announced by the EU which highlights how serious governments are about taking care of this subject. The European Parliament approved certain benchmarks for corporate boards to ensure gender equality (European Parliament, 2023). One of Harvard's Law School articles on corporate governance recommends that the board of companies should be at least 30 percent gender diverse (Harvard Law, 2023). The article mentions that the presence of female directors has been increasing in the past years. Also, it states that more and more companies are starting to disclose information on how diverse their board is.

2.2 Literature review

The background and composition of teams has an impact on decision making of firms. The background of teams is directly associated with the ideas and ideals of the individuals which means that a BOD that is more diverse can result in more innovative solutions and strategies due to the variety of opinions proposed. Jackson et al. (1995) in their paper mention that diversity in teams might have different consequences on decision making. They find that heterogeneous teams result in an rise of innovative ideas due to the various ideas proposed in a more diverse environment. Also, a Harvard Business Review article which is proposing seven strategies that improve decision making mentions that a more diverse team is proffered. This agrees with the ideas of the Jackson et al. (1995). The BOD can be considered as an executive team which is no exception and does not deviate from this.

These different decisions directly influence the performance of the companies sometimes positively and others negatively. The following papers discuss the effect on performance of having a diverse Board of Directors. Carter et al. (2003) focus their research on Fortune 1000 companies where only an independent variable for woman is included and a second one for minorities. The results are using a 2SLS model and conclude that there is a positive relationship between a firm's performance and diversity. For this and the paper that follows Tobin's Q has been used as a measure of financial performance. Similarly, Carter et al. (2008) examined the effect of gender, ethnic and minority diversity on firm performance. In their paper the authors used a dataset of Fortune 500 companies for a timeframe until 2002. The paper shows evidence of a positive relationship between a company's performance and board diversity. According to the paper there were only 14.7% of woman present in the Fortune 500 company's board until 2005.

The positive relationship indicated by the results highlights the different impact gender and ethnic minority diversity have on financial performance. Which corroborates the main idea of the research question of this paper. More research on the topic has been conducted by Miller and Del Carmen Triana (2009) where they use a dataset of Fortune 500 companies and an index of heterogeneity as a measure for performance. Return on assets (ROA) and return on sales (ROS) are used as dependent variables. The outcome of the research underlines a

significant positive relationship between board diversity and firm performance which appears as an increase in the Research and Development (R&D) expenditure of the company. Moreover, another paper written by Erhardt, Werbel and Shrader (2003) discusses the relationship between firm performance and diversity. However, this paper only focuses on observable or demographic diversity and cognitive diversity is not included in the research. By using return on assets (ROA) and return on investments (ROI) as measures of performance they highlight that there is a positive association between ROA or ROI and diversity on the board of directors. All literature mentioned until now accentuates the positive effects of BOD diversity. However, published papers exist which hint the exact opposite.

Contrastingly to the previous authors mentioned, Frijns, Dodd and Cimerova (2016) have a different approach to the subject. They examine diversity of a board from a cultural perspective. The authors create a variable which represents the cultural distance between the members of the board of directors and find an inverse relationship between diversity on the board of directors and performance. This contrasting result proves that a more definite answer on this subject is still to be found and that there is plenty more research to be done. All the above-mentioned papers are the groundwork to introducing the following research question:

“How does the diversity of a company’s board of directors affects its financial performance?”

Answering the question of whether diversity on the Board of Directors affects performance will be helpful for companies to develop their strategies to increase performance, showing the social relevance of this topic. Papers published before which have discussed the topic focus either on a specific sector or country, or on a specific type of diversity such as gender. Consequently, even though the topic has been researched before there is still room to grow and research this topic more in depth and from different angles. Previous research on this topic has been done in the past however this research aims to approach the topic with more recent data as well as use a combination of independent variables that have not been used in the past which ensures its scientific relevance. Also, another addition to the existing literature this paper will offer is the use of data from 4 European countries that have not been examined

in the past. After defining the research question the following hypothesis is derived to answer the question:

Hypothesis 1: Board diversity has a positive effect on firm financial performance.

However, this research will not only try to answer whether there is an effect of a diversified board on financial performance. This paper, will also try to answer the following sub-question:

“Can board diversity have an impact on the volume of M&A done by a firm and its level of risk taking, thereby influencing performance?”

Depending on the results derived from the research question this sub-question will try to argue why this relationship exists. In other words, if the relationship is positive or negative why is it the case? These different strategies that the BOD engages at depending on diversity can reflect by the risks a company takes. An example of more risky strategies is when a company engages in aggressive mergers and acquisitions or changes the capital structure by increasing debt. This question will be answered with the help of two proxies which will be the number of Mergers and Acquisitions (M&A) and leverage a company has. These two proxies are some firm strategies that can be affected by the diversity on the board of director's.

Research on this topic has been written in the past. A very recent study has been written by Cumming and Leung (2021). They study the effect of various types of diversity in different industries on firm innovation. They find that organizational diversity has an impact on the innovative activities a firm engages in. They highlight that each type of diversity might have a different impact on innovation. The sample dataset examines the period of 2008 until 2013 for China. The results imply that there is a strong relationship between diversity and innovation which results in several policy implications. Another paper which discusses the strategies a firm engages at due to diversity is written by Bernile, Bhagwat and Yoknker (2017). The authors rate the companies with respect to diversity they create an index which is compiled out of 6 characteristics of the board members. The findings underline the fact that more diverse boards invest more in the Research and Development (R&D) of the company.

Also, when it comes to risky decisions more diverse boards tend to minimize the risk a firm takes. In addition to Bernile et al. (2017), another study that focuses on R&D spending and diversity of a boardroom is introduced by Midavaine, Dolfsma and Aalbers (2016). The study focuses on the high-tech industries for a timeframe of seven years for Fortune 500 companies. They emphasize that educational diversity in the boardroom is positively associated with innovation. Lastly, Levi, Li and Zhang (2014) research whether gender diversity affects the M&A of the company. They discover that women are less likely to take up a lot of risk which leads to a decrease in acquisitions. For answering the sub-question of the paper, the following hypothesis are formed where for each firm strategy one hypothesis is formed:

Hypothesis 2: Board diversity has a positive effect on the volume of M&A of a firm.

