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An Analysis of the Age and Gender Diversity of the Dutch Pension Boards of 2019

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Abstract

It has almost been a decade since self-regulation on diversity of Dutch pension boards was introduced in 2010. Our results indicate that pension boards have significantly improved when it comes to having more female directors within their boards. However, when it comes to employing young directors in a way to improve diversity, pension funds drastically fail to comply. Surprisingly, funds are actually doing the opposite and are instead increasing the number of older workers within their boards. This indicates that there is a high possibility the Dutch Parliament will introduce mandatory legislation rules for age diversity in pension boards by 2020. We also examined the determinants of gender and age diversity of pension fund boards by collecting data from board members of the top 100 largest Dutch pension funds. Our results indicate that the trend towards new governance models and one-tier board structures have not helped make a difference in board diversity. Further, evidence is found supporting the conclusion by Shi, Swinkels and van der Lecq (2017) that larger boards are more likely to satisfy the diversity criteria.

Keywords: Diversity, self-regulation, Dutch pension funds, Pension fund characteristics, board composition

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1. Introduction

The pressure to comply with the diversity standards that the pension sector has imposed is ever increasing. This is due to unfavourable recent developments in the pension arrangements, the continuing growth of studies that show benefits of board diversity and the difficulty of exiting a pension fund if wanted. Having more diversity in boardrooms increases the possibility for pension members (i.e. employers, employees and retirees) to be fairly represented. Board members of different ages and gender bring different experiences and perspectives to the boardroom. Pension members, especially young- and female employees feel that they are not fairly represented by the board. As a consequence, these members have a low degree of trust in the functioning of the pension sector (Federation of the Dutch Pension Funds, 2014).

It is well known that Dutch pension funds have not made the necessary changes to reach optimal levels of board diversity. Although a lot has been done this last decade to improve board diversity, the executed solutions do not seem to be providing the desired outcome. In 2017, 7 years after the introduction of the Covenant where stakeholder promised to devote more attention to increase age -, gender - and ethnic board diversity, 28% of all pension funds had no women and no member below the age of forty. This is only a slight improvement in female board members and hardly any young trustees. The Dutch Parliament (especially D66 & GroenLinks) is becoming impatient and states that if there is no significant improvement by 2019, pension funds will most likely be obligated to comply to diversity requirements (Wolzak, 2018). Currently all pension funds are self-regulated by the Code of Dutch pension funds to increase board diversity. The Code of Dutch pension funds that was introduced in 2014, is an expansion of the Covenant and operates with a 'apply or explain' principle. This means that pension funds that are failing to apply the Code's standards of having "at least one man and one woman" or "at least one member over the age of forty and one member under the age of forty" are required to explain why this is the case in their annual report.

In order to further improve the quality of pension funds, the Dutch Parliament introduced new ways for pension funds to operate. For example, pension funds now have the option to choose between new governance structures and different pension fund types. This has been the case since the introduction of The Governance Improvement Act in 2014 and the general pension fund in 2016. Most Dutch pension funds have maintained the traditional model of equal representation within a two-tier board, however, more and more funds are opting for a new model with a one-tier board. In a one-tier board, both the managing board and the internal supervision form one whole. It is interesting to know if these recent changes within pension funds impact board diversity in different ways for further suggestions to improve board diversity.

The goal of this research is to contribute to the existing literature in three ways. First, this research attempts to determine if diversity of Dutch pension boards is indeed undergoing drastic changes. Second, since a lot has changed on how pension funds operate, we re-examine which

pension fund characteristics (e.g. fund size, fund type, board size, board structure and industry type) are associated with more age- and gender diversity. Third, taking into account the effect of the characteristics on board diversity, and the changes made in the diversity measures, we conclude if board diversity can only be improved through compulsory regulations, as many attempts have been made but seem to be unsuccessful as of yet.

Our findings suggest the following. First, comparing our results with previous data sets it can be concluded that female participation has truly increased. In mid-2019, from the top 100 pension funds only 13% had no women on their boards. This is truly surprising, considering that in April 2014 and December 2017 more than 35% of the funds did not had one woman on their boards. Besides the strong increase in boards with *at least one female*, an increasing number of funds are also complying to the more stricter gender diversity measures (i.e. at least 3 and at least 30% criteria) ultimately reducing the possibility of "token" female. In contrast, results on age diversity show that pension boards drastically fail to comply to the minimum requirement of having at least one board director below the age of forty. Second, we find evidence of a positive relationship between board size and funds complying to the *at least one* and *at least three* female criteria. A positive relationship was also found between board size and having members of different age brackets (decades). Third, both fund size and board structure were found not to be associated with gender and age diversity. Fourth, in line with Shi, Swinkels and van der Lecq (2017) corporate pension funds tend to satisfy the at least 30% female criteria significantly less often. Lastly, similar to the results found on many corporate studies, female representation in pension boards is extremely low for funds in the industrials sector.

The remainder of the paper is structured as follows. The second section reviews the academic literature concerning Dutch pension fund dynamics, benefits of diverse boards, diversity of Dutch pension boards and characteristics associated with a more diverse board. The third section describes the data and research methods used for this research. The fourth section illustrates the results found regarding age -, gender diversity and important board characteristics. Finally, this paper will conclude in the fifth and final section.

2. Literature Review

2.1 The definition - and importance of diversity

Diversity is in fact a very broad concept that has been defined and measured in a variety of ways. However, for the purpose of this paper, the literal Oxford English Dictionary entry that defines the word *diversity* as "the condition or quality of being diverse, different, or varied" will be used ("diversity, n." *OED Online*. Oxford University Press, June 2019. Web. 6 July 2019). In researching diversity, scientists often make a distinction between observable and non-observable dimensions. Observable aspects of diversity are clearly visible or easily detectable such as an individual's age, gender, race or ethnic background. Non-observable aspects are less visible or underlying attributes that represent an individual's education or social economic background. Especially observable characteristics seem to be important as they are more likely to evoke responses that are directly caused by biases, prejudices, or stereotypes (Rothbart & John, 1993; Stangor, Lynch, Duan, & Glass, 1992; Cunningham & Melton, 2011). In numerous studies (e.g. Rutledge, 1994; Brennan & McCafferty, 1997), research has shown that a considerable improvement in quality can be achieved for organizations by increasing observable diversity aspects, namely gender and age, within the boards. Additionally, more recent sources such as Hewlett, Marshall and Sherbin (2013) show that when people from different contexts work together, their unique perspectives often lead to more innovative ideas. Turban, Wu and Zhang (2019) find that a diverse workforce signals an attractive work environment for talented individuals. This is supported by a recent survey conducted by PWC[1], that concluded that 61% of women take the diversity of the employer's leadership teams into account when considering where to work. Hunt, Layton and Prince (2015) show that more diversity leads to improved customer orientation. A board that represents diverse groups will have a better understanding of their market's decision-making behaviour, and how to positively influence their impact on the target audience. Furthermore, a more diverse board makes it possible for organization leaders to respond more effectively to market shifts and new customer needs. Due to these findings on the importance of diversity in corporations, pension funds should strongly consider taking age and gender diversity in the composition of pension fund boards seriously.

While there are many similarities between corporations and pension funds with regards to how they operate, an important difference is the freedom of participation. Most members of Dutch pension funds, are obligated to join the pension scheme their company or industry offers. Due to this mandatory participation, more than 90% of the Dutch employees build up pension rights under a mandatory scheme and have, in essence, no possibility to exit from the pension fund. As a consequence, pension fund members need to feel assured that they are fairly represented so that their interests are taken into consideration. Increasing diversity in the pension boards ultimately increases the trust and therefore the support of its members (Hirschman, 1970). However, according to the Dutch Pension Federation, boards should be diverse even if the composition of

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[1] https://www.pwc.com/gx/en/about/diversity/iwd/iwd-female-talent-report-web.pdf

the members provides no reason for diversity. The reason for this is that the participation of people from a variety of backgrounds and a wide range of skills ensures accountability and a broader perspective within their management and supervision. This will ultimately contribute to a better quality of the total pension fund governance.

A great deal has been done within the last decade to improve the diversity of Dutch pension boards. One of the first important actions undertaken to improve board diversity was the signing of the *Covenant Increasing Diversity in Pension Fund Boards* (The Covenant) in 2010. Stakeholders promised to improve board diversity in age, gender and ethnic background in relation to the composition of the members in the pension scheme. To further stimulate pension funds to recognize the importance of diversity, the Pension Federation and the Labour Foundation (STAR) replaced the Covenant with The Code of the Dutch Pension Funds in 2014 (The Code). In The Code, different norms (i.e. diversity norms) are given for pension funds to maintain and improve their quality. The Code entails an 'apply or explain principle' that states that funds must either comply to the newly set diversity regulations or be able to explain why they are unable to do so in their annual report. However, this method no longer includes ethnicity, and instead only states that the board of trustees should hold at least one man and one woman (norm 67) and also be comprised of at least one member over the age of forty and one member under the age of forty (norm 68). Additional actions taken to encourage diversity were the introduction of the Golden Stiletto Award in 2012, the "Wet versterking bestuur pensioenfondsen (Wvbp)" otherwise referred to as The Governance Improvement Act in 2014, the guide book released by the Pension Federation on increasing diversity in 2016 and The Plan of Action in 2018.

According to the Dutch association of women in institutional pensions (Viip), the requirement of having at least one woman is far too lenient considering the number of women in the workforce and the availability to reach female board members through either Viip or Women in financial services (Wifs). Their goal is to have at least 30% of women represented on pension fund boards as well as its committees. To encourage pension funds to appoint more women, Viip introduced the Golden Stiletto Award, that is awarded to the pension fund that has contributed the most to diversifying the gender in their ranks. To strive for a higher percentage of female board members is indeed important according to multiple studies. For example, Torchia, Calabrò and Huse (2012) stress the need for corporate boards to have at least three female directors. According to their study, when a board has less than three female members, these members are considered diversity tokens. This entails that these female board members will not be able to positively impact the overall level of firm innovation and board strategic tasks, and are instead only included to help satisfy the diversity regulations. The same result, was also found by Joecks, Pull, and Vetter (2013) on 151 listed German firms for the years 2000-2005. As they find evidence that firms need a "critical mass" of women, in the range of about 30% in order to benefit from the advantages a more diverse board brings. With an average board size of 11.45 for their data sample, the critical mass of women translates into an absolute number of three women (3.45 on average).

