# Master Thesis

*Examination of the moderating effect of country cultural dimensions on the relation between board gender diversity and firm financial performance.*

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**ABSTRACT**

This thesis aims to make sense of some inconclusive results that exist in the current academic literature by examining how culture moderates the relation between board gender diversity and firm financial performance. In doing so, board gender diversity is measured by the percentage of female board members, firm financial performance is measured by Return on Assets, Return on Equity and Tobin's Q and culture is measured by Hofstede's cultural dimensions power distance, individualism, uncertainty avoidance and masculinity. This thesis uses the data of 260 listed firms in 13 different countries and performs a multilevel analysis. The results of this thesis suggest that power distance positively moderates, individualism negatively moderates and masculinity positively moderates the relation between board gender diversity and some of the measures for firm financial performance. These results confirm that there might be an influence of culture on the relation between board gender diversity and certain measures of firm financial performance. Therefore, this thesis contributes to the existing literature by providing a possible explanation for the inconclusive results.

**Keywords:** board gender diversity, financial performance, Hofstede's cultural dimensions, moderator, multilevel analysis

**PREFACE**

'Women are the largest untapped reservoir of talent in the world' – *Hillary Clinton.*

With this quote in mind, I started writing this thesis. Why are there so few female executive directors in companies? And do all the women who have the ambition to fulfil such a position even get an equal chance to do so? One of these women who has such an ambition and would like a chance to fulfil an executive position is me. Being in an environment where everyone always tries to outperform each other has made me even more ambitious than I already was. Doing an internship, going abroad, being active in a board and graduating Cum Laude are all necessary elements to present yourself and outperform others. At the same time, I wonder whether these elements are equally important for men and women. When looking at the current society, more and more females are able to graduate from university with higher grades and it could be expected that the traditional social roles of men and women will fade away. Unfortunately, this is not always the case. But why? Are females still underrepresented since they do not contribute anything to organisations? Or do the countries in which these females are living have anything to do with this underrepresentation? All these questions triggered me in doing this research and, hopefully, show some confirmation that I, as a woman, do contribute something to organisations and that I have the chance to fulfil my ambitions. A person who also would like to see this confirmation is Loes Verheij, who is even more ambitious than I am and who I would like to thank for being by my side during all the steps I took towards becoming successful. Also, I would like to thank my family who always believe in me and who support every choice I make towards achieving my goals, even though they sometimes do not understand my choices. Furthermore, I would like to thank Rutger Schilpzand for assisting me in understanding multilevel analyses. Finally, I would like to thank my supervisor Esther-Mirjam Sent for supporting me during the process of writing this thesis and for helping me understand that gender should not matter when chasing your ambitions.

Now, this thesis shows whether this untapped reservoir of female talent really exists and I hope that you enjoy reading this thesis as much as I enjoyed writing it.

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# CHAPTER 1 - INTRODUCTION

## 1.1. Introduction

The lack of female representation in senior management positions is a global issue (Festing, Knappert & Kornau, 2015). Even though female directors are more educated, have more international experiences, provide more external expertise and are more likely to adopt long-term strategies, women are underrepresented in boards, where only 14% of the female graduates became a director in a large firm (Sabatier, 2015).

This is first of all an ethical dilemma, since half of the world's population is now excluded from involvement in decision-making processes. Excluding this part of the population is often referred to as the glass ceiling that implies 'invisible barriers that prevent women from advancing to top management' (Festing et al., 2015, p. 56). These barriers can range from stereotyping women to discrimination against women and the main source for these barriers is caused by the conflicts between female values and the male oriented management culture, especially in the top management environment (Festing et al., 2015). Excluding these women from the decision-making process implies a lack of diversity in the board. Hence, board diversity can empower this minority that is historically excluded from engaging in powerful positions (Ujunwa, Okoyeuzu & Nwakoby, 2015).