Hypothesis 3: Board diversity has a positive effect on the risk strategies of a firm.

Chapter 3- Data

3.1 Defining important concepts and dataset.

Before moving on to the data of this research it is important first to define all important concepts. As this paper will examine the relationship between board diversity and firm performance it is important to define what is meant by performance. This paper focuses on the financial performance of the companies. There are several measures of financial performance, but this paper will focus on the market capitalization and the revenue growth of a company. The reason for choosing revenues as one measure of performance is that all companies have revenues whereas using net income or EBITDA would be problematic since some companies such as the ones present in the technology industry have a negative net income or EBITDA. Revenues of a company is the income that the company generates from sales of product or services. The equity market capitalization is the value of the company that is being traded in the stock market and it is generated by the number of shares outstanding multiplied with the current share price. This measure is chosen because market capitalization is a good valuation measure of each firm and it is easily comparable.

To study the research question of whether diversity of a board of directors affects performance a dataset will be used. The dataset consists of 200 listed companies from 4 different countries namely, France, United Kingdom, Switzerland and the Netherlands. The companies included from the dataset belong to 25 different industries such as consumer goods, financial services, healthcare, real estate, mining and engineering. The data retrieved will derive from listed companies in those four countries which are chosen from the respective country index. The indexes used for the Netherlands, France, Switzerland and the UK were the AEX, CAC 40, SPI and the FTSE 100 respectively.

3.2 The effect of diversity on performance

The main sources of data is the Bloomberg Terminal. This database is provided on campus, and supplies various financial information about companies. The database used is suitable due to the wide range of financial data that exists, its reliability and wide use by researchers and financial professionals. The Bloomberg Terminal was used to get data on the Diversity rating of each company specifically on age and gender in the year 2021. The age diversity score indicates whether the BOD represents well all age groups in a rating from one to ten.

Similarly, the woman diversity score indicates whether the representation of both genders is equal enough between the two genders and it is again measured out of 10. Then, the average tenure of the board members and the average number of boards served that each board member is serving other than the current one is measured. The first variable helps to understand whether there is cyclical in the BOD and management entrenchment, the second is going to contribute to this research as a proxy for prior experience and board members' dedication. Since the effect of a BOD is not immediate, a lag of one year is taken. For the dependent variables, data on revenue and market cap growth for the years 2021 to 2022 are extracted. Also, the number of board members is included in the dataset which will be used under the assumption that a larger BOD is more diverse given that the companies included in the dataset are from the top 100 firms of each country index. Lastly, this study will incorporate dummy variables such as the country, sector as well as whether the CEO and the Chair of the BOD are independent. The last dummy will be used to examine how independent the board is at making decisions.

3.3 Diversity effect on firm strategies

Moving on to the impact of BOD diversity on the strategies of a company, a few more variables are added. Leverage growth and M&A deals occurred in the last 3 years are gathered and will be used as dependent variables. As mentioned in the theoretical framework, these two variables will be used as proxies for the strategies a firm follows depending on the diversity its BOD has. By observing whether a more diverse board of directors leads to more M&A we can understand if diversity is related to certain strategies of a firm leading to better financial performance. Additionally, the amount of leverage a company has can be used as an indicator of whether the company engages in more risky strategies.

Table 3.1 showcases the descriptive statistics of the variables. From observing the table it should be pointed out that the mean diversity score is 5.587 whereas the standard deviation indicates that the diversity scores are highly clustered around the mean. Then, the mean of Chairman is 81.4% showing that a high number of companies have independent CEO and Chairman. The M&A deals mean is around 12 deals which is much lower than maximum of 98 deals for the period of 2 three years from 2022 until 2023. The average abnormal revenue

growth is 10.5%. However, the market capitalization growth has an average decrease of approximately 14.9% which could be explained by several reasons. First, it could appear as a loss of market capitalization due to the company Merging in those years. Another reason could be that the company experienced these losses in market values due to higher interest rates.

Table 3.1 Descriptive statistics table of variables.

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Country	200	2.397	1.178	1	4
Industry	200	9.085	7.372	1	25
Chairman	200	0.814	0.390	0	1
Diversity Score	200	5.587	1.101	2.063	7.943
M&A deals	200	12.752	14.845	0	98
Debt to Equity Growth	200	0.326	0.587	0	5.073
Market Capitalization growth	200	-0.149	0.249	-0.936	0.660
Abnormal Revenue Growth	200	0.105	0.227	-1.016	0.891

Notes: This table showcases all the descriptive statistics of the variables used in this research paper. Notice that the Diversity score can get a minimum value of 0 and a maximum value of 10. The variables Country, Industry and Chairman are dummy variables. Also, market capitalization, Debt to Equity and Revenue growth are measured in percentage terms. SOURCE

Chapter 4- Methodology

4.1 Composition of important variables

Before discussing the research method some important variables of the model need to be defined. This paper discusses BOD diversity where the diversity score here is defined as the weighted average of five variables that affect diversity. The five different factors that the diversity score is composed of are the age, gender, and tenure score as well as the number of board members and past BOD's served score. The score is calculated according to the following formula:

$$\text{Diversity score} = \frac{\text{age score} + \text{gender score} + \text{past BOD} + \text{number of members} + \text{tenure score}}{5}$$

Except for the age and the gender score which is given on the Bloomberg terminal the rest of the diversity scores were calculated by converting the data given on Bloomberg into a rating from a scale 1 to 10 points with 10 being the best score. Then, to estimate the financial performance, the market capitalization from year 2021 and 2022 were selected and then the growth figure was calculated using the following formulas:

$$\text{Market Capitalization Growth} = \frac{\text{market cap 2022} - \text{market cap 2021}}{\text{market cap 2021}}$$

The process was identical for revenue growth:

$$\text{Revenue Growth} = \frac{\text{Revenue 2022} - \text{Revenue 2021}}{\text{Revenue 2021}}$$

However, accounting just for the revenue growth without adjusting for the GDP of the respective year would not give fully correct results. Thus, the revenue growth is adjusted by the GDP growth of 2022 respectively by subtracting the GDP growth from the Revenue growth which gives the abnormal revenue growth. Since for each country the GDP growth is different the figures have been adjusted accordingly to match the GDP growth of each country.

