

How do the board characteristics influence the firm performance?

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ABSTRACT, This paper studies whether specific board characteristics are important for the firm performance of Dutch listed firms. It investigates the impact of the age diversity, the national background, gender diversity and the amount of board members on the firm performance, measured by ROA and P/B-ratio. The analysis is done for the supervisory board, the management board and the total board. In conclusion this paper provides some evidence that the gender characteristics of board members would influence the firm performance of these Dutch listed firms.

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Keywords

board characteristics, firm performance, ROA, P/B-ratio, the Netherlands, listed firms.

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1. INTRODUCTION

Since the crisis of 2008 the discussion about corporate responsibility is arising and with that the discussion about monitoring and control. The Cadbury Report (1992) stated corporate governance as: “the systems by which companies are directed and controlled”. The economic crisis has shown us that the system of corporate governance is not perfect. Nier & Merrouche (2010) find that in preventing crises supervision and regulation of the financial system are key resources. With the discussion about the role of corporate governance, the board is subject for debate. Research shows that most of the larger firms have a board even when it is not mandatory according to Bennedson (2002). Bennedson discusses two arguments why firms would choose to have a board. The first argument is the separation of ownership and control. Installing a board to manage the agency theory: mediation between the weak powers of owners compared to the power of management, achieving that the management acts in the interest of the owners. Van der Walt & Ingley (2003) find “the board’s monitoring role (its stewardship capacity) in protecting shareholder interests from the self – interest (agency costs) of management”. For example asymmetric information, not all of the involved parties have access to the same information, this leads to advantages respectively disadvantage for some of the parties. The second argument explained by Bennedson is that the board mitigates the relation between controlling owners and not-controlling owners. Without a board the controlling owners could abuse their position with regard to those owners that do not put effort in controlling the actions of the business themselves. Fama & Jensen (1983) find the corporate board the most important control mechanism, for controlling opportunistic management behaviour. They find the corporate board as a solution for the agency theory, because owners should be capable of making sure that the management works in their best interest. Hermalin & Weisbach (2003) describe that boards are part of the market solution to the contracting problems that are present inside most organizations. The results of Francis et. al. (2012) support the policy recommendation that firms should build a strong governance system to protect shareholder wealth.

There are boards with all different kind of characteristics for example: firms with small, medium or large boards; only manly board members or also women. The goal of this paper is finding out what board characteristics influence the firm performance. In the different fields of research studies did not provide a clear conclusion, there is no unambiguous inference. Therefore it is important to investigate small pieces, for instance a country. Later on the study might be helpful in finding a general conclusion for board characteristics and firm performance.

Finding out what board characteristics are important for the firm performance. Where should firms put their focus when looking at the composition of their board? In the recent years after the crisis there are voices for making changes to the system of corporate governance. When certain board characteristics influence firm performance more than others do, then this could imply that adjusting the rules would be more effective for certain of these board characteristics than others. So that the rules can be made in such a way that it helps preventing a crisis, in line with what Francis et. al. found. Within the different possibilities of changing the rules for securing that crises are prevented, making sure that the negative influence on the firm performance is as minimal as possible.

2. LITERATURE REVIEW

‘Board characteristics’ can be seen as a general term, there is no widely used definition. Carcello et. al. (2002) use the percentage independence, the diligence and the expertise of the

board members as board characteristics. In this literature review there will be attention for the following board characteristics: the size of the board, nationality of the board members, gender diversity and age diversity among board members.

2.1 Board size

One board characteristic that has been subject of research often is the amount of members on a board. Larger boards have the advantage of having more people with different knowledge and information. With the growth of a board the problem of free rider problems and coordination costs are arising (Guest, 2009). When there are more people on the board it is harder to detect who of the members is doing nothing in return of his payment, a so called free rider. With a larger group it is harder to reach consensus, which makes the large board slower and less-efficient in making decision (Jensen, 1993). Jensen (1993) suggest that the optimal board size is around seven or eight directors. Lipton & Lorsch (1992) find that beyond some point having more directors on the board will lead to a lower level of corporate performance. An empirical study in the United Kingdom (UK) concludes that board size has a negative impact on firm performance (Guest, 2009). Overall, the conclusion is that when boards get too large the advantage of the extra board member does not outweigh the disadvantages. A more recent and oft-cited paper is: ‘Boards, does one size fit all?’ (Coles, Daniel & Naveen, 2008). This paper examines whether more independent and smaller boards are better. They argue that certain classes of firms are likely to benefit from larger boards. Complex firms such as those that are diversified across industries, large in size, or have high leverage are likely to have greater advising requirements.