Besides the benefits that diverse boards bring, several recent factors have contributed to the increasing importance of diversity. One important factor has been the aging and changing of the workforce. The percentage of older workers between 55 and 64 is increasing rapidly. Older workers comprised 57.1% of the 28 European member states workforce in 2017, which is a 12.7% increase since 2007 (Eurostat, 2017). This increase in older employees means that young employees must now learn how to work with older colleagues and vice versa. Therefore, companies and institutions are trying to understand how they could and should utilize the knowledge of different aged workers. Another catalyst for diversity is the purchasing power of women and minority groups. This is evident in the fact that 70-80% of the purchases of consumer goods are made or influenced by women, through a combination of their buying power and influence. The households of gay and lesbian couples are increasingly representing a mainstream and sizable consumer segment (Hunt, Layton, & Prince, 2015). A third factor that contributes to the increasing significance of diversity is the developing importance of social responsibility. Companies that take responsibility for the impact of their business operations on people, the environment and society have a more positive company image (Bear, Rahman, & Post, 2010). The last factor is talent shortage as the massive baby boomer generation begins to retire and fewer skilled workers are available to replace them. In Europe, for instance, the acquisition of talent has been identified as a significant management challenge for the next five years. Therefore, targeting different diversity groups in order to broaden the recruiting base can help companies improve recruitment (Hunt, Layton, & Prince, 2015).

2.2 The diversity of Dutch pension funds

According to the latest results from the evaluation of The Governance Improvement Act and the reporting by the Pension Funds Code Monitoring Committee, diversity of Dutch pension boards remains an area of concern. In 2017, 36% of the pension funds had no women on their board and 62% had no members below the age of forty. Of all pension funds, a total of 28% had no women and no members younger than forty in the board of trustees. Comparing these results with the results found by Shi, Swinkels and Van der Lecq (2017) on the diversity of the top 100 and 200 Dutch pension funds in 2014, funds show no improvement in either gender - or age diversity within the board. In 2017, the monitoring commission evaluated whether pension boards acquired more diverse board members when they had the chance, wherein the results indicate that pension funds wasted opportunities. From pension boards that had no women and no members below the age of forty, 19 out of 30 (63%) open vacancies were appointed to older males. This percentage was higher for pension boards that did not include any women or members under the age of forty (73% and 82% respectively).

As a response to this low percentage of diversity, the Minister of Social Affairs and Employment (W. Koolmees) introduced new incentive measures to increase board diversity to The Pension Federation & The Foundation of Labour. As a response, The Pension Federation & The Foundation of Labour implemented The Plan of Action in the 4th quarter of 2018. The Plan of Action summarizes concrete steps that pension funds and social partners can take to improve

diversity. Step number one is to create a shareable platform where important factors (i.e. the current state of board diversity, the expected vacancies, the announcement of vacancies and possible candidates) are discussed at least twice a year. The second step is to benefit from PensioenLab's network when searching for new board members under the age of forty in addition to collaborating with Viip when searching for female board members. The last step is a possible arrival of a central pool of directors from the Dutch employer's federation "VNO-NCW".

The Dutch Parliament is becoming impatient and states that if there is no significant improvement in board diversity with regards to gender and age in 2019, politicians will likely enforce legal measures. If this is the case, there is a high possibility that the government will obligate pension boards to have a balanced gender distribution that is in line with the Management and Supervision Act for corporate boards (Wolzak, 2018). The Management and Supervision Act, which has been effective since January of 2013 for corporate boards, states that a management board or supervisory board will be deemed to have a balanced gender distribution if no more than 70% of the board is dominated by one gender. This just so happens to coincide with the goal set by the Viip.

Hence, due to the previously mentioned findings the first research question will be:

Are Dutch pension boards indeed undergoing drastic changes in the domains of age - and gender diversity in 2019?

According to the vice-president of the network organization Viip, there are several reasons why pension funds lack diversity. One of the problems lies in the hiring process of new potential candidates. Namely, when searching for potential candidates, individuals often find candidates who are similar to themselves with regards to their background, skills and gender. This is due to an individual's social network, which mainly consist of individuals with these same characteristics. Another reason for the lack of diversity is the fact that pension funds are not inclined enough to make the necessary investments to attract more potential candidates. Currently, due to the amount of overwork being a board manager brings especially female and younger individuals are less motivated to join a board. By investing more in educating the younger (and therefore usually inexperienced candidates) and in aiding individuals by lessening the workload from their typical work week, the supply of more diverse candidates increases. Lastly, pension funds are too willing to reappoint board members due to low costs, energy and time. According to the president and vice-president of Viip (Marjon Brandenbarg and Larissa Gabriëlse respectively) publicly denouncing pension funds that do not live up to the diversity requirements, otherwise referred to as *naming and shaming*, could help bring the percentage of women on boards closer to 30%. As pension funds who are not meeting the requirements don't like to be negatively portrayed in the public. They also state that if *naming and shaming* does not trigger the desired effect the only other solution will be through enforcing legal measures (van Wijk, 2018).

A recent study by Evelien Visscher (2018) investigated why Dutch pension fund boards are so homogeneous and how diversity can be promoted. In order to answer this question Visscher

makes use of the ASA-model by Benjamin Schneider (1987) that implies that organizations are functions of the kinds of people they contain, and that those people in turn are functions of the attraction-selection-attrition cycle. The results from the first quantitative analysis on 'attraction' show that individuals who experienced a *personal characteristics match* with the characteristics of the fund and its members, feel stronger attracted to the pension sector. For the attracted group especially age and not gender has a decisive role. In contrast, the results of the second part of the cycle 'the selection process' show that members of pension funds who are responsible for the selection process of possible new candidates (namely older male members) primarily focus on similarities within the gender dimension. However, even pension funds that use *elections* by the fund members to hire new board members fail to comply to the diversity standards, because they are limited in their choices as the available new pension board candidates are mainly older males.

2.3 Pension fund characteristics

For the purposes of this paper, we consider whether board size, fund size, board structure, pension fund type and industry type are related to board diversity. Within corporations there has been some evidence that shows a positive relation between board size, firm size, and industry type when shaping the gender composition of boards. However, the effect of these characteristics on age and gender diversity within pension boards is quite scarce. In 2002, Hyland and Marcellino found evidence of a positive correlation between board size, the type of industry and the number of women on the corporate board. This study is supported by Klein (2002) and Luoma and Goodstein (1999) that found that especially corporations with large boards can afford to have more diversity among their *directors*, as it is argued that society still considers gender diversity to be something that is simply voluntary as a gesture of goodwill. Furthermore, Luckerath-Rovers (2011) provides evidence among Dutch companies, that the difference in board size and firm size is significantly larger for companies with female directors namely respectively 48% and 12% than those without female directors. A possible explanation for the significantly larger board size can be regarded in the conclusion found by Bilimora (2000), who suggests that women are only appointed to the board as an additional director rather than as a replacement director. More recent studies by Abdullah (2014) and Nekhili and Gatfaoui (2013) also found a positive association between board size and the appointment of female directors. They explained this to be the case due to the fact that larger boards are more accommodative in appointing female directors as opposed to smaller boards. However, a possible explanation with regards to a larger firm size can be found as large firms are more likely to be concerned about their public image and therefore also about diversity, either because they are more visible to the public in comparison to the smaller companies or because they are required to deal with government agencies that have preferences for diversity (Adams & Ferreira, 2004).

In contrast to the aforementioned statement, a study on the top 100 Australian companies in 2003 found there to be no positive relationship between board size, industry type and gender diversity. However, they did find a positive and significant effect between board size, industry type and age diversity. In this study, companies were classified into four industry types; Consumer

Services and Products, Materials and Industrials, Financials and Others. Only companies in the consumer services and products sector were more likely to appoint individuals from different age groups. This was expected due to the fact that companies in this sector are required to accommodate a wide range of consumers in different age groups (Kang, Cheng, & Gray, 2007). Harrigan (1981) concludes that companies in certain sectors such as the healthcare, services and technology sector are more likely to have a higher percentage of female directors, while companies in the finance and banking sector employ a greater percentage of older male directors. A study done by Engen (2002) also concludes that especially companies from the finance and banking sector are male dominated within their boards. However, this conclusion is in direct contrast to Lückerath-Rovers and Van Zanten (2008) who state that companies in the finance sector are not only on average the largest but are also more likely to employ female board directors. This conclusion is further supported by Adams and Ferreira (2009) and Joecks, Pull and Vetter (2013) who state "Female representation on the board is higher in Financials, Telecommunication, Pharma & Healthcare and in Consumer Goods, and less prevalent in Industrials and Basic Materials". The main explanation given why certain sectors have a higher presence of female directors on corporate boards, is due to fact that those sectors operate closely to the end consumer (Brammer, Millington, & Pavelin, 2009).

As a response to the aforementioned findings it is expected that;

Hypothesis 1: The larger the size of the board, the more diverse (age and gender) the board will be.

Hypothesis 2: The larger the fund, the more diverse (age and gender) the board will be.

Hypothesis 3: There is an association between industry type, and the diversity (age and gender) of the board.

A recent study by Shi, Swinkels and Van der Lecq (2017) on the top 100 and 200 largest Dutch pension funds in 2014, already examined whether pension fund characteristics (i.e. size of the board, the size of the pension fund and type of pension fund) are related to more age and gender diversity within boards.

The first set of results regarding gender diversity shows that board size was found to be positively related to having at least one woman on the board. However, in contrast, board size was found to be negatively correlated when considering a 30% female criterion. Fund size seemed to have no impact on gender diversity and corporate pension funds tend to satisfy the 30% female criterion significantly less often.