4.2 Regressions

A cross-sectional analysis is conducted with several Ordinary Least Squared (OLS) regressions. A cross-section is used as this study focuses on several firms at one point in time, contrary to a panel data which would study firms over more than one time period. Before running the regressions, a Breusch–Pagan test is run for heteroskedasticity. Thus, Models I and II are run without robust standard errors in contrast to Models III and IV where robust standard errors are used.

Two of the regressions are run to estimate the effect of BOD diversity on firm performance. The dependent variable of the regressions will be performance which will be measured in two different ways: abnormal revenue growth and by the growth in market capitalization of the company. For both regressions, diversity score will be used as the independent variable. For these two models three control variables are used: sector, country and chairman. Thus, the two OLS models are formulated as follows:

(I) Model

Revenue Growth

$$= \beta_0 + \beta_1 \text{Diversity score} + \beta_2 \text{Chairman} + \beta_3 \text{Sector} + \beta_4 \text{Country} + \varepsilon$$

(II) Model

Market Capitalization Growth

$$= \beta_0 + \beta_1 \text{Diversity score} + \beta_2 \text{Chairman} + \beta_3 \text{Sector} + \beta_4 \text{Country} + \varepsilon$$

The character beta (β) of the model symbolizes the OLS estimator of each of the variables. The character (β_0) represents the constant of the model meaning where the regression line

is intercepting with the y axis. Epsilon (ϵ) constitutes the error term which accounts for the variation of the model that the variables used are not accounting for. The control and dummy variables used in the models are chosen because they minimize the Omitted variables bias of the model. However, even with the presence of all these variables the omitted variable bias has still not disappeared fully because there might be some variables that are relevant but are left out of the models.

Moving on to the methodology of the effect of diversity on firm strategies, two OLS regressions will be run again. The first (Model III) will regress the diversity score on the number of M&A acquisitions the firms engage in the past 3 years. Then, the other regression (Model IV) will have as independent variable the diversity score but as a dependent variable, the debt-to-equity growth of the company. In Model II and IV the same control and dummy variables will be used as in Model I and II. Also, in these two models a variable is added to control for the market capitalization of 2021. Essentially, the regression equations of the last two models will be the following:

(III) Model

$$M\&A = \beta_0 + \beta_1 \text{Diversity score} + \beta_2 \text{Chairman} + \beta_3 \text{Sector} + \beta_4 \text{Country} \\ + \text{Market capitalization 2021} + \epsilon$$

(IV) Model

$$\text{Debt to Equity Growth} \\ = \beta_0 + \beta_1 \text{Diversity score} + \beta_2 \text{Chairman} + \beta_3 \text{Sector} \\ + \beta_4 \text{Country} + \text{Market capitalization 2021} + \epsilon$$

Lastly, a regression between the number of M&A and the individual diversity score components is run to examine the influence that each component has on the number of M&A.

(V) Model

$$M\&A = \beta_0 + \text{age score} \beta_1 + \beta_2 \text{gender score} + \beta_3 \text{past BOD} + \beta_4 \text{number of members} \\ + \beta_5 \text{tenure score} + \epsilon$$

Chapter 5- Results

This section of the research paper will cover the results of the three hypothesis proposed. Specifically, I researched the effect of diversity of the Board of Directors of a company on its performance and how it affects its strategy. The tables illustrated below showcase the regression results of each model that is run. The first two models aim to answer the first part of the question concerning the effect diversity has on firm performance (Table 5.1 and 5.2). Then model III, IV and V analyse the effect of diversity on the strategies of firms (Table 5.3, 5.4, 5.5). Each model is run three times to show the impact of the addition of control variables. In the tables fixed effects have been used for the variables country and sector. This is because these two variables remain constant through the timeframe examined. By doing this all time-invariant characteristics are captured and there is no need to control for the time invariant variables.

5.1 Hypothesis 1

The first hypothesis examines whether there is a positive effect of BOD diversity on financial performance. Table 5.1 used as a dependent variable the abnormal revenue growth and as independent the diversity score. Specification (1) shows a positive significant relationship between BOD diversity score and abnormal revenue growth. When adding more variables to the model as seen in specification (2) and (3) the coefficient of the BOD diversity score is decreasing whereas the significance remains at the same level of 1%. This is a sign of potential omitted variable bias that exists in regression (1) and (2) since the variables were excluded from the models. This means that a one-point increase in the diversity score of a BOD holding all other variables constant is associated with approximately a 0.047 percentage points increase in revenues.

Table 5.2 uses market capitalization as proxy for financial performance. In the first regression of Table 5.2, we can see a positive but insignificant relationship between market capitalization growth of a firm and BOD diversity. Specification (3) of the model indicates that a one-point increase in the diversity score of a BOD holding all other variables constant is associated with approximately a 0.010 increase in market capitalization. A one-point increase in the Diversity score is considered to be a lot taking into account the standard deviation of the score which is 1.101 above the mean of 5.587. All in all, hypothesis 1 is accepted which is

in line with the findings of Carter et al. (2003), Carter et al. (2008), Miller and Del Carmen Triana (2009) and Erhardt, Werbel and Shrader (2003).