Second, this is an economic issue, since female board members provide the firm with divergent capabilities, which might have certain consequences for the financial performance of the firm (Festing et al., 2015). The resource dependency theory provides a theoretical basis to explain this association between board diversity and firm financial performance, since the theory states that 'board members with different skills, different cultural backgrounds, different gender, among others, will act as strategic resource to the firm which may result to superior performance' (Ujunwa et al., 2015, p. 607). This suggests that a diverse board in terms of gender increases the access to a variety of beneficial resources, which might lead to a better firm performance (Randoy, Oxelheim & Thomson, 2006).

However, the academic literature that examines this association in different empirical contexts is inconclusive. For instance, some studies find a positive association between board diversity and firm financial performance (Vafaei, Ahmed & Mather, 2015; Low, Roberts & Whiting, 2015; Lückerath-Rovers, 2013; Erhardt, Werbel & Shrader, 2003; Dezso & Ross, 2012; Martin-Ugedo & Minguez-Vera, 2014) where others suggest a negative (Abdullah, Ismail & Nachum, 2016; Darmadi, 2013; Böhren & Ström, 2010; Ahern & Dittmar, 2012; Boubaker, Dang & Nguyen, 2014) or even no significant relation between the two variables (Rose, 2007; Ujunwa et al., 2015).

According to Miller & Triana (2009), these inconclusive findings could be the result of not including a moderator variable. They state that 'the lack of the main effect between gender diversity and firm performance does not necessarily mean that gender diversity does not help firms. There may be something about the firm's environment that is not set up to allow the firm to achieve the benefits of a gender diverse board' (p. 777). One possible aspect of the firm's environment that might explain the variation in the benefits of board gender diversity in terms of performance is culture (Abdullah et al., 2016). Hence, the culture of a country can explain the advantages and disadvantages of gender-diversified boards (Low et al., 2015; Schneid, Isidor, Li & Kabst, 2015) and the cultural context influence the challenges and barriers for female directors (Festing et al., 2015). Therefore, using culture as a moderator variable might explain why the studies that examine the relation between board gender diversity and firm financial performance contain inconclusive results and might provide new insights. This thesis measures culture by using four cultural dimensions of Hofstede, since these constitute the basic theoretical framework to investigate differentiation in national cultures (Carrasco, Francoeur, Labelle, Laffarga & Ruiz-Barbadillo, 2015). Although Hofstede's cultural metrics now consist of six dimensions, the literature review explains why this thesis will only focus on four dimensions.

### 1.2. Research question

This thesis aims to make sense of the inconclusive results by including a moderator variable. More specifically, the four cultural dimensions of Hofstede can be used to explain why the relation between female board members and firm financial performance might differ among countries. Therefore, this thesis examines the moderating effect of country cultural dimensions on the relation between board gender diversity and firm financial performance. In doing so, the following research question will be answered:

*How do country cultural dimensions moderate the relation between board gender diversity and firm financial performance?*

In answering this research question, the resource dependency theory is useful since it can function as the basis for explaining the relation between board gender diversity and firm financial performance. The literature review chapter explains this theory in more detail. Furthermore, this thesis uses quantitative multilevel analyses and examines interaction effects to answer this research question. The methodology chapter explains this method in more detail.

## 1.3. Relevance

### *1.3.1. Scientific relevance*

The scientific relevance of this study is twofold. First of all, this thesis aims to make sense of the inconclusive results concerning the relation between board gender diversity and firm financial performance. In doing so, this thesis complements the existing literature that examines this relation (Vafaei et al., 2015; Low et al., 2015; Ujunwa et al., 2015; Darmadi, 2013; Lückerath-Rovers, 2013; Carter, D'Souza, Simkins & Simpson., 2010; Rose, 2007) by trying to find a moderator effect that explains why the results on the relation between board gender diversity and firm financial performance differ. Since studies that examine the effect of such a moderator variable are scarce and needs more effort (Marinova, Plantenga & Remery, 2015), this thesis contributes to the academic literature.