For the second set of results, pension boards are seen to be age diverse when there is at least one person below the age of forty or at least 20% of board members below the age of forty. For boards where young members make up at least 20% of the board, no statistically significant relation with board size and fund size was found. However, when considering having at least one member below the age of forty, larger boards are more likely to have at least one young board member as opposed to larger funds that are less likely to have a young board member. A possible explanation given is that larger funds place more value on experience than smaller funds do, and

are therefore less willing to appoint young members. Further, the results conclude that corporate pension funds are more likely to have at least 20% of their members below the age of forty than industry-wide pension funds.

It is important to take into account that there have been some important changes in how Dutch pension funds operate since 2014. These new pension fund characteristics may have the potential to influence the diversity of the board of trustees in different ways. For example, since the introduction of the general pension fund "APF" in January of 2016 pension funds can now be categorized under three types of pension funds namely company, industry-wide, and general funds. A company pension fund, manages the pension plans for employees tied to a single company or corporation. In the case of an industry-wide pension fund, pension plans are managed for all workers in an entire sector of the economy, such as the retail or textile industry (Reichert, 2012). In a general pension fund, several pension schemes of different companies are being managed under a single board. The APF was implemented as a response to strengthening the quality of the pensions sector. Each pension fund maintains its own identity because APF allows for ring fencing. However, if all stakeholders agree, the schemes accountability bodies can also merge. By joining the APF as a new pension administrator, pension schemes can now benefit from lower administration costs, economy of scale, professionalization, and gradual standardization of the pension administration (HVG Law, 2017). Therefore, in particular small and vulnerable company pension funds are choosing to join a general pension fund. For mandatory industry-wide schemes, being part of an APF is not yet allowed (Preesman, 2015).

According to De Nederlandse Bank due to a combination of trends such as increasing legal requirements, difficulty to find suitable board members and increasing operational costs more and more pension funds decide to pass their obligation to - or merge with other pension funds. In particular general pension funds and insurers took over claims from disappearing pension funds since 2016.

A second important and recent change, came with the introduction of The Governance Improvement Act in 2014. Due to this act, pension funds now have the option to choose between five different governance models. These governance models can further be classified as two type of board structures, namely one- and two-tier boards (Stibbe, 2013). In the traditional joint model (two-tier structure) the managing board and the supervisory board are separated. In a two-tier board system, the *managing board* or body that is responsible for all strategic decisions is considered the governing body. The governing body is responsible for all aspects of the administration of a pension plan. In the two-tier structure, there is really a stakeholder orientation of the board because employers, employees and pensioners are required to have a position in the supervisory board (Alcantara, Foronda, & Sanz, 2015).

However, in the case of a one-tier board both the managing board and the internal supervision form one whole. Within a one-tier board the non-executive directors are responsible for the task of internal supervision and the execution of the board is primarily with the executive directors. The difference between models in the one-tier - or two-tier board comes from having independent board members as either non-executive -, executive directors or both. From The four added models three mixed models (joint mixed, independent mixed, or inverse mixed) can

be categorized as a one-tier board, and the independent model as a two-tier board structure[2] (Federation of the Dutch Pension Funds, 2014).

Most Dutch pension funds have maintained the traditional joint model, however, more and more pension funds are opting for a one-tier board (especially the independent mixed model). According to the 2018 evaluation report of The Governance Improvement Act, when pension funds make decisions about the board size and governance model, important considerations are equal representation, countervailing power, expertise and decisiveness. Factors like more age - and gender diversity or number of suitable candidates seem to be less important. These factors however differ per governance model. According to their survey results, for pension funds with a two-tier model the most important factor is a better representation of the stakeholders (47%) and for one-tier board models this is more decisiveness of the board (69%). Diversity & more suitable candidates seem to be more important for two-tier boards (21%, 27%) in comparison to one-tier boards (15%,8%).

It is still unknown if these specific pension characteristics (new one-tier based models and general pension fund) influence the way in which pension funds comply to the diversity criteria. Hence, to get a better understanding of diversity we examine whether pension fund type and board structure are related to age- and gender diversity.

Therefore, we hypothesize:

Hypothesis 4: There is an association between pension fund type, and the diversity (age and gender) of the board.

Hypothesis 5: There is an association between board structure, and the diversity (age and gender) of the board.

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[2] See Appendix 1 for an overview of the governance models

3. Data and Methodology: Measuring the Dependent and Independent variables

This following section elaborates on data and methodology. *First*, important steps are described in how the data was collected. *Second*, different techniques regarding how to measure age- and gender diversity will be discussed. Thirdly, the statistical analysis used will be elaborated on. Lastly, the descriptive statistics of the independent variables and correlation matrix of the dependent and independent variables will be attended to.

3.1 Top 100 pension fund data

In order to examine the board diversity of the top 100 Dutch pension funds, we first hand-collected a list of the top 100 pension funds by *total assets under management*. This list was made by examining the *total assets under management* from the latest annual report (2018), of all current pension funds (227) registered in the public register of De Nederlandse Bank (DNB). All pension funds are obligated to notify their establishment to the DNB, with a request for registration within a three-month period after they have been established. To further make sure that the top 100 pension funds are still active as of July of 2019, the current status of all pension funds were analysed through their pension websites. Although there are a total of 227 pension funds in the Netherlands, we presume that our sample is an accurate representation of the Dutch pension industry, as they represent a great majority of the total pension assets and pension scheme members. In total, our sample consists of 826 board members affiliated to the top 100 pension funds. It is important to know that the data of board members collected (July, 2019) represents a snapshot of the board members at this time.

Comparing the top 100 pension funds with the top 100 pension funds found by Swinkels and Ziesemer (2012) in June of 2011 we see that precisely 72% of pension funds have maintained their position in the top 100. Unsurprisingly, for the more recent compiled data sample by Shi, Swinkels and van der Lecq (2017) in April of 2014, a greater percentage (79%) of the pension funds have maintained their position in the top 100 funds. This suggests that it is extremely likely that the top 100 pension funds at the end of 2018 are also the top 100 pension funds as of July 2019.

3.1.1 Age and Gender Data

As previously described, diversity is analyzed on two dimensions: *age* and *gender*. Data regarding age and gender of pension board members of the top 100 pension funds in July of 2019 was collected through a number of different ways. The majority of the data was collected through the annual reports and through the pension websites that are provided by the public registry of DNB. A second method of data collection was achieved by cross-referencing the

previously mentioned datasets of 2011 and 2014 with the mid-2019 acquired sample. Lastly, although pension funds are required to report the gender of their board members in their annual reports, not all pension funds adhere to this. Therefore, any remaining gaps in the data was then determined by the use of gender-specific language (he, she, his, her, etc.) in internet materials, mainly news articles and LinkedIn, Facebook or Google. However, if no information regarding gender had been found, an individual's gender would have been determined by controlling whether their first name is commonly used as a male or female name within the Dutch society. Unlike with the data of an individual's gender, more effort must be made to obtain information concerning the age of board members. This is especially due to the fact that information on newly hired board members is not always specifically declared, and it seems that pension funds are a lot more hesitant to disclose information about the age of board members in their annual reports. As a consequence, from the total of 826 board members, data of board director ages could be collected for 766 (92.74%) board members. However, only for 76 boards all pension member ages are known.

3.1.2 Data Independent Variables

To determine which pension funds are likely to have diverse boards, there is more information needed on their characteristics. As mentioned in the introduction, it is considered whether board size, fund size, board structure, pension fund type and industry type are related to board diversity. The methods of collecting board size and pension size has already been discussed, therefore this section will focus on the remaining three characteristics (i.e. pension fund type, board structure and industry type). Firstly, the data with regards to pension fund type was collected from the public register of DNB concerning pension funds. Looking at the type of pension funds, the most common type of fund within the top 100 pension funds are the *company pension fund* (49%), thereafter the *industry-wide pension fund* (46%) and *general pension fund* (5%). Secondly, as previously described funds have the option to choose between multiple governance models, that can essentially be categorized into two groups, either a one-tier or two-tier board. From the top 100 pension funds collected in the sample, 83 pension funds have the traditional two-tier board structure. Thirdly, the last pension characteristic controlled for will be the type of industry. Industries can be classified in a variety of ways, however for the purpose of this paper the top 100 pension funds are classified in different sectors as described by the latest version of "Standaard Bedrijfs Indeling" (SBI) classification standard. This classification standard is generated by the Dutch central statistical office and complies with international codes and models. According to the SBI classification standard, businesses and professions are divided into 21 sectors (CBS, 2019). However, in the top 100 pension funds not all but 13 sectors appear. For the purpose of this paper these sectors were then further categorized into six groups, which are; Financial Institutions, Wholesale and Retail, Transport and Storage, Health- and Welfare care, Industrials and Other. The reason these six groups are selected is because, according to the results found in corporations, they seem to have an impact on board diversity. The largest percentage of funds in the data sample belongs to Industrials (31%) followed by Transport and Storage (14%). Due to the fact that general pension funds represent multiple funds, and therefore

also different industries, general pension funds cannot be categorized within one sector (as described by the SBI code). For this reason, general pension funds that represent multiple industries will be categorized under "Other". Table 1 shows the descriptive statistics on industry.

Table 1. *Descriptive statistics on industry.*

Industry	Number of funds	Industry classification for regression analysis	
Industrials	31	Industrials	IND6
Wholesale and retail trade	8	Wholesale and retail trade	IND2
Health and welfare care	8	Health and welfare care	IND4
Transport and storage	14	Transport and storage	IND3
Financial Institutions	9	Financial Institutions	IND1
construction industry	5	Other	IND5
Accommodation, meals and drinks	1		
Information and communication	3		
Advice, research and other specialist business services	7		
Rental of movable property and other business services	4		
Public administration, government services and compulsory social insurance	2		
Other services	2		
Agriculture, forestry and fishing	1		
Mixed (general pension funds)	5		
Total	**100**		

Note. the top 100 pension funds are classified in industry-sectors as described by the latest version of "Standaard Bedrijfs Indeling" (SBI) classification standard.