Table 5.1 Revenue growth on diversity score

	(1) Abnormal Revenue Growth	(2) Abnormal Revenue Growth	(3) Abnormal Revenue Growth
Diversity score	0.056*** (0.015)	0.048*** (0.014)	0.047*** (0.018)
Not Independent Chairman		0.043 (0.039)	0.052 (0.043)
Fixed effects			
Sector (25)		✓	✓
Fixed effects			
Country (4)			✓
Constant	-0.211** ()	-0.187 (0.227)	-0.188 (0.143)
Number of observations	200	200	200

Notes. This table showcases the results of an OLS regression. For the variables sector and country fixed effects are used (see Appendix table 8.1 for full table). This table uses diversity score as the independent variable and abnormal revenue growth as the dependent. The reference category for sector is chemicals and for country France. The values reported in the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

Table 5.2 Market capitalization growth on diversity score

	(1)	(1)	(1)
	Market capitalization	Market capitalization	Market capitalization
	growth	growth	growth
Diversity score	0.007 (0.017)	0.014 (0.018)	0.010 (0.022)
Not Independent Chairman		-0.007 (0.046)	-0.003 (0.049)
Fixed Effects			
Sector (25)		✓	✓
Fixed Effects			
Country (4)			✓
Constant	-0.190 (0.104)	-0.446 (0.131)	-0.423 (0.164)
Number of observations	200	200	200

Notes. This table showcases the results of an OLS regression. For the variables sector and country fixed effects are used (see Appendix table 8.2 for full table). This table uses diversity score as the independent variable and market capitalization growth as the dependent. The reference category for sector is chemicals and for country France. The values reported in the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

5.2 Hypothesis 2

The second hypothesis of the paper examines whether there is a positive effect of BOD diversity on the volume of M&A of a firm. Table 5.3 illustrates this relationship. From specification (1) to (2) we notice that the significance increases from a 10% to a 5% significance level and the coefficient changes from 1.521 to 2.677 percentage points. Specification (3) can be interpreted in the following way: if a company's BOD diversity score increases by one point, then this leads to approximately on average 2.843 M&A more on average keeping all other variables constant. This means that the effect is indeed positive and that the second hypothesis of this research is accepted. Thus, when a BOD is more diverse this leads to more M&A. A possible explanation of this could be that the different backgrounds of people result in more diverse opinions and a wider range of ideas. Also, because of the diversity that exists on the BOD the members might feel more confident and thus engage in more aggressive growing strategies. When comparing with the literature Levi, Li and Zhang (2014) use the same dependent variable, however instead of using a diversity score they only focus on gender diversity. Their results are different than what is found in this research

however this might be due to their focus on only gender diversity whereas this research includes more parameters.

Table 5.3 M&A on diversity score

	(1)	(2)	(3)
	M&A	M&A	M&A
Diversity score	1.521*	2.677**	2.821**
	(0.879)	(1.195)	(1.332)
Market capitalization 2021			0.000
			(0.000)
Not Independent Chairman		1.261	1.826
		(3.331)	(3.347)
Fixed Effects			
Sector (25)		✓	✓
Fixed Effects			
Country (4)			✓
Constant	4.256	-8.608	-5.427
	(5.030)	(4.289)	(8.790)
Number of observations	200	200	200

Notes. This table showcases the results of an OLS regression. For the variables sector and country fixed effects are used (see Appendix table 8.3 for full table). This table uses diversity score as the independent variable and M&A as the dependent. The reference category for sector is chemicals and for country France. The values reported in the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

However, after performing a regression of each individual component of the diversity score of this research we notice several interesting elements. First, the coefficient of the age score is negative and non-significant. This could be explained in the following way; when the age pool is very diverse in a BOD then younger people with less experience enter the BOD where they might not be willing to take up much more risk and thus engage less in M&A. Contrastingly, we notice that a one point increase in the BOD gender score of a firm leads to an average of 1.412 M&A deals more keeping all other variables constant. Which again is opposing the results of Levi, Li and Zhang (2014). This figure is much smaller than when we measure the gender score within the overall diversity score. An example could be a BOD with mostly women who tend to take less risky decisions. Then suddenly a lot of males join the

BOD and due to the tendency of men in engaging in risk, the number of M&A of the firm will increase.

Table 5.4 Regression analysis with individual components of Diversity score and M&A

	(1) M&A
Age score	-1.738 (1.347)
Gender score	1.412 (1.083)
Number members score	3.639 *** (1.332)
Tenure score	0.019 (0.728)
Boards served score	0.502 (0.562)
Not Independent Chairman	0.727 (3.438)
Market capitalization 2021	0.000 (0.000)
Fixed Effects	
Sector (25)	✓
Fixed Effects	
Country (4)	✓
Constant	-12.888 (10.861)
Number of observations	200

Notes. This table showcases the results of an OLS regression. For the variables sector and country fixed effects are used (see Appendix table 8.4 for full table). The values reported in the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

5.3 Hypothesis 3

The third hypothesis of this paper is questioning whether there is a positive relationship between BOD diversity and the Debt-to-Equity ratio growth of a firm. The results of the regressions can be observed on Table 5.5. From the coefficient of all three regressions, a negative relationship between a firm's debt to equity growth level and BOD diversity is implied and only specification (1) find significant results at the 5% significance level. A reason that can justify these findings could be that the more diverse boards choose to engage in less risky strategies when it comes to increasing their debt levels. The fact that firms choose to engage in less or more risk usually depends on the size and the industry of the company. Men usually engage in more risky strategies and thus if you increase female presence on a BOD then risk will decrease as well. Since in this case debt to equity growth is used as a proxy for risk then the results are not in line with the hypothesis and thus the third hypothesis is rejected. Previous authors such as Bernile, Bhagwat and Yoknker (2017) agree with the idea that risk is decreased in more diverse settings. However, the authors use a dependent variable in their model namely the R&D spendings but when it comes to risk the findings are similar.

Table 5.5 Debt-to-Equity on diversity score

	(1)	(2)	(3)
	Debt to Equity	Debt to Equity	Debt to Equity
Diversity score	-0.076** (0.033)	-0.047 (0.028)	-0.033 (0.045)
Market capitalization 2021			0.000 (0.000)
Not Independent Chairman		0.028 (0.098)	0.035 (0.098)
Fixed Effects			
Sector (25)		✓	✓
Fixed Effects			
Country (4)			✓
Constant	0.755 (0.217)	0.316 (0.192)	0.454 (0.245)
Number of observations	200	200	200

Notes. This table showcases the results of an OLS regression. For the variables sector and country fixed effects are used (see Appendix table 8.5 for full table). This table uses diversity score as the independent variable and debt to equity growth as the dependent. The reference category for sector is waste services and for country France. The values reported in the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

Chapter 6- Conclusion

Previous research on BOD diversity and performance focused on ROA and ROE as financial measures and only gender diversity. This research uses abnormal revenue growth and market capitalization growth as financial measures. Also, when it comes to the strategies most existing literature discusses the effect of diversity on innovation and research and development spending whereas this research uses two proxies namely the volume of M&A and the debt-to-equity ratio growth of firms.