Secondly, multi-country studies that examine the relation between female board members and the financial performance of the firm improve the understanding of board diversity (Carter et al., 2010). This suggests an increased call for more context-focused diversity research (Joshi & Roh, 2009) and more empirical and cross-country research on diversity (Labelle, Francoeur & Lakhal, 2015). Since this thesis examines the relation between board gender diversity and firm financial performance in multiple countries, this thesis contributes to the demand for more contextual and cross-country diversity research.

### *1.3.2. Practical relevance*

The practical relevance is also twofold. First of all, the results of this thesis provide insights into gender equality initiatives since blindly adopting gender equality initiatives from other countries might be inappropriate (Abdullah et al., 2016). Take, for example, the quota law in Norway. This law requires companies in the private sector to have a board that consists of at least 40% female directors (Ahern & Dittmar, 2012). By comparing the financial performance of, for example, firms in Norway with countries without gender equality initiatives, this thesis might provide insights about the effectiveness of these gender equality initiatives in terms of financial performance. In the end, gender quota for female board members may not be desirable in every country (Simpson, Carter & D'Souza, 2010).

Secondly, the results of this study can help firms in deciding on the composition of the board in their country. When firms consider to nominate female executives, the firms 'should carefully examine the level of women's involvement that is adequate for them' (Abdullah et al., 2016, p. 475). So, if this thesis concludes that the cultural dimensions of Hofstede do affect the relation between board gender diversity and firm financial performance, firms in a specific country can better support their choice for increasing or decreasing the amount of female representation in the executive board.

### 1.4. Structure

The thesis proceeds as follows. Chapter two contains an analysis of the literature on gender diversity in boards, firm financial performance, Hofstede's cultural dimensions and the relation between these concepts, followed by the development of the hypotheses. Chapter three contains the research methodology, which explains the quantitative method, sample selection, variables, proxies, measures and statistical analysis extensively. Chapter four contains the quantitative analyses, which provides insights about the relation between board gender diversity and firm financial performance, including the influence of Hofstede's cultural dimensions on this relation. Chapter five contains the conclusion that answers the research question and presents a discussion, some policy recommendations, limitations and possibilities for future research.

## CHAPTER 2 – LITERATURE REVIEW AND HYPOTHESES

This chapter elaborates the current academic literature related to this research topic. First of all, this chapter explains the term corporate boards in more detail, whereafter this chapter reviews the literature on gender diversity in these boards. Secondly, this chapter explains the relation between gender diversity in corporate boards and firm financial performance by discussing the current empirical literature. Finally, this chapter describes and explains Hofstede's cultural dimensions in more detail, including the reasoning and formulation of the hypotheses. Since this thesis uses a multilevel analysis, it develops a hypothesis for each cultural dimension and each financial performance measure separately.

### 2.1. Corporate boards

Corporate boards fulfil different responsibilities. The members of the board are connected to the environment, which results in providing the organisation with valuable information and resources. Furthermore, the board tries to coordinate and connect all the different demands and opinions of the different stakeholders that are linked to the organisation (Hung, 1998). In addition, the board tries to protect the shareholders against management that operates in their own interests (Fama & Jensen, 1983) and is responsible for formulating the strategy including improving and monitoring this strategy (Ingley & Van der Walt, 2001).

In fulfilling these responsibilities, corporate boards can have a one-tier or two-tier structure, where the legal framework that differs among countries determines this structure. For example, the United Kingdom has a one-tier structure, where the Netherlands and Denmark have a two-tier structure and Spain and France can choose between the two structures (Jungmann, 2006). The difference between these two is that the two-tier board has a separate executive and supervisory board, where the one-tier board does not have this separation (Hooghiemstra, 2012). The executive board, also known as the management board, is responsible for executing strategic tasks, which are, amongst others, resource allocation, organisational practices and environmental policies (Huse, Nielsen & Hagen, 2009; Nielsen & Huse, 2010). This management board has the highest expertise of the company, is involved in the decision making process and is responsible for the day-to-day management (Darmadi, 2013). On the other hand, the supervisory board consists of independent, outside and non-executive directors that are not employed by the company (Baysinger & Butler, 1985). The primary responsibilities of the supervisory board are supervising management performance and monitoring the compliance with laws and regulations (Carter et al., 2010). 'In addition, the supervisory board must approve the annual accounts and can intervene in cases where the company's interests are seriously affected' (Jungmann, 2006, p. 432).