Research from the Netherlands by Postma et. al. (2001) find that “the mangement board is not determining firm performance, but do find a negative relationship between the size and composition (number of outsiders) of the supervisory board and firm performance”. Conyon & Peck (1998) also find a significant negative relation between the size of the board and firm performance.

The broad conclusion about board size is that small boards are preferable. Small boards are easier to control and capable of relatively quick decision making. The research of Coles et. al. (2008) is suggesting that this might be questioned. So the following hypothesis is developed:

Hypothesis 1: Small size board leads to higher firm performance.

2.2 Board member diversity

Board members differ from one another; they have different personal characteristics and experience. Kang et. al. (2007) describe observable diversity as differences in; race/ethnic background, nationality, gender and age. This is quite similar to the following description of Campbell & Mínguez-Vera (2008) it can be measured on a number of dimensions: gender, age, ethnicity, nationality, educational background, industrial experience and organisational membership. Of all of these aspects the gender diversity has been given the most of attention. The other aspects are less exposed, there is no large amount of relevant literature available; this paper contributes to this.

2.2.1 Age

Talking to people of roughly the same generation is experienced by people as easier. “In an organizational context, generational characteristics may lead to formulating distinct generational perceptions and values” (Park & Gursoy, 2012). The paper of Westphal & Milton (2000) finds “Boards have traditionally been viewed as a homogenous group of elites who have similar

socio-economic backgrounds, hold degrees from the same schools, have similar educational and professional training, and, as a result, have very similar views about business practices". Therefore it could be reasoned that for reaching agreement on the board it would be nice to have members that are of quite similar age. But does all of this really matter for the firm performance? Hafsi & Turgut (2013) argue that the age diversity of board members has a negative impact on firm performance. Ali et. al. (2013) find that organizations with a low level of board age diversity experience high levels of return on assets. Meaning it would be better for the firm performance to have people from quite the same age on the board. But it can also be argued that having members from different ages would improve connecting to different segments. And the fact that elder people have more life experience. There is little research done about the influence of age diversity on the firm performance. The hypothesis formulated is the following;

Hypothesis 2: Boards with high age diversity show higher firm performance.

2.2.2 Background

Carroll & Buchholtz (2011) find that for managing the interest of the different stakeholders it is best to have a demographically diverse board. But whether the ethnical background of board members matters for the firm performance is to be questioned. The general assumption is that having people from different backgrounds and ethnic groups is important for the business. Because people from a certain ethnical background recognize the needs from the people of this group. Representing different groups is important to pick up signals from different customer groups. The more contact a firm has to different groups the more a firm can adjust their products or services to specific needs of certain groups. In the empirical study of Abdullah & Ismail (2013) argues that every ethnic group is different in social, cultural and economic terms. Boards with greater diversity could minimize the risk of 'group think' and prevent firms from making decisions somehow biased towards particular groups of the stakeholders. Having board members from different ethnic backgrounds might help to understand the customers from the different backgrounds. Abdullah & Ismail (2013) find that ethnic diversity does have a positive impact on accounting-based performance measure. An empirical paper by Brammer, Millington & Pavelin (2007) about firms in the UK finds both ethnic and gender diversity to be very limited, in this paper is also mentioned that ethnic diversity is hard to measure. An empirical study by Carter et. al. (2010) shows that the interactions of gender diversity and ethnic minority diversity have no impact on financial performance. The results of the empirical studies show different results from what was expected, namely the expectance that more ethnic diversity would be good for the firm performance.

Hypothesis 3: Boards with members from different ethnic groups show higher firm performance.