The results obtained in the previous section accept the first hypothesis of the paper about whether there is a positive relationship between BOD diversity and financial performance. Similarly, it accepts the second hypothesis regarding the positive relationship between BOD diversity and M&A strategies. However, it fails to confirm the third hypothesis concerning the positive effect of BOD diversity on debt-to-equity growth. In contrast it finds that the relationship is negative. The results were statistically significant for the first and the third models whereas the rest of the models appear to not give statistically significant results. All in all, the most reliable regressions is the third specification for each table since it minimizes the omitted variable bias by including more variables that might affect the results in the model. In this way the coefficient captures better the effect that board diversity has on the dependent variable.

As all academic research papers, this research paper faces some significant challenges as well. One very important limitation is the lack of resources and time in order to collect a larger dataset with more companies and variables. Then, in the models used there is a high change that there is omitted variable bias. When running the models, we observe that as more control variables are included in the regressions the more the coefficient of the independent variable changes. This is a strong sign that variables which affect the results are still missing in the model. Unfortunately, this is a very challenging limitation to solve since one can never know whether they included all the variables that influence the results in the model. Furthermore, the dataset of this research might not be completely externally valid when selecting the companies. As mentioned in the data part the companies are chosen from the respective country indexes which resulted in constructing a dataset with the largest companies of each country excluding smaller ones. This results in selection bias since the

dataset focuses on companies with very similar size excluding the rest. Also, the number of industries that were selected are 25 in total which leaves out of the scope a lot of existing sectors.

The topic this paper explores is widely researched and whilst this research addresses the subject from a different spectrum, there is still a lot of recommendations for future research. When it comes to creating a diversity score it would be interesting to also include the different nationalities of each board member as well as their educational level. Then for the strategies firms engage at would be interesting to research whether more patents and more products are introduced in a more diverse board setting. Also, using panel data to research the topic would be a good approach since it will capture better the effect throughout time that board diversity has on a company's performance and strategies.

Chapter 7- Bibliography

- Bear, S. E., Rahman, N., & Post, C. (2010). The Impact of Board Diversity and Gender Composition on Corporate Social Responsibility and Firm Reputation. *Journal of Business Ethics*, 97(2), 207–221. <https://doi.org/10.1007/s10551-010-0505-2>
- Bernile, G., Bhagwat, V., & Yonker, S. E. (2017). Board diversity, firm risk, and corporate policies. *Journal of Financial Economics*, 127(3), 588–612. <https://doi.org/10.1016/j.jfineco.2017.12.009>
- Carter, D., D'Souza, F. P., Simkins, B. J., & Simpson, W. G. (2008). The Diversity of Corporate Board Committees and Financial Performance. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.1106698>
- Carter, D., Simkins, B. J., & Simpson, W. G. (2003). Corporate Governance, Board Diversity, and Firm Value. *The Financial Review*, 38(1), 33–53. <https://doi.org/10.1111/1540-6288.00034>
- Certo, S. T. (2003). Influencing Initial Public Offering Investors with Prestige: Signaling with Board Structures. *Academy of Management Review*, 28(3), 432. <https://doi.org/10.2307/30040731>
- Cumming, D. J., & Leung, T. Y. (2021). Board diversity and corporate innovation: Regional demographics and industry context. *Corporate Governance: An International Review*, 29(3), 277–296. <https://doi.org/10.1111/corg.12365>
- Emmerling, T., & Rooderes, D. (2020). Seven Strategies for better group decision making. *Harvard Business Review*. <https://hbr.org/2020/09/7-strategies-for-better-group-decision-making>
- Erhardt, N., Werbel, J. D., & Shrader, C. B. (2003). Board of Director Diversity and Firm Financial Performance. *Corporate Governance: An International Review*, 11(2), 102–111. <https://doi.org/10.1111/1467-8683.00011>
- European Commission. (2022). Final report on Sustainable Finance. *Platform on Sustainable Finance*. https://finance.ec.europa.eu/system/files/2022-08/220228-sustainable-finance-platform-finance-report-social-taxonomy_en.pdf

- European Parliament. (2022, November 22). Parliament approves landmark rules to boost gender equality on corporate boards. European Parliament. <https://www.europarl.europa.eu/news/en/pressroom/20221118IPR55706/parliament-approves-landmark-rules-to-boost-gender-equality-on-corporate-boards>
- Frijns, B., Dodd, O., & Cimerova, H. (2016). The impact of cultural diversity in corporate boards on firm performance. *Journal of Corporate Finance*, 41, 521–541. <https://doi.org/10.1016/j.jcorpfin.2016.07.014>
- Goodstein, J., Gautam, K., & Boeker, W. (1994). The effects of board size and diversity on strategic change. *Strategic Management Journal*, 15(3), 241–250. <https://doi.org/10.1002/smj.4250150305>
- Harvard Law. (2022, June 14). Diversity, Experience, and Effectiveness in Board Composition. *Harvard Law school*. <https://corpgov.law.harvard.edu/2022/06/14/diversity-experience-and-effectiveness-in-board-composition/>
- Jackson, S. E., May, K., & Whitney, K. (1995). Understanding the dynamics of diversity in decision making teams. *American Psychological Association*. https://www.researchgate.net/profile/SusanJackson5/publication/275714101_Understanding_the_Dynamics_of_Diversity_in_Decision_Making_Teams/links/565f625608ae1ef9298548d5/Understanding-the-Dynamics-of-Diversity-in-Decision-Making-Teams.pdf
- Johnston, W. M. (1987). *Workforce 2000: Work and Workers for the 21st Century*. <http://files.eric.ed.gov/fulltext/ED290887.pdf>
- Levi, M. D., Li, K., & Zhang, F. (2014). Director gender and mergers and acquisitions. *Journal of Corporate Finance*, 28, 185–200. <https://doi.org/10.1016/j.jcorpfin.2013.11.005>
- Midavaine, J., Dolfmsa, W., & Aalbers, R. (2016). Board diversity and R & D investment. *Loughborough University Institutional Repository (Loughborough University)*, 54(3), 558–569. <https://doi.org/10.1108/md-09-2014-0574>
- Miller, T. L., & Del Carmen Triana, M. (2009). Demographic Diversity in the Boardroom: Mediators of the Board Diversity-Firm Performance Relationship. *Journal of Management Studies*, 46(5), 755–786. <https://doi.org/10.1111/j.1467-6486.2009.00839.x>