3.2 Dependent Variable: Age- and Gender diversity measures

According to The Covenant pension boards are seen to be *age* - and *gender* diverse when they comply to the requirement of having; at least one board member below the age of forty and one female board member. Although, it seems to be a good measure to indicate diversity there are many limitations to take into account. One of the limitations, is that pension funds who comply to these standards are not necessarily benefiting from diversity. As complying to this measure does not say much over the "variety" of the rest of the board members. Pension boards can still be heavily dominated by men and certain age groups. A second limitation of this measure, is that it gives the impression that pension boards can only be age diverse when they have a board member who are younger than forty. Board members of different age groups bring unique ideas

& new perspectives to the board, excluding certain age groups to satisfy the diversity criteria may decrease diversity. Due to the limitations of these measures, diversity will be measured in multiple ways.

In the case of *gender diversity,* besides the measure of having at least one female board member more strict measures will be implemented. Pension funds will be seen to be *gender diverse* when either 30% of the board members are female or the board has at least three female board members. The reason for this, is to decrease the odds for pension funds having a female board member for the sole reason to help satisfy the diversity requirement. Pension funds with at least three female board members will be able to positively impact the overall level of firm innovation and board strategic tasks (Torchia, Calabrò and Huse, 2012). The 30% requirement set by Viip is held for the reason that there are many boards that are small in size (below 6 members). Maintaining the requirement of having at least three female board members for smaller boards indicate that female pension members dominate the pension board with more than 50 percent. Due to the unfeasibility for small pension boards to comply to *the at least three female board member* requirement, pension boards that comply to the 30% requirement are also seen as gender diverse.

For *age diversity*, besides the measure of having at least one board member below the age of forty, two new measures will be used. New measures to indicate the diverse ages of board members will be done by measuring the number of decades represented on each board and subsequently measuring the standard deviation of the ages of the directors within each board. As described in the literature, pension boards that consist of members that represent multiple age groups or decades benefit from the different perspectives these individuals bring. Therefore, when comparing age diversity of pension boards, pension funds with more decades represented should be seen as more diverse. The groups used to compare *age diversity* between different boards are categorized by the following decades; 40 and younger, between 41 and 50, 51 and 60, 61 and 70 and lastly, 71 and older. With regards to the standard deviation, it measures the age dispersion of board room members relative to its mean. For instance, when a pension board has a small standard deviation it indicates that board members come from the same (age) group. Therefore, it is expected that pension funds with a higher standard deviation are also more age diverse.

3.3 Methodology

The Methodology consists of two parts. The first part will seek to answer whether Dutch pension boards are indeed undergoing drastic changes in the domains of age- and gender diversity in 2019. To determine whether diversity has improved since 2011 and 2014, the *descriptive statistics* and *graphs* with regards to board size, age - and gender diversity measures will be analyzed and compared. To do this, age- and gender diversity measures will be collected and analyzed between three groups; the top 100 pension funds in 2011, the top 100 pension funds in 2014, and the top 100 pension funds in 2019. The two datasets of 2011 and 2014 (by Swinkels

and Ziesemer, 2012; Shi, Swinkels and van der Lecq, 2017) are used in an attempt to showcase an improvement in board diversity. The data of the top 100 pension funds in 2017 has not been collected due to the fact that age - and gender diversity show little to no improvement since 2011 and 2014 (van Waveren & Kuin, 2018).

The second part will seek to answer the *hypotheses* regarding the effect of the characteristics (i.e. board size, fund size, pension fund type, board structure and industry type) on age and gender diversity by performing different *regression analyses*. The type of regression model used depends on the measurement used to define the age - or gender diversity of the boards. Concerning the *age diversity* measure, which states that at least one board member must be below the age of forty and the *gender diversity* measures, which state that either the board must contain one female member, at least three female board members or that 30% of the board members should be female, a probit regression model is used. The reason is because the dependent variable or diversity measure can only have two possible outcomes, in this case *1* when boards comply to the diversity requirement or *0* otherwise. In contrast, for the age diversity measures with more than two possibilities (i.e. number of decades and board age dispersion), an ordinal - and multiple linear regression analysis is performed.

Each age- and gender diversity measure will be regressed against the independent variables to better comprehend the relation between pension fund characteristics and diversity. Due to the fact that certain independent variables (i.e. board structure, pension fund type and industry type) are classified as *categorical variables,* they first need to be transformed into dummy variables in order to use them in the regression model. Additionally, for the independent variable fund size the logarithmic transformation is used, as this could help reduce the skewness of the data.

The different regression models used, can then be broken down as follows:

$$Diversity = \beta_0 + \beta_1(board\ size) + \beta_2 \log(fund\ size) + \beta_3(one - tier) + \beta_4(company) + \beta_5(\ general\ pension) \\ + \beta_6(IND1) + \beta_7(IND2) + \beta_8(IND3) + \beta_9(IND4) + \beta_{10}(IND6) + \varepsilon$$

The first independent variable represents the *board size* of pension funds. Board size is measured as the number of board members. According to the studies discussed in the literature, pension - and corporate boards are more likely to be both age - and gender diverse when there are more seats available within the board. If this is the case in mid of 2019, the coefficient (β_1) should not only be positive but also significant at the 1%, 5% or 10% level. The second independent variable within the regression represents the *fund size*. As described previously, fund size is measured by the total assets under management. The third independent variable is the dummy variable *one-tier*. Dummy variable *one-tier* has a value of 1 if pension boards are governed by a one-tier board structure (and zero otherwise). The fourth and fifth independent variables are two dummy variables used to categorize the type of pension fund. The two dummy variables applied are *company* and *general pension* fund. If a pension fund is classified as a company pension fund then "company" would be equal to 1, and "general" would be equal to 0. In this case the "industry-wide pension fund" is seen as the base group to which all other categories will be compared. Lastly, the rest of the independent variables are dummy variables for the industry type. If funds can be categorized in one of the dummy sectors, then the dummy variable is equal

to 1 and the rest of the dummy variables are equal to 0. In this case the base group are all pension funds that cannot be categorized in one of the five dummy sectors (i.e. Financial Institutions, Wholesale and Retail, Transport and Storage, Health- and Welfare care, Industrials sector).

3.4 Descriptive Statistics & Correlation Analysis

The first section compares the summary statistics of the independent variables found within the three data groups used for this study. The second section analyzes the correlation between the dependent and independent variables as it can be useful in identifying possible multicollinearity issues.

3.4.1 Descriptive statistics independent variables

Figure 1 shows the distribution of the number of board members per pension fund. Comparing the results of the board size distribution in mid-2019 with the board size distribution of the top 100 funds in June of 2011 and April of 2014, it can be seen that a greater portion of pension funds have smaller boards and seem to be increasingly willing to have an uneven number of board members, especially 7 and 9 members.
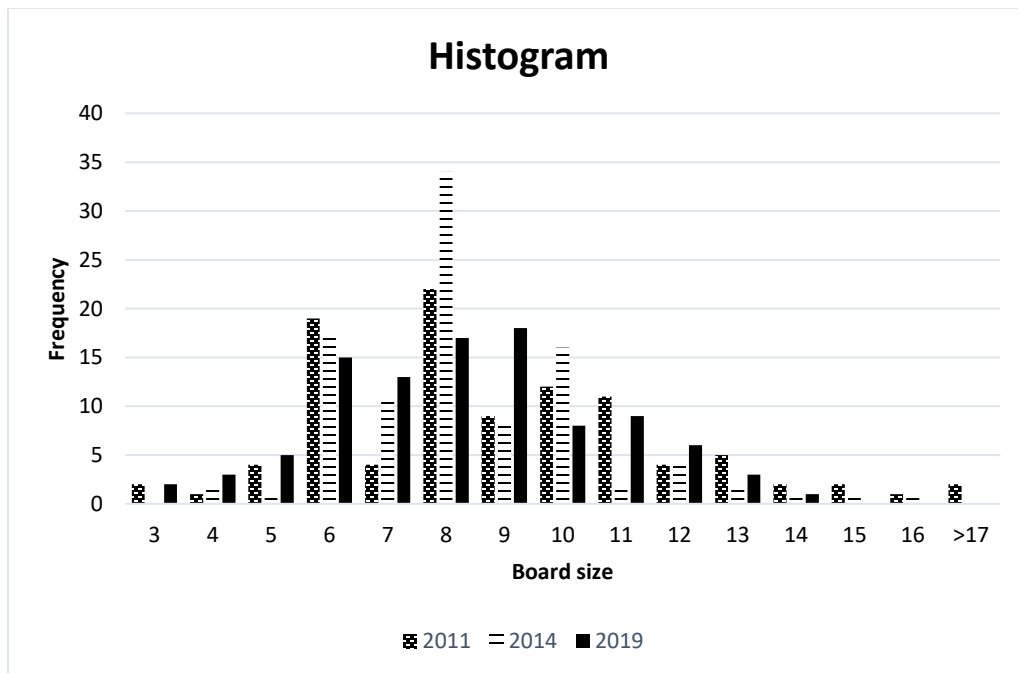

Figure 1: *Board size distribution of the top 100 funds in June of 2011, April of 2014 & July of 2019*

A possible explanation for the increase of pension funds with smaller boards can be due to the introduction of the *general pension funds,* into the top 100 funds. This can be regarded in table 2, which shows the average and standard deviation of the board size for each pension fund type in 2011, 2014 and 2019. We see that there is a large difference between the average amount of board members for *general pension funds* in comparison to industry-wide and company funds. The average size of board members for general pension funds is **5.8** with a standard deviation of **3.63**. However, excluding the outlier[3], the average board size decreases drastically to **4.25** with a standard deviation of **1.26**. Comparing the results with the average board size of industry - and company funds (for all data groups) it seems that the size of boards with a general pension fund are approximately 50% smaller.