2.2.3 Gender

Gender diversity of board members is quite an extensive field of research, the following section provides a brief overview. The European Commission (2012) aims for equal representation of women and men in economic decision-making processes and in particular more women on boards of directors. In 2020 they want 40 percent of the board members to be female. Not only the EU calls for representation of females in the boards, there are also governments that make guidelines or regulations for the minimum of female board members. Research is done about whether the coming of female board members would change the firm performance. The result of Campbell & Mínguez-Vera (2008) suggests "at a minimum, that increased gender diversity

can be achieved without destroying shareholder-value". However in total the results in this field of research are contradictory, a paper by Adams & Ferreira (2009) finds a negative linear relationship. But others find a positive linear relationship (Campbell & Mínguez-Vera, 2008) (Bear, Rahman & Post, 2010). Also there are papers providing no significant relationship (Carter, D'Souza, Simkins & Simpson, 2010) (Wang & Clift, 1992). Fact is that this field of research has not come to consensus about what the influence is of having women on the board. So question is what is the relationship between gender diversity and corporate performance? The paper of Ali et. al. (2013) conclude that there is a relation between the gender diversity and the employee productivity. Higher gender diversity leads to higher employee productivity which is good for the firm performance. Yet Ali et. al. have only done their empirical research in Australia.

Hypothesis 4: Boards with only men score the same on firm performance as diversified boards with men and women on the board and as boards with only women.

Quite some research is done about the influence of certain board characteristics on the firm performance, the point is that it is sometimes contradictory. In some fields it can be stated that there is little research done about the effects on firm performance. Based on the literature may in fact be concluded that it is difficult to draw conclusions on the effect of a higher degree of diversity within boards on firm performance. Therefore this paper will take a look at specific firms in one country, namely listed firms in the Netherlands. Focus will be on the fact whether in this situation there are significant relations.

3. METHODOLOGY AND DATA

The main aspects of this research are the age background of the board members, the background diversity of the board members, the gender diversity of the board members and the size of the board on the firm performance.

For all measures the management board and supervisory board are listed separately. This is done on behalf of the fact that the boards can be analyzed separately as well as for the total board. The model is stated as following:

$$\text{Performance} = \alpha + \beta \cdot \text{Age TOT} + \beta \cdot \text{Background TOT} + \beta \cdot \text{Gender TOT} + \beta \cdot \text{Size TOT} + \varepsilon$$

$$\text{Performance} = \alpha + \beta \cdot \text{Age SU} + \beta \cdot \text{Background SU} + \beta \cdot \text{Gender SU} + \beta \cdot \text{Size SU} + \varepsilon$$

$$\text{Performance} = \alpha + \beta \cdot \text{Age MA} + \beta \cdot \text{Background MA} + \beta \cdot \text{Gender MA} + \beta \cdot \text{Size MA} + \varepsilon$$

TOT stands for the total board consisting of the management and supervisory board members. MA stands for the management board. SU stands for the supervisory board.

The goal of three different models is to see whether there is an effect for the board characteristics of the total board and firm performance, or a relationship between the characteristics of the management board or the supervisory board and firm performance. In the following section the measures for the board characteristics will be specified.

3.1 Measures

The age of the board members is mostly stated in the annual report. The Netherlands has the 'Code 2008', in this code recommendations are done on what characteristics should be mentioned in an annual report. Namely: gender, age, profession, primary function, nationality, and additional functions to the extent that they are relevant for the performance of the duties as auditor, date of first appointment and current term of office.