In a one-tier structure, the board includes executive as well as non-executive directors in one board, where firms have the legal obligation that at least half of the board comprises of non-executive directors.

These non-executive directors are not employed by the company, but are only members of the board, where their primary responsibility is in terms of control (Jungmann, 2006). Within this one-tier structure, there is no clear distinction between the functions of the executive and non-executive directors in comparison to the two-tier structure. This makes it hard to differentiate the tasks of the executive directors from the non-executive directors (Jungmann, 2006). Therefore, another party is important, namely top management. This top management team does not have to be a member of the board of directors and is responsible for the day-to-day business, even though the managerial power belongs to the executive and non-executive directors (Jungmann, 2006). In comparison, the management board in the two-tier structure, which 'are closely aligned with the top management of the corporation' (Baysinger & Butler, 1985, p. 109), and the top management team in the one-tier structure are both responsible for the day-to-day management (Darmadi, 2013) and make the most important strategic and organizational decisions (Dezso & Ross, 2012). This suggests the comparability of these two groups. In addition, since the executive directors in a one-tier structure often only consists of the Chief Executive Officer and the Chief Financial Officer, the data on board gender diversity is scarce and cannot really represent diversity. This suggests that using the data about the top management team instead of the executive directors in the one-tier structure provides this thesis with a more representative set of data. Therefore, to compare the teams that are responsible for the day-to-day business and to have a dataset that is more representative of gender diversity, this thesis retrieves data about the composition of the management board when the country has a two-tier structure and the top management teams when the country has a one-tier structure[1].

A problem that occurs in both of these board structures is the agency problem. This arises in situations in which there is a separation of ownership and control, due to the fact that the interests of management, who are responsible for the decision-making process, are not in line with the interests of the shareholders, who are the owners of the company (Fama & Jensen, 1983). This results in the risk that management acts according to its own interest. A solution to this agency problem is board diversity. Board diversity in terms of age, ethnicity, religion and gender 'holds the potential to improve the information provided by the board due to the unique information held by diverse directors' (Carter et al., 2010, p. 398). This unique information held by the diverse directors suggest more different perspectives into the decision making process (Gul, Tsui & Srinidhi, 2011), which results in an increased understanding of the environment in which the firm operates. This increased understanding of the environment implies an increased ability to understand the needs and interests of different social groups (Hassan, Marmuthu & Johl, 2015) and in the end increases the likelihood that the board acts in the interest of the shareholders (Robinson & Dechant, 1997). Diverse boards thus reduce the agency problem, since a diverse board is more likely to act in the interest of the shareholders (Rose, 2007).

[1] References to the board include both the management board and top management teams.

One demographic characteristic is of particular interest for board diversity, namely gender. This is the result of the fact that even though there is consensus on the benefits of gender diversity, the empirical results that examine the influences of gender diversity are still inconclusive (Horwitz, 2005). Besides that, gender diversity is frequently discussed and has been the longest subject of debate in terms of board composition (Mahadeo, Soobaroyen & Hanuman, 2012), which makes the empirical literature on this topic extensive.

### 2.2. Gender diversity in corporate boards

The influence of board gender diversity in top management receives a growing attention from investors, academics, policymakers and other interest groups (Labelle et al., 2015), where new ideas on leadership, such as cohesion and social integration, results in an increased demand for female leadership and women in management (Alvesson & Billing, 1997). In the end, female representation implies gender diversity and can improve board efficiency (Labelle et al., 2015).