The Equal Pay Act of 1963. (n.d.). US EEOC. <https://www.eeoc.gov/statutes/equal-pay-act-1963>

Chapter 8- Appendix

8.1 Tables

Table 8.1 Revenue growth on diversity score

	(1) Revenue growth	(2) Revenue growth	(3) Revenue growth
Diversity score	0.057*** (0.015)	0.048*** (0.013)	0.047*** (0.018)
Not Independent Chairman		0.043 (0.038)	0.053 (0.043)
IT		-0.001 (0.070)	-0.000 (0.069)
Automotive		0.155 (0.099)	0.155 (0.101)
Aviation		0.127 (0.081)	0.141 (0.089)
Biotechnology		0.108 (0.095)	0.106 (0.098)
Conglomerate		-0.091 (0.077)	-0.082 (0.079)
Construction		-0.071*** (0.015)	-0.072*** (0.020)
Consulting		0.042 (0.044)	0.047 (0.046)
Consumer goods		-0.002 (0.043)	0.000 (0.043)
Energy		0.243*** (0.060)	0.243*** (0.062)
Engineering		0.070 (0.074)	0.082 (0.068)
Entertainment		0.049 (0.123)	0.048 (0.126)
Financial services		-0.082 (0.062)	-0.075 (0.063)
Healthcare		-0.134 (0.113)	-0.110 (0.108)
Insurance		-0.086 (0.078)	-0.067 (0.086)

Logistics		0.024 (0.090)	0.017 (0.098)
Manufacturing		0.022 (0.051)	-0.005 (0.058)
Mining		0.128 (0.131)	0.124 (0.133)
Other		0.097 (0.073)	0.098 (0.071)
Real estate		-0.070 (0.084)	-0.061 (0.085)
Semiconductors		0.216*** (0.064)	0.202*** (0.060)
Services		0.045 (0.064)	0.058 (0.062)
Telecommunications		-0.114** (0.046)	-0.109** (0.047)
Transportation		0.175 (0.143)	0.191 (0.137)
Waste service		0.075 (0.062)	0.046 (0.070)
Switzerland			-0.033 (0.050)
Netherlands			0.034 (0.051)
United Kingdom			0.005 (0.043)
Constant	-0.212** (0.086)	-0.187* (0.104)	-0.189 (0.143)
Observations	200	199	199
R²	0.075	0.314	0.321
Adjusted R²	0.071	0.210	0.205

Notes. This table showcases the results of an OLS regression. This table uses diversity score as the independent variable and abnormal revenue growth as the dependent. The reference category for sector is chemicals and for country France. The values reported in the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

Table 8.2 Market capitalization growth on diversity score

	(1) Market Capitalization growth	(2) Market Capitalization growth	(3) Market Capitalization growth
Diversity score	0.007 (0.017)	0.014 (0.018)	0.010 (0.022)
Not Independent Chairman		-0.007 (0.046)	-0.003 (0.049)
IT		0.188* (0.102)	0.189* (0.101)
Automotive		0.225* (0.114)	0.227* (0.120)
Aviation		0.251*** (0.063)	0.245*** (0.070)
Biotechnology		0.113 (0.132)	0.124 (0.130)
Chemicals		0.000 (.)	0.000 (.)
Conglomerate		0.098 (0.067)	0.104 (0.068)
Construction		0.318*** (0.021)	0.313*** (0.025)
Consulting		-0.080 (0.134)	-0.059 (0.136)
Consumer goods		0.206*** (0.050)	0.198*** (0.050)
Energy		0.424*** (0.067)	0.426*** (0.067)
Engineering		0.196*** (0.070)	0.199*** (0.074)
Entertainment		0.211*** (0.078)	0.195** (0.081)
Financial services		0.204*** (0.064)	0.202*** (0.065)
Healthcare		0.026 (0.107)	0.042 (0.106)
Insurance		0.427*** (0.072)	0.438*** (0.073)
Logistics		0.157	0.166

		(0.158)	(0.153)
Manufacturing		-0.036 (0.059)	-0.007 (0.067)
Mining		0.443*** (0.067)	0.416*** (0.067)
Other		0.199* (0.103)	0.208** (0.099)
Real estate		0.144** (0.071)	0.151** (0.073)
Semiconductors		0.335 (0.296)	0.357 (0.300)
Services		0.231** (0.102)	0.209* (0.107)
Telecommunications		0.179** (0.073)	0.167** (0.079)
Transportation		0.232*** (0.081)	0.240*** (0.082)
Waste service		0.613*** (0.074)	0.637*** (0.081)
Switzerland			-0.025 (0.052)
Netherlands			-0.034 (0.058)
United Kingdom			0.055 (0.057)
Constant	-0.190* (0.105)	-0.446*** (0.131)	-0.423** (0.164)
Observations	200	199	199
R²	0.001	0.219	0.231
Adjusted R²	-0.004	0.101	0.099

Notes. This table showcases the results of an OLS regression. This table uses diversity score as the independent variable and market capitalization growth as the dependent. The reference category for sector is chemicals and for country France. The values reported in the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

Table 8.3 M&A on diversity score

	(1) M&A	(2) M&A	(3) M&A
Diversity score	1.521* (0.879)	2.677** (1.195)	2.821** (1.332)
Not Independent Chairman		1.261 (3.331)	1.826 (3.347)
IT		4.060 (3.166)	-0.767 (2.848)
Automotive		11.625* (6.227)	7.421 (6.734)
Aviation		2.764 (3.812)	-1.841 (3.878)
Biotechnology		-2.100 (4.567)	-6.618* (3.808)
Chemicals		4.775 (3.615)	0.000 (.)
Conglomerate		5.857 (7.166)	1.600 (6.756)
Construction		0.896 (2.957)	-3.710** (1.553)
Consulting		3.738 (2.543)	-0.560 (3.076)
Consumer goods		1.677 (3.165)	-3.536 (2.496)
Energy		11.151* (6.587)	6.463 (5.950)
Engineering		2.447 (2.319)	-1.867 (1.948)
Entertainment		0.125 (3.327)	-5.092* (2.808)
Financial services		16.659*** (4.681)	11.940** (5.978)
Healthcare		8.884* (4.684)	3.452 (5.509)
Insurance		4.026* (2.306)	-0.268 (3.386)
Logistics		-4.858 (3.526)	-9.255** (3.618)