The Orbis database is built with data out of annual reports, the data from the board members of 2012 is retrieved from the annual report of these firms. Not all firms provide the year of birth of their board members in their annual report. Of 54 board members the age was unknown, these firms were taken out of the analysis. The age that is used in the analyses is the age the board members had on 31-12-2012, it is calculated as 2012 minus the year of birth. Not the age of the board members will be linked to the firm performance but the difference in age of those board members. The measure of the age spread of the board members will be the standard deviation (σ) of age (Grund & Westergaard-Nielsen, 2008). As Grund et.al (2008) also advocate in their paper, if a firm holds exactly the same employees as last year, the standard deviation of this year will be the same as next year. Meaning the measure does not change for a group even if the year does change. The question could be raised whether this is the best measure to compare with firm performance, because it does not look at the height of the age. This measure is chosen to be able to determine whether having board members of different ages would contribute to the firm performance. This way it can be stated whether the board members are from totally different age or mostly from the same age. A more often used measure the coefficient of variation the measure takes into account the average age and therefore changes every year (Pelled, Eisenhardt & Xin, 1999). With the standard deviation this is not the case and comparison over the years is easier. In the database the age will be a numeric variable, not in terms of clusters. This on behave of the fact that the standard deviation of age is interesting and therefore the age should not be clustered.

The background of the board members can be interesting, like for instance the educational background, nationality or ethnicity (Virtanen, 2012) (Ruirok, Peck & Taccheva, 2007) (van der Walt & Ingley, 2003). In the literature review it was already mentioned that measuring the background of the board members is very hard (Brammer, Millington & Pavelin, 2007). Logically the ethnicity of the board members is not available, because persons are not registered by their personal characteristics. Just like things as religion these are seen as personal and a violation of privacy when mention in the annual report. It has turned out testing the relation between the backgrounds of the board members will be difficult, because the available data is not complete. Most annual reports of firms mention the nationality of the board members. Therefore the board members diversity on the basis of nationality could be looked at. Among the board members many different nationalities can be found. Most of the boards hold only Dutch board members which can be declared by the fact that the involved firms are all Dutch listed firms. There are also firms with a single or even none Dutch board members. Calculating the percentage of Dutch board members would mean a score of 100 for a board with only Dutch members, a score of 0 means no Dutch board members. This would mean that a board of for example five American citizen scores the same as a board with four Americans and one France member. For this thesis this is not a proper way to measure background, because then the focus is on whether board members are Dutch or foreign. Without attention for the fact that people from two foreign countries should also score on background. Therefore the so called Blau index was calculated for the board members. This calculation takes in account the diversity of nationalities.

Figure 1. Blau index

$$Blau_{dj} = 1 - \sum_{i=1}^K \left(\frac{x_{ij}}{n_j} \right)^2$$

“ x_{ij} stands for the number of board members from a certain category in the board. N_j stands for the total number of board members. K stands for the collection of different categories of a given characteristic d . The proportion board members out of category I in board J is obtained by dividing the number of board members of category I on board J by total number of board members on board J . This is then squared and summed over all categories in set K . This summation is then subtracted from 1 to come to a diversity measure” (Van Ees et. al. 2007).

The Netherlands has a long road ahead of itself when it comes to representation of women in top positions of firms. A recent report of Grant Thornton showed that only 10 percent of the positions in senior management in the Netherlands are held by women. The Netherlands are in the bottom ten of the world. How well are women doing when it is about board positions in the Netherlands? Gender is similar to the age measure, it is available in the annual report and therefore available in the Orbis database. With the data the percentage of male board members could be calculated. Then the relation between having male board members and the firm performance can be made. With that it can be seen whether having female board members has a significant influence on the performance of a firm. None of the board members is registered as transgender, they are all male or female. For all of the board members the gender was given. Gender diversity is calculated as the percentage of male board members, a higher score means less gender diversity of the board.

The size of the board is measured in number of people that are on the board, these are absolute numbers. There will be a difference between the supervisory board, the management board and a measurement of both of them together. There are some boards with a value of one indicating that there are firms with only one chief executive officer. In the data there were also firms with only one member on the supervisory board, in the Netherlands there is a legal minimum of three. Firms sometime have a period with fewer board members, due to members that resign or die. Firm can have less than three board members for quite some time. This difference can be declared by the fact that members are appointed on the general shareholder meeting, which is held once a year. Therefore appointing new members can take some time.