However, this demand for female representation in top management has not always been the case. In the past, boards were relatively homogeneous, which implies that its members had a similar educational and socioeconomic background (Westphal & Milton, 2000) and the same demographic characteristics, such as gender. This desire for homogeneity in terms of gender could have emerged due to the inequalities and injustices in society and organisations, or could have been caused by the lack of females with the right qualifications that were demanded by organisations (Alvesson & Billing, 1997).

In the present, this desire for homogeneous boards is changed, where female representation in corporate boards increases and board gender diversity gains growing attention in the academic literature (Mahadeo et al., 2012; Ferreira, 2010; Syed & Murray, 2008). The focus on gender diversity is unavoidable, since the economic environment becomes more multicultural and gender sensitive, where organisations need to respond to this diversity perspective of the society (Van der Walt & Ingley, 2003). Since both masculine and feminine elements are desirable (Hofstede et al., 1998), this gender diversity in the board is a balance between male and female board members and does not suggests the presence of only female board members (Campbell & Minguez-Vera, 2008). Due to this focus on gender diversity, this thesis measures board gender diversity by the percentage of female board members and not the presence or number of female board members. Such a percentage better reflects gender diversity, since it is a better representation of male as well as female directors (Martin-Ugedo & Minguez-Vera, 2014). Besides, Carter et al. (2010) states that earlier empirical research uses the percentage of female board members as an independent variable. Hence, the percentage of female board members seems the best proxy in terms of board gender diversity.

Within this diversity perspective, the resource dependency theory provides theoretical arguments to support this balance between male and female directors. The theory assumes that organisations do not have the capacity to produce everything internally, which means that they are dependent on interactions with their environment to acquire these goods and services (Pearce & Zahra, 1992). The primary benefits of these interactions with the environment are the 'provision of resources such as information and expertise, creation of channels of communication with constituents of importance to the firm, provisions of commitments of support from important organisations or groups in the external environment and creation of legitimacy for the firm in the external environment' (Carter et al., 2010, p. 398). In achieving these benefits, the board provides the link between the firm and the external resources that the firm needs for the most optimal performance (Ujunwa et al., 2015). When this board is diversified in terms of gender, it produces unique information that influences the decision-making process (Carter et al., 2010). More specifically, including female board members increases the access to critical resources (Boubaker et al., 2014) such as partners, suppliers, capital and customers (Randoy et al., 2006). 'As a result, a more gender diverse board will provide more valuable resources, which should produce better firm performance (Carter et al., 2010, p. 398).

Hence, even though the results in the academic literature are mixed, this theory suggests that gender diversity provides advantages for the firm. Other advantages of board diversity are that, first of all, females contribute to organisations since female board members possess complementary qualifications in terms of managerial practices. This implies that females should not adapt to the male-dominant organisational culture (Alvesson & Billing, 1997). Second, both male and female experience life differently (Ferreira, 2010) due to differing values and beliefs (Alvesson & Billing, 1997). This suggests that both have a different perspective on problems (Carter et al., 2010) and, in the end, promotes the functional ability in terms of problem solving and monitoring (Ujunwa et al., 2015), decrease the chance of group thinking, increases creativity and improves board discussion (Gul et al., 2011). Third, including female board members show that the firms wants to promote minority workers by increasing their career opportunities. This can positively influence the reputation of the firm, since paying attention to gender diversity in the board can change the view of the public, media and government (Ferreira, 2010) and can affect customer behaviour (Smith, Smith & Verner, 2005). Fourth, gender diversity is related to the corporate governance of the firm. Namely, female board members have a higher compliance rate for financial reporting and regulation guidance (Barua, Davidson, Rama & Thiruvadi, 2010). Furthermore, they have an increased diligence, independency (Simpson et al., 2010) and have a higher level of commitment and legitimacy (Gul et al., 2011), which increases the control effectiveness of the board. Finally, board diversity leads to more innovation (Robinson & Dechant, 1997) and increases the achievement of company objectives (Erhardt et al., 2003; Adams & Ferreira, 2009; Terjesen, Sealy & Sign, 2009; Huse et al., 2009; Nielsen & Huse, 2010).