Manufacturing		4.332 (3.439)	-0.102 (5.139)
Mining		15.550** (6.896)	9.683 (6.919)
Other		5.358 (5.914)	0.816 (6.497)
Real estate		1.276 (3.216)	-2.891 (3.274)
Semiconductors		-4.917 (3.404)	-9.383** (3.980)
Services		9.217 (6.654)	3.981 (6.710)
Telecommunications		3.743 (3.919)	-1.263 (3.971)
Transportation		-5.537* (3.053)	-9.763*** (2.714)
Waste service		0.000 (.)	-4.222 (4.129)
Switzerland			-0.082 (3.725)
Netherlands			0.525 (4.330)
United Kingdom			2.432 (3.241)
Market capitalization 2021			0.000 (0.000)
Constant	4.256 (5.030)	-8.608** (4.289)	-5.427 (8.790)
Observations	198	197	197
R²	0.013	0.179	0.184
Adjusted R²	0.008	0.053	0.036

Notes. This table showcases the results of an OLS regression. This table uses diversity score as the independent variable and M&A as the dependent. The reference category for is waste service for the sector of the first specification and is chemicals for the sector of the second specification and for country France. The values reported in the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

Table 8.4 Regression analysis with individual components of Diversity score and M&A

	(1) M&A	(2) M&A	(3) M&A
Age score	-1.572 (1.397)	-1.601 (1.390)	-1.739 (1.347)
Women score	1.455 (1.186)	1.427 (1.162)	1.412 (1.084)
Tenure Score		-0.143 (0.782)	0.019 (0.728)
Served score		0.737 (0.549)	0.502 (0.562)
Number of members score			3.639*** (1.333)
IT	-0.976 (2.725)	-0.545 (2.671)	2.407 (2.747)
Automotive	3.515 (6.935)	3.919 (6.365)	9.241 (7.154)
Aviation	-3.243 (3.927)	-3.586 (3.869)	0.093 (3.842)
Biotechnology	-7.466** (3.049)	-8.436*** (2.899)	-0.149 (4.231)
Chemicals	0.000 (.)	0.000 (.)	0.000 (.)
Conglomerate	2.786 (6.908)	2.942 (5.963)	7.466 (7.840)
Construction	-6.553*** (1.020)	-5.110** (1.977)	2.753 (4.050)
Consulting	-0.718 (3.088)	-0.799 (2.941)	4.350 (2.651)
Consumer goods	-3.689 (2.554)	-3.526 (2.321)	0.737 (2.547)
Energy	4.856 (5.593)	5.063 (5.631)	9.191 (5.900)
Engineering	-3.884 (2.404)	-3.894* (2.151)	5.252 (3.510)
Entertainment	-4.617 (2.891)	-4.228 (2.901)	0.172 (3.578)

Financial services	10.935* (5.816)	11.901** (5.605)	14.728*** (5.627)
Healthcare	1.008 (5.801)	1.451 (5.822)	6.089 (5.451)
Insurance	-2.645 (3.483)	-1.102 (3.673)	1.097 (3.501)
Logistics	-10.077*** (2.315)	-10.305*** (2.949)	-7.314*** (2.796)
Manufacturing	-0.885 (4.173)	-1.529 (4.769)	5.002 (5.389)
Mining	10.939 (7.196)	11.295 (6.877)	13.712 (8.416)
Other	1.264 (7.106)	1.044 (6.757)	7.203 (7.235)
Real estate	-4.801 (3.282)	-3.856 (3.241)	3.180 (4.081)
Semiconductors	-10.132** (3.914)	-11.775*** (4.359)	-4.218 (3.607)
Services	3.992 (7.123)	4.118 (7.068)	9.177 (6.501)
Telecommunications	-2.079 (4.131)	-1.878 (4.070)	1.368 (4.265)
Transportation	-10.409*** (2.384)	-9.274*** (2.832)	-6.878 (5.150)
Waste service	-6.966* (3.827)	-3.922 (4.527)	6.046 (6.148)
Switzerland	-4.334 (4.045)	-5.220 (4.113)	1.389 (4.617)
Netherlands	-4.927 (3.989)	-5.955 (3.798)	2.633 (5.174)
United Kingdom	-0.963 (3.421)	-1.813 (3.412)	3.258 (3.404)
Constant	14.388** (7.081)	12.681 (7.963)	-12.883 (10.861)
Observations	197	197	197
R²	0.181	0.188	0.257
Adjusted R²	0.027	0.024	0.101

Notes. This table showcases the results of an OLS regression. This table uses the 5 score components as the independent variable and M&A as the dependent variable. The reference category for sector is Chemicals and for country France. The values reported in the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

Table 8.5 Debt-to-Equity on diversity score

	(1) Debt-to-equity growth	(2) Debt-to-equity growth	(3) Debt-to-equity growth
Diversity score	-0.077** (0.033)	-0.047 (0.029)	-0.033 (0.045)
Not Independent Chairman		0.028 (0.098)	0.035 (0.098)
IT		0.289 (0.207)	0.046 (0.212)
Automotive		0.162* (0.095)	-0.052 (0.087)
Aviation		0.220* (0.122)	-0.024 (0.130)
Biotechnology		0.153* (0.083)	-0.080 (0.111)
Chemicals		0.000 (.)	-0.240* (0.126)
Conglomerate		0.344 (0.214)	0.107 (0.225)
Construction		-0.027 (0.034)	-0.251** (0.113)
Consulting		0.414* (0.245)	0.167 (0.278)
Consumer goods		0.139* (0.079)	-0.109 (0.120)
Energy		0.222** (0.110)	-0.013 (0.101)
Engineering		0.041 (0.052)	-0.202* (0.104)
Entertainment		0.253* (0.138)	0.007 (0.157)
Financial services		0.421** (0.191)	0.178 (0.167)
Healthcare		0.342	0.114