The performance of a firm can be measured in many ways. For example by their growth, yet what growth? There are many different types of growth, for example: productivity growth, turnover growth, profit growth. But what is seen as a high rate of growth in one sector can be seen as relatively low growth in another sector. Therefore growth is not widely used as a measure of firm performance. In this paper firm performance is measured as the return on assets (ROA) and price to book ratio (P/B-ratio). ROA is an accounting based measure. Where the (*earnings* before extraordinary income and preferred dividend in financial year t) are divided by the (average of book values of *total assets* at the beginning and at the end of financial year t). The P/B-ratio is the relation between the values of the firm as noted on the stock market in relation to the book value of the firm (Haslam, Ryan, Kulich, Trojanowski & Atkins, 2010). ROA is a so called accounting based measure because in the calculation roughly the earnings and total assets are divided. The method makes use of archived results in the recent past. The P/B-ratio makes use of what the ratio is between the market and book assets. Stock based methods like the P/B-ratio are relatively forward looking, because they reflect the potential that investors see in the firm.

The data on firm performance is taken from the database because all firms are treated equally. Meaning that there is no

problem with defining what should or should not take in to account within a certain measurement. And not facing the problem that all firms use different setups and different names for example for their possessions and stock. Later on in the discussion section the downsides of this method will be discussed.

3.2 Sample

The firms involved in this research are Dutch listed firms so called Naamloze Vennootschappen (NV), the final sample consists of 60 firms. The data is retrieved from the Orbis database. The used data is data from the latest available year; 2013 for the financial data and respective 2012 for the data about the board members. This because the decisions of the board members in a year are likely to have an influence on the results in the following year. This is to make sure that the relationship found between the different characteristics and the firm performance is not affected by the opposed.

The financial data is collected in the Orbis database, a database that holds information about large listed and unlisted firms around the globe. The country of interest in this study is the Netherlands, this so that the data from annual reports would be understandable. The goal of this paper is looking at the linear relation between board characteristics and firm performance.

Table 1. Search strategy

Criteria	Results
All active companies and companies with unknown situation	1,509,381
World region/ Country/ Region in country: Netherlands	28,406
Active companies	28,340
Listed/Unlisted companies: Publicly listed companies, Formerly publicly listed companies	301
Last available year: 2013	84
Annual report available	78
ROA or P/B-ratio without outlines	75
Complete data for all boards	60

The data on the characteristics of the board members was only available in Orbis for the recent situation and not for the situation in 2012. Therefore for all of the 78 firms the data about the board members was retrieved from their annual reports. For the management board those members who were mentioned explicitly as such in the annual report are included in the database. This on behalf of the fact that all firms are hereby treaded equally and no exceptions are made in the management board definition.

Outliers were defined by 1,5 the interquartile range of the edge of the rectangle of the boxplot. Extreme values are even further away, three times the interquartile range. These values are found with help of the boxplot function of Statistical Package for the Social Sciences (SPSS). Analyses are sensitive for outliers and extreme values. All the outliers and extreme values were removed from the database. Therefore for the P/B-ratio two outlier and four extreme values were removed. For the ROA there were six outlier and four extreme values removed. There were firms with an outlier score on both ROA and P/B-ratio. The firms with outlier score on both firm performance measures were taken out of the sample. The sample of 60 firms holds complete data for all the board characteristics.

4. RESULTS

Table 2. Descriptive statistics of the variables

	N	Minimum	Maximum	Mean	Std. Deviation
P/B-ratio	49	0.53	4.09	1.73	0.89
ROA	52	-6.90	15.35	3.43	4.56
Age TOT	60	1.20	10.16	6.18	1.90
Background TOT	60	0.00	0.74	0.32	0.27
Gender TOT	60	0.43	1.00	0.91	0.12
Size TOT	60	4.00	18.00	8.80	3.21
Age MA	60	0.00	11.50	3.60	2.60
Background MA	60	0.00	0.73	0.20	0.26
Gender MA	60	0.00	1.00	0.94	0.17
Size MA	60	1.00	10.00	3.22	1.73
Age SU	60	0.89	11.25	5.10	2.38
Background SU	60	0.00	1.00	0.33	0.30
Gender SU	60	0.50	1.00	0.89	0.12
Size SU	60	2.00	12.00	5.65	2.03
Valid	41				

The data for all of the boards show that there were 60 firms involved in the database. Some of these firms presented both the P/B-ratio and the ROA. There were 19 firms of which one of the firm performance values was missing. These firms were only involved in the analysis for ROA respectively P/B-ratio. Therefore the valid number of 41 firms comes from those were all the data was known.