However, board diversity also brings costs in terms of effective and efficient decision-making processes (Randoy et al., 2006; Sabatier, 2015), which implies that gender diversity also has its disadvantages. First of all, gender diversity can lead to conflicts in terms of leadership and communication (Ferreira, 2010). Female board members are more transformational and people oriented and score higher on empathy, where male board members are more oriented on competition, assertiveness and success (Syed & Murray, 2008). This might cause conflicts in terms of strategy and management style. Second, the resource allocation of the firm could be harmed, due to a less cooperative environment (Williams & O'Reilly, 1998; Dwyer, Ricardo & Chadwick, 2003) and an increased variety of professional interest (Ferreira, 2010). Finally, it seems that including both male and female board members causes a slower response to competitor's initiatives and decreases the efficiency when taking actions (Erhardt, 2003).

### 2.3. Gender diversity and firm financial performance

Hence, gender diversity provides advantages as well as disadvantages, especially in terms of the long-term performance of the firm (Murray, 1989). These advantages and disadvantages are consistent with the empirical studies conducted in different countries, since the obtained results imply positive as well as negative relations between gender diversity and firm financial performance. However, these opposite results, including the studies that do not find significant results, makes it hard to draw general conclusions about the association between female board members and firm financial performance in organisations, where the majority of the studies measures financial performance by Return on Assets (ROA) and Return on Equity (ROE), which are accounting-based measures (Vafaei et al., 2015) or Tobin's Q, which is a market-based measure. ROA indicates 'the ability of the firm to produce accounting based revenues in excess of actual expenses form a given portfolio of assets measured as amortized historical costs' (Carter et al., 2010, p. 403) and provides insights into the ability of management to perform well with the given resources (Dharmadasa, Gamage & Herath, 2014). ROE indicates the profitability for the providers of equity capital (Bodie, Kane & Marcus, 2008). Both represent the past performance of the firm (Campbell & Minguez-Vera, 2008). Tobin's Q indicates the ability of the firm to generate shareholder wealth (Rose, 2007) and focuses on the future performance of the firm (Campbell & Minguez-Vera, 2008). Tobin's Q is a useful addition to the accounting based measures ROA and ROE, since it reflects the market's expectations in terms of competitive advantages of the company (Campbell & Minquez-Vera, 2008) and ROA and ROE 'are sensitive to management's choice of asset valuation principles' (Rose, 2007, p. 409).

The next section analyses the empirical studies that use these three financial measures to examine the relation between board gender diversity and firm financial performance. In doing so, this section provides an overview of the inconclusive results when comparing the studies that are conducted in different countries.

*Review empirical literature*

First of all, some studies suggest a positive association between female board members and financial performance. A study in Australia, where financial performance is measured by ROA, ROE and Tobin's Q, concludes that there is a positive relation between board gender diversity and the financial performance on all three of the measures (Vafaei et al., 2015). When examining this relation in the United States, studies find a positive association between female representation in the board and financial performance in terms of ROA and Tobin's Q (Erhardt et al., 2003; Dezso & Ross, 2012). A study in Spain also finds a positive and significant relation between board gender diversity and financial performance measured by ROA (Martin-Ugedo & Minguez-Vera, 2014). Besides ROA and Tobin's Q, studies use ROE as a measure for firm financial performance. When using ROE, studies in the Netherlands, Hong Kong, Malaysia and Singapore find a positive association between board gender diversity and the financial performance (Lückerath-Rovers, 2011; Low et al., 2015). Hence, studies in Australia, the United States, Spain, the Netherlands, Hong Kong, Malaysia and Singapore suggest that there is a positive association between board gender diversity and the financial performance of a firm.