The increase in the uneven number of board members might be explained by the trend for pension funds to hire *independent professional directors*. This trend is due to the fact that the requirements for managing a pension fund have considerably increased in recent years (SPMS, 2018). Analyzing the results show that 58% of the 50 boards with an uneven amount of board members have at least one independent professional director. This is however lower for boards with an equal number of members, namely 42%. Although the number of pension boards with an uneven number of members has increased sharply, pension funds still like to maintain a board size of 6 and 8, which has not changed since the introduction of the covenant.

By analyzing the board size of the 79 pension funds that maintained a position in the top 100 pension funds since 2014, it can be concluded that a significant part of the pension funds, 31 funds in total, have chosen to increase the amount of board member seats. Further results show that 24 funds have chosen to maintain, and 24 funds have chosen to reduce the amount of board member seats. However, even with all the changes made, the average size of these pension boards namely, 8.62 board members has not changed since 2014. Therefore, it can be assumed that the overall change in the distribution of the number of board members and the total number of board seats can mostly be explained due to the introduction of the 21 new pension funds (especially the general pension funds) that have joined the top 100 funds in mid-2019.

Comparing the *type of pensions* within the top 100 pension funds, the amount of company pension funds has drastically decreased since 2011 and 2014 (table 2). Although there was still a majority of company pension funds in 2011 (58%) and 2014 (57%), company pension funds now represent less than 50% of the top 100 funds. A possible explanation is the fact that general pension funds took over claims from company funds that fall within the top 100 funds in 2014. By analyzing the general pension funds, it can be seen that six company pension funds of the top 100 funds in 2014 (namely Holland Casino, Getronics, Douwe Egberts, Arcadis, Unilever progress and Ballast Nedam) have chosen to join a general pension fund. However, the majority of the funds, namely 15, that have joined a general pension fund are small company funds that are ranked outside the top 100 pension funds in 2014.

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[3] General pension fund Unilever with a board size of 12

Table 2. *Average board size, and stand dev. for each pension fund type*

	Industry-wide	Company	GPF
2011			
Average board size	9.64	8.47	X
Standard dev.	3.50	2.66	X
Number of funds.	42	58	X
2014			
Average board size	8.58	8.21	X
Standard dev.	2.62	1.73	X
Number of funds.	43	57	X
2019			
Average board size	8.79	8	5.8 (4.25)
Standard dev.	2.33	2.05	3.63 (1.26)
Number of funds.	46	49	5

3.4.2 Correlation Analysis

Prior to the making of the regression models, a cross-sectional correlation matrix between dependent and independent variables is performed. Analyzing the *correlation* between the variables can be useful because the *correlation* describes the strength and direction of linear dependence and possible multicollinearity issues. Although the correlation matrix is helpful, it is important to take into account that certain variable correlations can be heavily biased, as both binary and continues variables are used.

Table 3 illustrates the cross-sectional correlation matrix between the dependent and independent variables. When analyzing the correlation variables, it becomes clear that most variables are not highly correlated witch each other. However, when looking at the correlation coefficient between the dependent variables *number of decades* and *board age dispersion,* there seems to be a moderately strong and positive correlation (0.63). This result is expected, as both diversity measures try to define *age diversity* by looking at the "variety" of ages. This moderately strong and positive correlation is also the case for the dependent variables *at least three females* and *above 30% female* (0.61), indicating that boards that have three female board members often also directly comply to the 30% female board criteria.

Further analyzing the effect of the correlations between the independent - and dependent variables, the direction indicating a positive or negative relationship between variables is in line with what was expected. However, in the case of the correlation between *fund size* and *at least one young board member,* although the strength of the correlation is low (0.19), it does not

comply with the negative correlation that was expected. This negative correlation was expected due to the assumption that primarily larger funds are less willing to hire young board directors because they place more value on experience than smaller funds do.

Another important correlation coefficient to take into account for further regression analyses is the almost non-existent correlation between the variables *general pension fund* and *at least three females* (-0.10). A possible explanation for the negative and extremely weak correlation is the fact that general pension funds have a substantially small board (4 board members on average) compared to other types of pension funds, which makes it highly unlikely that they will adhere to the *at least three female* criteria and would result in them being even less gender diversified if they were to do so. Therefore, for further regressions, the impact of general pension funds on gender diversity will only be analyzed by using the dependent variable *above 30% female* and *at least one female*.

Table 3. *Correlation matrix*

#	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1.	#Of Decades	1.0000																		
2.	Board age di.	**0.6305**	1.0000																	
3.	Atleast1<40	0.4200	0.4498	1.0000																
4.	Atleast1fem	0.3940	0.3315	0.2624	1.0000															
5.	Atleast3fem	0.1292	-0.0053	0.2993	0.2007	1.0000														
6.	Above30%	-0.0160	0.0090	0.2608	0.2360	**0.6063**	1.0000													
7.	Board size	0.4132	-0.0766	0.1549	0.3107	0.2808	-0.0477	1.0000												
8.	Log (Total Assets)	0.1370	-0.0784	**0.1902**	0.2846	0.3353	0.1266	0.5681	1.0000											
9.	Total Assets	0.0508	-0.0987	0.1459	0.1106	0.3492	0.2742	0.3962	0.6776	1.0000										
10.	One-Tier	0.1634	0.0333	0.0037	0.0475	0.0029	-0.0498	0.2125	0.1151	-0.0340	1.0000									
11.	General (pf)	-0.3271	-0.2180	-0.1361	0.0850	**-0.1041**	0.1995	-0.3917	0.0160	-0.0410	-0.0850	1.0000								
12.	Company (pf)	0.0482	0.1176	-0.1888	-0.0982	-0.2625	-0.2994	-0.0798	-0.2982	-0.2001	0.0982	-0.2013	1.0000							
13.	Industrywi. (pf)	0.0835	-0.0298	0.2436	0.0639	0.3044	0.2191	0.2375	0.2917	0.2166	-0.0639	-0.2013	-0.9189	1.0000						
14.	Ind1	0.0767	0.0356	0.1835	0.1114	-0.1364	0.0927	0.0986	0.0604	-0.0253	0.0468	-0.0578	0.1769	-0.1537	1.0000					
15.	Ind2	0.1456	0.1897	0.1835	-0.0468	0.0019	-0.0339	-0.0621	-0.0753	-0.0554	-0.1114	-0.0578	-0.2638	0.2871	-0.0758	1.0000				
16.	Ind3	0.1290	0.0171	0.0637	-0.0504	0.0813	-0.0706	0.1047	-0.1076	-0.0892	-0.0615	-0.0899	0.2129	-0.1767	-0.1179	-0.1179	1.0000			
17.	Ind4	-0.1208	0.0589	-0.0073	-0.0019	0.0736	0.0245	-0.0785	0.2428	0.1192	-0.1339	-0.0695	-0.3170	0.3450	-0.0910	-0.0910	-0.1416	1.0000		
18.	Ind5	-0.0215	0.0555	0.0058	0.1635	0.2405	0.3548	-0.1151	-0.0003	0.1329	0.1065	0.3354	-0.1616	0.0265	-0.1724	-0.1724	-0.2681	-0.2071	1.0000	
19.	Ind6	-0.1236	-0.2273	-0.2508	-0.1523	-0.2674	-0.3342	0.0597	-0.0631	-0.0905	0.0658	-0.1454	0.2401	-0.1816	-0.1905	-0.1905	-0.2964	-0.2289	-0.4335	1.0000

4. Research results and discussion

This section represents the main results of this study. Firstly, the main results regarding the age- or gender diversity measures between the different data groups will be discussed. Secondly, the different regression analyses to estimate how the pension fund characteristics effect board diversity will be performed and analyzed. Lastly, considering the results found, the discussion concludes whether the hypotheses are either accepted or rejected.

4.1 Has Gender diversity improved since 2011 and 2014

As previously described, expanding the proportion of women on the board has been increasingly important. In order to prevent the Dutch Parliament from introducing legal measures that further increase the pressure on pension funds, significant changes have to be made. Table 4 describes the positions occupied by female board members as well as the gender diversity of Dutch pension boards for all data groups. Comparing the results of the overall board positions occupied by female board members, a strong improvement is observable in the amount of board positions occupied by female board members. In the first three years after the Covenant was signed, the amount of female board members hardly increased (from 103, 11.50% to 111, 13.26%). However, this is not the case with regards to the results found for mid-2019. The amount of positions occupied by female board members as of mid-2019 increased to 177 female board members. This strong increase of female board members with a simultaneous decrease in total board seats has led female board members to obtain 21.43% of the total pension board positions. In order to determine if the mean of the *percentage of female board members* between the top 100 funds of 2011 or 2014 is significantly different from the top 100 funds in mid-2019, an independent sample t-test is performed. As can be seen in table 5, there is enough evidence to reject the null hypothesis for both the year 2011 (t(198)=5.59, p=.0000) and 2014 (t(198)=4.39, p=.000018), indicating that the average amount of female board members in mid-2019 has significantly improved.

Although this increase in female board members may be an indication for increased gender diversity, further analysis of the pension funds and their *gender diversity* measures (i.e. at least 1 female, at least 3 females, at least 30% must be female) is needed. This is due to the fact that an increased percentage of female board members does not directly indicate more- or legitimate diversity. In the case where gender diversity is defined as having *at least one female board member,* 13 pension funds can be described as being non-diverse in mid-2019, as they do not adhere to the *at least one female board member* criteria. However, the amount of non-diverse pension boards was extremely higher in 2011 and 2014 (39 and 34 respectively). A strong improvement in gender diversity is also observed for the less lenient gender diversity measures. In mid-2019, 21 pension funds complied to having *at least three female board members* or 26 funds adhered to the *at least 30% female* criteria. However, although the amount of pension boards complying to the stricter diversity measures more than doubled in comparison to 2011

and 2014, the overall amount of pension funds complying to these diversity measures is still extremely low. Combining the two strict gender diversity measures shows, however, that 30 funds adhere to either the *at least three female board members or at least 30% female* criteria. In mid-2019, 34% of the funds with an *at least one female board member* also adheres to the *at least 30%* criteria or the *at least three female* criteria. However, this was approximately 11% lower in 2011 and 2014.