High ROA often indicates that a firm has low debt. A low ROA means that a firm uses a lot of assets for business.

If the P/B-ratio is high, this means that the stock of the firm stands higher on the exchange market than in the books of the firm. A high P/B-ratio indicates that the investors expect the management to be able to create more value with the assets.

The standard deviation of the age of the board members can be zero, when all members are from the same age. For the total board there is always a difference in the ages of the board members.

The background of the board members is scored on the Blau index therefore the scores are between zero and one. Zero stands for a totally homogenous team, one stands for a total heterogeneous team on nationality. The supervisory board also shows a board were all members are from different nationalities.

Gender is scored between zero and one, a score of one stands for a board with only male board members. There is a management board with only female board members scoring zero. For the total board the minimum score of 0.43 indicates that there are firms with more female than male board members. The mean of the total board of 0.91 indicates that there are way more male board members than female. This 9 percent female board members is in line with the findings of the report of Grant Thornton that 10 percent of the positions in senior management om the Netherlands were held by women.

Some of the boards are small by the minimum scores of one, two and four for the total board. The maximum of the board of 10, 12 and 18 for the total board. There are large differences in the in size of the boards.

4.1 Correlation on ROA

Table 3. Correlation of the variables ROA

(N=52)	Age	Back-ground	Gender	Size	ROA
Age TOT	1				
Background TOT	-0.035	1			
Gender TOT	-0.142	0.004	1		
Size TOT	0.258*	0.339**	-0.315*	1	
ROA	0.161	0.078	0.032	-0.069	1
Age MA	1				
Background MA	0.026	1			
Gender MA	-0.145	-0.039	1		
Size MA	0.303*	0.530**	-0.165	1	
ROA	0.210	0.132	-0.015	0.130	1
Age SU	1				
Background SU	-0.062	1			
Gender SU	-0.295*	0.067	1		
Size SU	0.142	0.061	-0.333**	1	
ROA	0.255	-0.117	0.057	-0.212	1

* $p < 0.05$, ** $p < 0.01$. Age is the standard deviation of the board members age at the end of 2012. Background is the Blau-index scoring the diversity in nationality of the board members. Gender is the percentage of male members on the board. Size is the total number of board members on the board.

The level of significance indicates whether it can be assumed that the observed effect may or may not occur by chance. The lower the significance score the more reliable the relationship is.

The significant correlation between age and size is .258* for the total board. The larger the board the higher is the score on the standard deviation of age. This is explained by the fact that having more board members also enlarges chance on having age differences among the board members. The significant correlation between background and size is 0.339** of the total board. Explanation here fore can most likely be found in the fact that the more board members a firm has the bigger the chance is that there are members of different nationalities on the board. The relation between gender and size of the total board is -0.315*, a high score on gender stand for a high percentage of male board members. Meaning that when a board is larger the chance of finding a female member on the board is increasing.

The supervisory board holds a significant correlation of -0.295* between the age and the gender. Meaning that the board members age standard deviation holds a negative relation with the gender of the members. Gender holds a significant relation with the size of the board of -0.333**. Female board members lower the score on gender Declared above by the fact that the more members the board has the higher the chance of having female board members.

For the management board there are significant scores on the correlation between age and background with the size of the board. Meaning that the larger the board the higher the standard deviation of the ages of the board members is, 0.303*. With the increase of board size the background diversity of the board members also increases, 0.530*. This can be explained by the more board members there are, the bigger the chance is on having members from a different nationalities on the board.

4.2 Regression ROA

Table 4. Two tailed regression of the variables on ROA

	Return on assets		
	TOT	MA	SU
Constant	0.290	0.251	0.970
Age (σ)	1.390	1.421	2.321*
Background (<i>Blau index</i>)	0.862	0.801	-0.836
Gender (%)	0.021	0.100	-0.229
Size (N)	0.993	0.155	-2.262*
Adjusted R square	-0.026	-0.016	0.100

* $p < 0.05$, ** $p < 0.01$. See variable description at table 3.