		(0.232)	(0.285)
Insurance		0.694 (0.436)	0.437 (0.431)
Logistics		0.652** (0.280)	0.430 (0.313)
Manufacturing		0.678*** (0.254)	0.466* (0.237)
Mining		0.167 (0.109)	-0.088 (0.168)
Other		0.216 (0.145)	-0.024 (0.155)
Real estate		-0.010 (0.076)	-0.245*** (0.085)
Semiconductors		0.436* (0.257)	0.212 (0.250)
Services		0.206 (0.183)	-0.060 (0.206)
Telecommunications		0.102 (0.085)	-0.145 (0.112)
Transportation		0.112 (0.076)	-0.137 (0.105)
Waste service		0.196* (0.114)	0.000 (.)
Switzerland			0.079 (0.129)
Netherlands			0.008 (0.106)
United Kingdom			0.060 (0.181)
Market capitalization 2021			-0.000 (0.000)
Constant	0.755*** (0.218)	0.317 (0.193)	0.454* (0.245)
Observations	200	199	199
R²	0.021	0.101	0.104
Adjusted R²	0.016	-0.035	-0.056

Notes. This table showcases the results of an OLS regression. This table uses diversity score as the independent variable and debt to equity growth as the dependent. The reference category for sector is Chemicals for the first specification and waste services for the second specification and for France the country. The values reported in

the parenthesis are the standard errors. Significance levels are reported as follows: *** < 0.01, **<0.05, * < 0.10.

8.2 List of companies studied

Company name

SHELL NA EQUITY

ASML HOLDING

ING GROEP

UNILEVER

ARCELORMITTAL SA

WOLTERS KLUWER

JUST EAT TAKEAWAY

ADYEN

ASM INTERNATIONAL

HEINEKEN

RELX

ABN AMRO BANK

AHOLD DEL

DSM FIRMENICH AG

KPN KON

NN GROUP

AEGON

UMG

AMG

AKZO NOBEL

PHILIPS KON

GALAPAGOS

SIGNIFY NV

RANDSTAD NV

DSM KON

SBM OFFSHORE

ASR NEDERLAND

EXOR NV

OCI

APERAM

VOPAK

FUGRO

AALBERTS NV

TOMTOM

POSTNL

ARCADIS

ORDINA

WDP

REINET INVESTMENTS
VEON
RENEWI
HAL TRUST
APAM NA EQUITY
LVMH
L'ORÉAL
HERMÈS
TOTALENERGIES
SANOFI
AIRBUS
SCHNEIDER ELECTRIC
AIR LIQUIDE
ESSILORLUXOTTICA
BNP PARIBAS
KERING
AXA
VINCI
SAFRAN
PERNOD RICARD
STELLANTIS
DASSAULT SYSTÈMES
DANONE
ENGIE
STMICROELECTRONICS
CRÉDIT AGRICOLE
ORANGE
CAPGEMINI
LEGRAND
MICHELIN
VEOLIA
PUBLICIS GROUPE
SOCIÉTÉ GÉNÉRALE
CARREFOUR
EUROFINS SCIENTIFIC
BOUYGUES
WORLDLINE
VIVENDI
RENAULT
TELEPERFORMANCE
ALSTOM
UNIBAIL-RODAMCO-WESTFIELD
THALES

EDENRED
SODEXO
BUREAU VERITAS
EIFFAGE
EDF
SARTORIUS STED BIO
GETLINK SE
BIOMERIEUX
ARKEMA
BOLLORE
REXEL
GECINA
ACCOR
KLEPIERRE
ADP
REMY COINTREAU
ALTEN
IPSEN
AMUNDI
SPIE
ELIS
UBISOFT ENTERTAIN
COVIVIO
EURAZEO
WENDEL
FAURECIA
RUBIS
NEXANS
SES
S.E.B
BIC
COFACE
IMERYS
ICADE
ALD
JCDECAUX
EUTELSAT COMMUNIC.
NEXITY
ATOS
METROPOLE TV
MERCIALYS
ERAMET
UBS

EFG INTERNATIONAL
NESTLE
NOVARTIS
ROCHE HOLDINGS
CFR SW EQUITY
ZURICH INSURANCE GROUP
ABBN SW EQUITY
SIKA SW EQUITY
LONZA GROUP AG
ALCON
SWISS RE
GIVAUDAN
PARTNERS GROUP HOLDINGS AG
GEBERIT
SWISS LIFE HOLDINGS
SWISSCOM
SONOVA
LOGITECH
TEMENOS
SWATCH GROUP
CHUBB LTD
EMS CHEMIE HOLDING
BKW
BALOISE HOLDING
BANQUE CANTONALE
SWISS PRIME SITE
HELVETIA HOLDINGS
PSP SWISS PROPERTY
CLARIANT
DKSH
FLUGHAFEN
JULIUS BAR
GALENICA
STADLER RAIL
VONTOBEL
SULZER
LANDIS
DORMAKABA HOLDINGS
OC OERLIKON
FLUTTER ENTERTAINMENT
REL

BEZ
JD FASHION
NATWEST GROUP
INTERNATIONAL CONSOLIDATED AIRLINES
GROUP
IMPERIAL BRANDS PLC
PEARSON PLC
ENTAIN
ENDEAVOUR
GLENCORE LONDON
MONDI PLC
KINGFISHER PLC
RENTOKIL
EXPERIAN PLC'S
LLOYDS
ANGLO AMERICAN PLC
SMURFIT KAPPA GROUP
WPP PLC
BARCLAYS
SAINSBURY PLC
RIO TINTO PLC
TESCO
HISCOX
VODAFONE
RECKITT
NATIONAL GRID
CENTRICA PLC
HARGREAVES LANSDOWN
BRITISH AMERICAN TOBACCO
BT GROUP
B&M EUROPEAN VALUE RETAIL
NEXT PLC
HSBC
FRASERS GROUP
HALMA PLC
BT GROUP