Table 4. *Gender diversity of directors on board of top 100 pension funds.*

	2011		2014		2019	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Director positions in top 100 pension funds	896		837		826	
Gender						
Positions occupied by male directors	793	88.50%	726	86.74%	649	78.57%
Positions occupied by female directors	103	11.50%	111	13.26%	177	21.43%
Average percentage of female directors per board (M)		11.19%		13.09%		21.10%
Std. Deviation (SD)		11.69%		12.47%		13.89%
Diversity measures						
At least 1 female on board	61	61.00%	66	66.00%	87	87.00%
At least 3 females on board	11	11.00%	10	10.00%	21	21.00%
At least 30% female on board	10	10.00%	12	12.00%	26	26.00%
At least 3 or 30% female on board	14	14.00%	15	15.00%	30	30.00%

Note. Gender disclosed for all pension boards.

By analyzing the 79 pension funds that have maintained their position in the top 100 funds since 2014, it can be concluded that gender diversity truly improved over time. From the 79 pension funds that have maintained their position in the top 100 funds, 47 pension funds, increased the amount of female board members with *at least one female*[4], 19 pension funds maintained the same amount of female board members, and only 13 pension funds reduced the amount of

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[4] Of which 6 pension funds increased the amount of female board directors with *at least three*.

female board members with *at least one female.* From the 47 pension funds that increased the amount of female board members, with *at least one female,* 29 pension funds chose to replace[5] their male board directors with female board directors, and 18 pension funds added[6] female board directors by increasing the amount of total board seats. These results contradict the conclusion found by Bilimora (2000), who suggests that women are only appointed to the board as an additional director rather than as a replacement director. Overall, the results indicate that diversity has not only increased in mid-2019, but also reduced the chance of female board members being used as diversity tokens.

Table 5. *Independent Samples T-test results, Comparing the **mean** of the percentage of female board members.*

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
2019/2014	Equal variances assumed	0.769	0.382	4.393	198	0.000018***	0.082000	0.018667
	Equal variances not assumed			4.393	195.736	0.000018***	0.082000	0.018667
2019/2011	Equal variances assumed	1.929	0.166	5.593	198	0.0000***	0.101534	0.018154
	Equal variances not assumed			5.593	192.367	0.0000***	0.101534	0.018154

Note. *p < 0.10; **p < .05; ***p < .01

4.2 Has Age diversity improved since 2011 and 2014

Not only has *gender diversity* within boards been extremely important for building trust of individuals bounded to pension funds but *age diversity* as well. Table 6 illustrates the *average age* and *age diversity measures* for the year 2011, 2014 and 2019. When evaluating the *average age* for each data group, it can be concluded that the average age of board directors has been increasing with time. The results show that the average age of board directors has increased from 56 in 2011 and 2014 to 57 in mid-2019. Although this result can be an indication that pension funds are not taking the beneficial impact of younger or diverse board members seriously, more information is needed.

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[5] The increase of women board members is greater than the increase or change in the amount of board seats.
[6] The increase of women board members is equal to the increase in the amount of board seats.

In order to get more insight, the results of each age diversity measure will be thoroughly analyzed. The first age diversity measure examined is the *at least one young board member criteria*. As described in The Covenant, in order for pension funds to be age diverse, boards should have at least one member below the age of forty. Examining the results found, for the 74 pension funds that disclosed the age information about their directors in mid-2019, only 28.38% of the funds complied to the requirement of having *at least one young board member*. Comparing the result with the results found for the top 100 pension funds in 2011 and 2014, pension funds indeed seem to not take the beneficial impact of age diversity by hiring younger directors seriously.

Nonetheless, when age diversity is measured as *the number of decades* within boards, age diversity does seem to have improved since 2011 and 2014. Table 7 shows that 57% of the 74 pension boards represented at least 4 decades within their board. However, in 2011 and 2014, this was lower than 47%. This increase is due to the fact that more pension funds have board directors who are older than 70. As seen in table 6, 46% of the 74 pension funds have at least one board member over the age of 70. For the top 100 funds in 2011 and 2014, this was substantially lower (respectively 37% and 32%). The strong increase in board directors over the age of 70, with a simultaneous decrease in younger board members, may be an indication that pension funds place significantly more value on the generational benefits (i.e. experience) and spare time of older age groups. Another possible reason could be due to the introduction of The Governance Improvement Act in 2014. Since the introduction, pension funds with a joint model are obliged to include pensioners (who are usually above the age of 65) on the pension fund board. However, from the total number of board seats, pensioners may not acquire more than 50%.

The last *age diversity* measure controlled and analyzed will be the *board age dispersion,* which is measured by the standard deviation. According to the *average board age dispersion* of mid-2019, board member ages are indeed more spread out since 2011. However, compared to 2014, *age diversity* does not seem to have improved, as the average board age dispersion was slightly higher.

Table 6. *Age diversity of directors on board of top 100 pension funds*

	2011		2014		2019	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Total number of director positions in top 100 pension funds	896		837		826	
Age						
Number of directors whose age is disclosed	896	100%	837	100%	766	92.74%
Directors under 41	46	5.13%	47	5.62%	37	4.83%
Directors between 41 and 50	230	25.67%	182	21.74%	142	18.54%
Directors between 51 and 60	335	37.39%	312	37.28%	284	37.08%
Directors between 61 and 70	239	26.67%	258	30.82%	246	32.11%
Directors over 70	46	5.13%	38	4.54%	57	7.44%

Diversity measures						
At least 1 young board member (<40)	33	33.00%	34	34.00%	21	28.38%
Average amount of decades represented	3.45		3.48		3.58	
Average board age dispersion (St Dev)	9.06		9.29		9.22	
Average board age	55.98		56.20		57.49	
Number of boards with decade represented						
Directors under 41	37	37.00%	38	38.00%	26	35.14%
Directors between 41 and 50	85	85.00%	83	83.00%	65	87.84%
Directors between 51 and 60	96	96.00%	99	99.00%	72	97.30%
Directors between 61 and 70	90	90.00%	96	96.00%	69	93.24%
Directors over 70	37	37.00%	32	32.00%	34	45.95%

Note. Age disclosed for 74 boards fully, in 2019.

Table 7. *Distribution of decades represented*

	2011		2014		2019	
Decades represented	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	0	0%	0	0%	1	1.4%
2	9	9%	5	5%	4	5.4%
3	46	46%	49	49%	27	36.5%
4	36	36%	39	39%	35	47.3%
5	9	9%	7	7%	7	9.5%
Total boards	100		100		74	

Note. Age disclosed for 74 boards fully, in 2019.

In order to control the aforementioned results that pension funds are not taking age diversity by hiring young board members seriously, and are instead more interested in hiring older board members, we compare the hiring age of *new board members*[7] for the year 2011, 2014 and 2019. In line with previous results, table 8 shows that pension funds are indeed not interested in hiring young board members, as there seems to be no drastic changes in hiring board members below the age of forty. The results show that in mid-2019, only 12% of board members who have joined a pension board in the last three years, are below the age of forty. This was also the case for the top 100 pension funds of 2011 and 2014. With regards to hiring board members between the age of 61 and 70 there seem to be a considerable increase. However, this is not the case for new board members over the age of 70. The strong increase in board directors over the age of 70, the amount of boards with directors over the age of 70, and therefore more age diverse pension

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[7] We define *new board members* as board directors who have joined a pension board in in the last 3 years of when the data was collected.

funds (based on the *amount of decades* measure) can mainly be described due to the fact that older board members, especially board members over the age of 65, have aged over 70.

Table 8. *Distribution of ages of new board members*

Board member Age when hired	2011		2014		2019	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Directors under 41	55	14.82%	38	12.34%	39	13.13%
Directors between 41 and 50	122	32.88%	94	30.52%	85	28.62%
Directors between 51 and 60	131	35.31%	107	34.74%	104	35.02%
Directors between 61 and 70	60	16.17%	64	20.78%	66	22.22%
Directors over 70	3	0.81%	5	1.62%	3	1.01%
Directors under 40	48	12.94%	36	12.34%	36	12.12%
Directors over 65	23	6.20%	21	6.28%	26	8.75%
Total new directors	371		308		344	
Percentage of total directors	41.41%		36.80%		41.65%	

Note. Age disclosed for 297 of the 344 new board members in 2019

For further insights we also analyze the change in the age diversity measure *at least one member below the age of forty* for 56[8] of the 79 pension funds that maintained their position in the top 100 funds since 2014. It can be concluded that 35 of the 56 pension boards have not added any young board members or replaced any older members with young board members, 11 funds maintained having at least one member below the age of forty, and 10 funds added young board members of which 7 funds replaced[9] older board members with board members below the age of forty and 3 funds created extra board seats[10]. From the 11 pension funds that continued to comply to the age diversity measure, 8 pension funds replaced older board members with new young members, and for 3 funds the same board member are still considered to be young members. Further results show that from the 35 pension boards that have not added or replaced older board members with young board members, 11 pension funds have not maintained to the at least one board member below the age of forty criteria. For 8 of the 11 funds that no longer comply to the *at least one member below the age of forty* criteria, it is the case that the same board members that were under the age of forty in 2014 are now not considered to be young anymore. Surprisingly for the other 3 pension boards, pension board members below the age of forty were actively replaced by older board members.