The regression results show that there are little significant relations. The age of the supervisory board has a significant regression on ROA. Size of the supervisory board as well holds a relation with the ROA.

The supervisory board shows a significant regression, but for the total board consisting of the supervisory board and the management board the significance of the relation is diminished. The adjusted R square of the management board is 0.100. Indicating that it explains 10 percent of the data variability around its mean.

The age diversity holds a positive relation on the ROA. Meaning having board members from different age, a high standard deviation on age is for the ROA. The size of the board holds a negative relation with the ROA. Firms with a smaller board score higher on the ROA. For the management board and the total board there are no significant relations on the ROA.

4.3 Correlation on P/B-ratio

Table 5. Relation of the variables and P/B-ratio

(N=49)	Age	Back-ground	Gender	Size	P/B-ratio
Age TOT	1				
Background TOT	-0.035	1			
Gender TOT	-0.142	0.004	1		
Size TOT	0.258*	0.339**	-0.315*	1	
P/B-ratio	0.097	0.135	-0.399**	0.015	1
Age MA	1				
Background MA	0.026	1			
Gender MA	-0.145	-0.039	1		
Size MA	0.303*	0.530**	-0.156	1	
P/B-ratio	0.166	0.112	-0.357*	0.139	1
Age SU	1				
Background SU	-0.062	1			
Gender SU	-0.295*	0.067	1		
Size SU	0.142	0.061	-0.333**	1	
P/B-ratio	0.063	0.082	-0.334*	-0.103	1

* $p < 0.05$, ** $p < 0.01$. See variable description at table 3.

The relations for the age, background and gender on board size for total board have already been discussed above under the section of regression on ROA, this is the same relationship. This also counts for the supervisory board in relation of the age to gender and gender to the size of the board. And for the age and background in relation to the size of the management board.

The relation between gender and P/B-ratio is -0.399^{**} for the total board, -0.334^* for the supervisory board and -0.357^* for the management board. Indicating that a high score on gender has a negative influence on the P/B-ratio. Having female board members has a positive influence on the P/B-ratio. The gender score is the percentage of male members. Therefore having female board members is positive for the P/B-ratio.

4.4 Regression P/B-ratio

Table 6. Two tailed regression of the variables on P/B-ratio

	Price – Book ratio		
	TOT	MA	SU
Constant	3.999**	4.095**	4.122**
Age (σ)	0.641	0.689	-0.418
Background (<i>Blau index</i>)	1.400	0.583	0.855
Gender (%)	-3.078**	-2.368*	-2.856**
Size (<i>N</i>)	1.375	-0.049	-1.792
Adjusted R square	0.135	-0.069	0.104

* $p < 0.05$, ** $p < 0.01$. See variable description at table 3.

The constant values of the regression are highly significant. The significant regression between gender of the management board are -2.856^{**} for the supervisory board, -2.368^* for the management board and -3.078^{**} for the total board. Meaning that the higher the score on gender is, the lower the P/B-ratio. Having female board members has a positive influence on the P/B-ratio. The adjusted R square is 0.104 for the supervisory board, for the management board -0.069 and 0.135 for the total board. This is indicating that the total of variables does not have a strong predictive relation with P/B-ratio.

5. DISCUSSION

The standard deviation of the board members age is not researched before. Studies that are done all use different measures for age, for example an age indices (Hafsi & Turgut, 2013). But the paper of Grund et. al. (2008) also takes the standard deviation of age into account, yet this paper takes a look at workforce of companies and not board members. This paper is showing that the retiring of the babyboom generation in a couple of years might cause some large problems in finding replacements and for the pension system. In the Netherlands there is new regulation which postpones the retirement age of the Dutch citizen from 65 to 67 in 2023 (Rijksoverheid, 2012). This measure is taken on behave of the fact that the system as it is unpayable, primarily because the life expectancy is increasing (Alders & Tas, 2001). So if people on average are getting elder and the retirement age is being increased what does that mean for the boards? The position of a board member is not a full-time job and there are quite often board members are retired. Board members remain active at a later age. What effects will this have on the boards? And what effect would a different age distribution have on the firm performance? In other words, this paper has looked at the diversity of age of the board members, whether being of different age has an influence on firm performance. But does the age of board members matter for the firm performance? This would be interesting to look at in a couple of years when the regulation is in force, when the differences between the situations can be compared.

As stated earlier in this paper it is quite hard to measure the background diversity (Brammer, Millington & Pavelin, 2007). In literature there are no accurate measurements found that can be used in a database research. For background diversity additional information is needed. With the data that was

available only the nationality diversity could be looked at. The Blau index that was chosen here fore is a good and widely used calculation for the diversity. Within this diversity measure there is only attention for whether the board members are from different nationalities. It would be one step further to also look at whether the nationality of the board members is important. Rushton (2008) indicates in his paper about racial diversity that different outcomes for different backgrounds might even be more important than just looking the heterogeneity. In this field it can not be stated whether or not this paper is in line with literature. This is because literature has looked at ethnical diversity were this paper has looked at nationality, because for ethnicity quantitative research is needed.

The field of research about gender diversity is inconsistent. From positive, negative to not significant. This paper found a negative correlation between gender of the board members and the firm performance. The gender was measured as the percentage of male board members. So the relation is that having female board members is good for the firm performance. This conclusion corresponds with the findings of Campbell & Mínguez-Vera (2008) that find in their paper that having female board members did not damage the firm in Spain. Their results also suggest that greater gender diversity might generate economic gains. But it has to be realised that this paper only found a significant relation on the P/B-ratio, for the ROA no significant relation was found. So for the ROA we would agree with Carter et. al. (2010) and Bear et. al. (2010) that there is no significant relation between gender and the firm performance. Besides the economic reasons there are other arguments for having women in the boards. Namely the ethical ones, highly advocated by feminist organisations (Campbell & Mínguez-Vera, 2008).

The research field on size of the board in relation to the firm performance is in general that smaller boards are better (Jensen, 1993) (Lipton & Lorsch, 1992). This paper has found no significant relation. This could be caused by the fact that the sample was quite small. And there were quite some boards with vacant positions. In the sample there were firms with 12 of 13 members on one of the boards, but there were no extremely large boards in the sample. This could declare why there is no significant relation found.

The data partially was retrieved by hand from the annual reports of the firms. The firm performance data was retrieved from the Orbis database. This was chosen on behave of the fact that all firms are treated equally. So no mistakes could be made on the terminology used by the firms. Downside of this is that the numbers could not be checked. Taking an accounting based measure ROA and a P/B-ratio for the firm performance has broadened the relevance of this paper. It has proven ones more that there is great difference between diverse measures.

6. CONCLUSION

Literature shows a lot of different statements about the relation between board characteristics and firm performance, the conclusions are very ambiguous. Therefore the goal of this paper was looking at a specific situation; researching the relation between the age diversity, background diversity, gender diversity of the board members and the size of the board on the performance of Dutch listed firms.

For the age diversity there is positive regression found for the supervisory board. For the management board and the total board this effect is not significant. The age diversity holds no significant correlation with the ROA or P/B-ratio. Meaning that whether the board members are from quite the similar age or from totally different ages holds no significant relation with the firm performance.

The diversity of the board members, in this paper defined by the nationality, is found to relate insignificantly to each of the firm performance measures.

The gender diversity of the board members holds no significant relationship with the ROA, no correlation or regression is found. For the P/B-ratio there is a significant relation found with gender, in regression and correlation. The regression shows a negative relation indicating that having a high score on gender is not good for the P/B-ratio. This means that it would be good for firms to have female board members. Since having female board members lowers the percentage of male board members and therefore lower the score on the gender variable.

The in literature widely accepted statement is that a small board is better for the performance of a firm than a large board. In this paper no evidence for this relation is found. There is a significant regression between the size and ROA, but no correlation between the other variables was detected. Therefore in contrast to the other studies this paper finds no evidence that firms with smaller boards have better firm performance.

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