By combining the age diversity results, it can be concluded that the question 'whether age diversity has improved since 2011 and 2014' is a lot more complicated and really depends on how age diversity is defined. Additionally, for the results found on the *age diversity measures* in mid-2019, the possibility of a selection bias must be taken into account. As only funds who

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[8] Age data disclosed for 56 of the 79 pension funds that remained in the top 100 since 2014.
[9] The increase of board members below the age of forty is greater than the increase or change in the amount of board seats.
[10] The increase of board members below the age of forty is equal to the increase in the amount of board seats.

reported the age of their board directors, are included in the sample. It might be the case that funds who do not report the age of their board directors, less often meet the requirements (of *at least one member below the age of forty*) in comparison to the pension funds who do report the age of their board directors. It is assumed the aforementioned funds that do not report the age of their board directors are especially small funds because these funds are less likely to be concerned about their public image (as described by Adams & Ferreira, 2004). However, due to the contrary evidence[11] and the fact that results may vary depending on the time that they are acquired[12], we assume that the results found for the age diversity measures**,** is a realistic representation of the top 100 funds in mid-2019.

4.3 Which pension funds characteristics may also affect the composition of the board?

This section will first illustrate the results found with regards to the effect of the pension fund characteristics or independent variables on *gender diversity* within the board. Thereafter the effect of the fund characteristics on *age diversity* will be described.

4.3.1. Gender diversity regressions

As was previously explained in the methodology, in order to estimate how the independent variables influence gender diversity within boards, a probit regression model is used. This indicates that the outcome from the dependent variable is either 1 or 0. The dependent variable equals 1 if pension boards comply with the gender diversity measure and will equal 0 otherwise. Table 9 shows the effect (coefficients and their associated p-values) of the pension funds characteristics on gender diversity.

In the case of the dependent variable where *at least one female* is used, the independent - or dummy variables *general pension fund* and *financial institution sector* will be omitted. This is due to the fact that the probit model cannot include independent variables who perfectly predict success in the dependent variable. Excluding these variables with their observations is needed in order not to bias the remaining coefficients of the model.

By first evaluating the results found for the gender diversity measure *at least one female,* it can be concluded that larger boards have a higher probability of including at least one woman in their board. This conclusion is made because the board size coefficient (0.32) is both positive and significant at the 5% level. Funds that increase their board size by one seat have a higher probability of complying to the *at least one female* diversity criterion. This coincides with the findings of Shi, Swinkels and van der Lecq (2017), which also found there to be a positive effect

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[11] There seems to be no correlation between fund size and board age disclosure (-0.019*)*
[12] Due to the fact that the data was collected before the Annual Reports of 2019, a large number of the new board member ages were still missing. However, this might have not been the case had the data been acquired after the Annual Reports of 2019.

between board size and having *at least one female* in the board. Although the coefficient is positive with regards to fund size, the effect is considered to be insignificant. The results also indicate there to be no difference between company- and industrywide pension funds or one-tier and two-tier boards when complying to the *at least one female* diversity criterion. Furthermore, the results suggest that pension funds in the industrials sector and transport and storage sector have a significantly lower probability of complying to the *at least one female* board criteria. Both variables have a p-value of 0.025 and are therefore significant at the 5% level.

The results with regards to having *at least three female board members* do seem to differ. The results show that board size is still significant, however, not at the 5% level but at the 10% level. This indicates that larger boards do not only have a higher likelihood of complying to the *at least one female* board criterion but also to the *at least three female* board criterion. A further analysis of the results show there to be no difference between the *board structure* (one-tier or two-tier), *type of pension fund* (i.e. general, company and industry-wide) and the likelihood to comply with the *at least three female* board criterion. Likewise, fund size seems to be insignificant with regards to having at least three female board members. While pension funds in the *transport and storage sector* are less likely to comply with the *at least one female* board criterion, the same conclusion cannot be drawn with regards to having at least three female board members. However, after further analyzing the different types of sectors, only the *industrials sector* is significant and negatively correlated at the 5% level with having *at least three female* board members.

After analyzing the results with regards to the *at least 30% female* criterion, a number of important changes can be described. Namely, for this criterion, board size does not seem to have an impact on gender diversity as the negative coefficient is insignificant at the 10% level. In this case, the negative coefficient for the dummy variable *company pension fund* is significant at the 5% level. This indicates that company pension funds in comparison to general or industry-wide funds have a significantly lower probability to satisfy the *at least 30% female* criterion. The probit regression also shows important differences between the multiple sectors of the pension funds. Namely, pension funds in the *wholesale and retail*, *health and welfare care*, and *industrials sector* all have a lower probability with complying to the *at least 30% female* criterion, as the coefficients are both negative and significant. However, the rest of the variables seem to have no impact on gender diversity as all coefficients are insignificant.

Table 9. *Results of probit regression analysis for predicting gender diversity*

	Gender diversity		
	Female>=1	Female>=3	Female >=30%
Constant	-5.474	-5.714*	-1.625
	(5.466)	(3.341)	(3.015)
Board size	.322**	.178*	-.046
	(.147)	(.094)	(.0875)
Fund size (log)	.221	.186	.1063
	(.275)	(.166)	(.151)

One-tier	-.192	-.241	-.316
	(.648)	(.465)	(.440)
Company	.395	-.569	-.968**
	(.511)	(.395)	(.379)
General	-	-.374	-.093
	-	(.843)	(.725)
Ind1 (Financial Institutions)	-	-.839	.159
	-	(.697)	(.555)
Ind2 (Wholesale & Retail)	-.352	-.732	-1.407**
	(.815)	(.648)	(.666)
Ind3 (Transport & Storage)	-1.400**	-.136	-.471
	(.704)	(.511)	(.493)
Ind4 (Health & Welfare care)	-.429	-.697	-1.118*
	(.959)	(.649)	(.611)
Ind6 (Industrials)	-1.315**	-1.100**	-1.151 ***
	(.619)	(.465)	(.434)
R^2	0.2484	0.2289	0.1915

Note: Number of Industries was represented as five dummy variables with Ind5 (all other sectors) serving as the reference group.

*$p < 0.10$; **$p < .05$; ***$p < .01$*

4.3.2 Age Diversity Regressions

Table 10 describes the effects of the fund characteristics on age diversity. As was previously described in the methodology section of this paper, a different regression model is used for each age diversity measure. For the *at least one young board member* measure a probit regression is used. For the *dispersion on board age* measure a linear regression is used. Lastly, for the *number of decades* measure an ordered logistic regression is used.

The results that will be discussed first are those regarding the coefficients and p-values of the probit regression of the *at least one young board member* measure. Surprisingly, it can be concluded that there is no significant relationship between pension fund characteristics and the likelihood of having at least one member below the age of forty. Although the coefficients are insignificant, the positive direction of the variable *fund size* is surprising due to the fact that it is expected that especially larger funds are less willing to hire younger board members due to their inexperience. The positive sign of the dummy variable *financial institution* contradicts previous studies on company boards that found that specifically financial institutions have boards that are too old (Harrigan 1981; Engen, 2002; Kang, Cheng, & Gray, 2007). The negative direction regarding the *health- and welfare care sector* is also surprising as Harrigan (1981), Adams and Ferreira (2009), and Joecks, Pull and Vetter (2013) state that especially firms in the *healthcare sector* are more likely to have a higher percentage of female board directors.

The second set of results with regards to the *board age dispersion (standard deviation)* measure shows that large boards are less likely to have board members of different ages when compared

to small boards. However, the difference is not statically significant. The linear regression analysis also shows that general pension funds, in comparison to the other type of pension funds (i.e. company and industrywide), have a negative impact on *board age dispersion*. In this case, the coefficient is significant at the 5% level. The coefficient for the dummy variable *industrials sector* also relates negatively to *board age dispersion* and is significant at the 10% level. This indicates that funds operating in the industrials sector have a lower probability of hiring board members who vary from each other with regards to their age. Additionally, the rest of the variables and dummy variables are all insignificant.

The last age diversity measure controlled for will be the *number of decades* represented on the board. As previously described, due to the fact that the dependent variable, number of decades, can have 5 categories with a certain order, an ordered logistic regression is used. As seen in table 10, board size is positive and also statistically significant at the 5% level. This indicates that larger boards with more directors increase the possibility of pension boards representing multiple decades. This result is in line with the results found by Kang, Cheng and Gray (2007) on Australian corporate boards. The results also show that pension funds with more assets are less likely to represent different decades, however, this result is not significant. Further results also indicate there to be no significant effect between *pension fund type*, *board structure* and *industry type*.

Table 10. *Results of (probit-ordered logistic- linear) regression analysis for predicting age diversity*

	Age diversity		
	Young>=1	Log(standard dev)	Decades
Constant	-4.613	2.119***	-
	(3.424)	(.646)	-
Board size	-.043	-.015	.372**
	(.115)	(.021)	(.158)
Fund size (log)	.219	.010	-.069
	(.180)	(.033)	(.233)
One-tier	.038	.024	.582
	(.517)	(.098)	(.745)
Company	-.694	.081	.544
	(.432)	(.081)	(.585)
General	-	-.505**	-1.819
	-	(.204)	(1.471)
Ind1 (Financial Institutions)	.911	-.066	-.081
	(.690)	(.144)	(1.006)
Ind2 (Wholesale & Retail)	.463	.142	1.569
	(.698)	(.145)	(1.082)
Ind3 (Transport & Storage)	.325	-.077	.192
	(.550)	(.111)	(.772)
Ind4 (Health & Welfare care)	-.672	-.033	-.058
	(.669)	(.137)	(1.020)
Ind6 (Industrials)	-.653	-.144*	-.829

	(.493)	(.089)	(.652)
R^2	0.1623	0.1773	0.1354

Note: Number of Industries was represented as five dummy variables with Ind5 (all other sectors) serving as the reference group. *$p < 0.10$; **$p < .05$; ***$p < .01$

4.4 Discussion

Hypothesis 1: *Board size*

According to *Hypothesis 1*, it is expected that board diversity in the domains of age and gender is positively affected by the size of the board. Summarizing the results found with regards to board size and the multiple diversity measures, it can be concluded that a greater number of board directors truly increases the possibility of funds being more gender diverse (however this is much less clear for the age domain). As described in the results, larger boards have a significant and positive effect for two of the three gender diversity measures. Namely, complying to the *at least one female* and *at least three female* criteria. However, with regards to the different age diversity measures, board size is only significant if age diversity is measured as the *number of decades*. This indicates that larger boards have a significantly higher probability of representing different age groups (decades). Ultimately, given the results obtained, there is enough evidence to accept the alternative hypothesis (H0 is rejected).

Hypothesis 2: Fund size

As was described in the literature section of this paper, many studies on corporate firms found there to be a positive relationship between firm size (measured as the natural logarithm of total assets) and the number of women on boards. However, with regards to the effect of firm size on hiring young board directors, the relationship is less clear. This is because there has been little to no research conducted on this topic within corporate studies. A recent study by Shi, Swinkels and van der Lecq (2017) on Dutch pension funds found there to be a negative relationship between fund size and having young board directors (as age is highly correlated to experience). Therefore, it is expected that fund size is positively associated with gender diversity and negatively with age diversity. Surprisingly, the results provide strong evidence that there is no association between fund size and the presence of women - or young board directors. As a consequence, the null hypothesis cannot be rejected and, therefore, hypothesis 2 is not accepted.

Hypothesis 3: Industry type

As the results in table 9 have shown, there is enough evidence to suggest that certain sectors do differ with regards to gender diversity. The results show that especially funds in the *industrials sector* (as defined by the SBI code) should focus on increasing gender diversity within their

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boards, as all three gender diversity measures show a significant and negative relationship at the 5% level. Furthermore, funds in the *transport and storage* sector*, health- and welfare care sector* and *wholesale and retail* sector should improve their female representatives within their boards as they have a significantly lower probability to comply with the *at least one female* or the *at least 30% female* criteria. Lastly, there is not enough evidence to reject the null hypothesis with regards to age diversity because the *industrials sector* is only significant at the 10% level when age diversity is measured as the *number of decades*.

Hypothesis 4: Pension fund type

Pension fund types (general, company and industry-wide) do seem to differ depending on how age- or gender diversity is defined. First defining gender diversity as having *at least one female,* it can be assumed that general pension funds are more diverse because all general funds have at least one female director within their board. However, due to the small number of general pension funds (5 in total) this assumption is weakened. In contrast, the extremely small size of general pension boards (table 2) strengthens the assumption that general pension funds are more diverse in comparison to company and industry-wide funds. Further results on gender diversity measures also show that there is a significant difference in gender diversity between *pension fund types* if diversity is measured as having *at least 30%* of the board consisting of female directors. According to the results, company funds comply significantly less often with the diversity goal set by Viip to have *at least 30%* of women represented on pension fund boards.

With regards to age diversity, the hypothesis can only be accepted if age diversity is defined by *board age dispersion* (measured as the natural log standard deviation). The results show that general pension funds have a significantly lower board age dispersion.

According to the overall results found for the type of pension fund, there is enough evidence to reject the null hypothesis and accept hypothesis 4.

Hypothesis 5: Board structure (One-tier)

Due to the results found by the 2018 evaluation report of The Governance Improvement Act, it is expected that there may be an association between the age and gender diversity of boards and the board structure (one-tier or two-tier boards). However, there is not enough evidence to suggest this to be the case, as none of the coefficients for the dummy variable *one-tier* are significant at the 1%, 5% or 10% level. Therefore, the null hypothesis cannot be rejected.

5. Conclusion

Previous research has shown that since self-regulation was introduced in 2010 pension funds have not made the desired changes to improve the diversity or composition of the board. As a response the Dutch Parliament indicated in the 4th quarter of 2018, if there are no drastic changes made within 2019, it is highly likely that legal measures will be implemented in 2020. In order to examine whether age- and gender diversity has truly improved, diversity is measured in multiple ways and compared between the top 100 pension funds of 2011, 2014 and mid-2019. Further, since a lot has changed on how pension funds operate, we re-examined which pension fund characteristics (e.g. board size, fund size, pension fund type, board structure and industry type) are associated with more age- and gender diversity.

The data sampling and methodology used in this research were as follows. We first hand-collected a list of the top 100 pension funds by total assets under management, based on the annual reports of 2018. Second, board member data and fund characteristics was collected mainly through the annual reports and through the pension websites that are provided by the public registry of De Nederlandse Bank. In order to answer the question whether diversity has truly improved, age- and gender diversity was analyzed and compared between previous data samples, on the basis of three age diversity and three gender diversity measures. The three gender diversity measures applied are the *at least 1 -*, *at least 3 -*, and *at least 30%* female criteria and with regard to age diversity *at least 1 young* board member, the *number of decades* and *board age dispersion* (measured as the standard deviation). To analyze the effect of the pension fund characteristics on board diversity a probit model, ordinal - or multiple linear regression is used depending on the diversity measure.

The main findings of the research regarding age - and gender diversity within the board of the top 100 Dutch pension funds show interesting results. Starting with gender diversity, it must be pointed out that pension funds have significantly improved, as only 13% of the funds did not comply to the minimum requirement of having at least one female within the board. Compared to 2011 and 2014 where 39% and 34% of the top 100 pension funds had no women on the board this is a surprisingly strong improvement. Further results also indicate that an increasing number of funds are complying to the stricter gender diversity measures (i.e. *at least 30%* - or the *at least 3 female* criteria), which ultimately reduces the probability of female board members being used as diversity tokens. Overall, female board members now obtain 21.43% of the total pension board positions, in the top 100 Dutch funds.

With regards to age diversity that is defined by *The Covenant* as having at least one board member below the age of forty, pension funds are failing to comply and are instead increasing the number of older workers (70+). However, when age diversity is measured as *the number of decades* within boards, age diversity does seem to have improved since 2011 and 2014, as 56% of the 74 pension boards represented at least 4 decades within the board. This increase is mainly due to the fact that older board members have aged over 70. A possible explanation for the preference in hiring older board members (between the age of 61 and 70) is that funds value the

experience and free time of older workers now more than ever, which may be due to the increasing requirements and operating costs of managing a board. Another possible explanation could be due to the fact that pension funds with a joint model are obliged to include pensioners who are usually above the age of 65 on the pension board. The third age diversity measure used to get a better perspective regarding the change of age diversity overtime, is the board age dispersion (measured as the standard deviation). According to the results, the *average board age dispersion* has improved since 2011 but not since 2014. Ultimately, it can be concluded that self-regulation and the multiple solutions introduced to improve the number of young individuals did not have the desired effect, as young board members are still clearly underrepresented.

The key findings of this study with regards to which pension fund characteristics determine age- or gender diversity are mixed. Consistent with previous studies, board size was found to be a significant factor in determining which funds are complying to both the *at least one female* and *at least three female* criteria. However, in line with Kang, Cheng and gray 2007, larger boards are also more likely to be age diverse, as they represent different age groups (decades). Surprisingly, we find evidence that fund size is insignificant in determining age- and gender diversity within boards, which contradicts the results found by previous research (Adams & Ferreira, 2004; Shi, Swinkels and Van der Lecq, 2017). A possible explanation for the insignificant effect of fund size on age diversity is the fact that an increased number of larger funds in the top 10 increased the application of the *at least one young* board member criteria in the last 5 years. In 2014, only 10% of the top 10 pension funds had at least one board member below the age of forty. In 2019, this percentage had positively increased to 50%. The trend towards one-tier board structures was also found to be unimportant in determining diversity. Analyzing the different pension fund types with the introduction of the general pension fund it can be concluded that company funds indeed satisfy the *at least 30% female* criteria significantly less often. Ultimately, the results indicate that certain sectors do differ with regards to board diversity. Particularly funds in the industrials sector (as categorized by the SBI code) are in need of more women - and young board directors. This is precisely in line with the findings from Adams and Ferreira (2009) and Joecks, Pull and Vetter (2013).

The lack of improvement with regards to age diversity shows that it is highly possible that compulsory diversity regulations will be implemented by the Lower House of the Dutch Parliament in 2020. Although gender diversity has sharply increased in the first half of 2019, it can undoubtedly be argued, that the proportion of women on pension boards is still very low. If compulsory regulations are introduced in 2020, policy makers should particularly focus on increasing female board members (to a more balanced target, at least 30%) and young board directors (younger than 40) within the industrials sector.

This study has several limitations that could be addressed in future work. First, increasing the data sample of 2019 could have generated more accurate results, and thus bring better conclusions between the data groups of 2011 and 2014. Especially with regards to the results found on age diversity, as only 74 funds of the top 100 had a complete set of director's age data. As a consequence, for the results regarding age diversity, the possibility of a selection bias must be taken into account, as only funds with complete board director's age data are used in this

study. Future research could try to improve this by conducting surveys or interviews on funds that have not reported the age of their members (via annual reports or web pages). A second recommendation for future research is to explore the extent of diversity in Dutch pension funds in more depth, by conducting surveys or interviews on the less visible characteristics and director roles in greater detail. As independent board members and racial - and ethnic diversity are getting increasingly more important.

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7. Appendix

Appendix 1. Overview of the 5 Governance models used in pension funds

<u>Two-tier Board Models</u>

Model 1. Joint Model

Board of Directors	Internal monitoring	Accountability Body
• Employers • Employees • Pensioners • Max. 2 externals	• Board of control • or • Visitation committee	• Employer(s) • Employees • Pensioners

Model 2. Independent Model

Board of Directors	Internal monitoring	Stakeholder body
• Min. 2 externals	• Board of control • or • Visitation committee	• Employers • Employees • Pensioners

<u>One-tier Board Models</u>

Model 3. Joint Mixed Model

Board of Directors	Accountability Body
• Max. 2 externals • Executive directors: stakeholders • Non-executive directors with supervisory task: min. 3 externals	• Employer(s) • Employees • Pensioners

Model 4. Independent Mixed Model

Board of Directors	Stakeholder body
• Executive directors: min. 2 externals • Non-executive directors with supervisory task: min. 3 externals	• Employer(s) • Employees • Pensioners

Model 5. Inverse Mixed Model

Board of Directors	Accountability Body
• Executive directors: externals • Non-executive directors with supervisory task: stakeholders and independent chairman	• Employer(s) • Employees • Pensioners