Secondly, some studies find a negative association between board gender diversity and firm financial performance. Research in Malaysia finds contrasting results, where the study finds a positive association when using ROA as a financial performance measure, but finds a negative and significant association when using Tobin's Q as a measure for financial performance (Abdullah et al., 2016). For Indonesia and Norway, the association between board gender diversity and financial performance is also negative in terms of ROA and Tobin's Q (Darmadi, 2013; Böhren & Ström, 2010; Ahern & Dittmar, 2012). In addition, South Korea experiences a negative association between board gender diversity and ROE (Low et al., 2015) and research in France also finds this negative association when performance is measured by Tobin's Q (Boubaker et al., 2014). Hence, studies in Malaysia, Indonesia, Norway, South Korea and France imply that there is a negative association between board gender diversity and the financial performance of a firm.

Finally, some studies do not find a positive nor a negative significant association between board gender diversity and firm financial performance. Hence, studies in Denmark and Nigeria find no significant relation when using ROA and Tobin's Q as measures for financial performance (Rose, 2007; Ujunwa et al., 2012).

When analysing the literature on the relation between board gender diversity and firm financial performance, three possibilities arise, namely a positive relation, a negative relation or no relation between the two variables. There are several possible explanations for these inconclusive results. For instance, the relation between gender diversity and financial performance might be influenced by other aspects of the board, such as age and nationality or depend on the legal and cultural context. On the

other hand, the relation between board gender diversity and firm financial performance can be influence by the methodologies of the studies (Randoy et al., 2006). This implies that the industry, sample firms and time periods differ among the studies, which might explain the contradicted findings. This thesis controls for these methodological differences by including certain control variables as chapter three explains in more detail.

This thesis aims to find its own explanation for these inconclusive results on how board gender diversity is or is not related to the performance of the firm by examining intervening processes in terms of moderator variables (Miller & Triana, 2009). Analysing the empirical studies that have already been conducted, the results differ among countries, which makes it interesting to look at how country differences explain the divergent results in terms of the relation between board gender diversity and firm financial performance. Besides, including different countries is interesting, because the business world is becoming more international and global (Hofstede & Bond, 1991). Hence, investigating the relation by taking into account country differences might explain why firms in certain countries do experience a positive association between board gender diversity and financial performance, where others do not experience this positive association, and can explain that the diversity-performance link depends on the context (Dwyer et al., 2003).

As discussed above, it seems that countries in which organisations are located can be important for realising the benefits of a gender diversified board (Miller & Triana, 2009). More specifically, the culture in a country might explain the variation in the benefits of board gender diversity in terms of performance (Abdullah et al., 2016). In addition, Low et al. (2015) suggest that the culture of a country influence the benefits of gender-diversified boards, Festing et al. (2015) suggest that challenges and barriers for female executives are dependent on a cultural approach and are contingent on the cultural context and Schneid et al. (2015) conclude that the association between gender diversity and performance differs among cultures. Hence, using culture to explain the variance of the relation between female board members and financial performance might explain the inconclusive results in the academic literature. Some studies already examine this influence of culture on the relation between board gender diversity and firm financial performance. For example, studies investigate the influence of regulation (Labelle et al., 2015) gender egalitarianism, which refers to 'the degree to which a society minimizes gender-role differences while promoting gender equality' (Schneid et al., 2015, p. 737), collectivism, which means a 'pattern consisting of closely linked individuals' (Schneid et al., 2015, p. 739) and masculinity, which implies a male dominated culture, where female workers are perceived as negative (Kim, Lee & Kim, 2015). These studies show that culture might moderate the relation between female board members and financial performance, which is elaborated in more detail in the next paragraph. One way to identify this culture is by using Hofstede's cultural dimensions that distinguish national cultures and have implications for management processes and organisations (Hofstede, 2001).

### 2.4. Hofstede's cultural dimensions and hypotheses development

Culture 'is the collective programming of the mind which distinguishes the members of one groups or society from those of another' (Hofstede, 1984, p. 82). It consists of patters of thinking and reflects the meaning that people give to aspects in life (Hofstede, 1984). Culture influences individual behaviour in everyday life and creates social roles and stereotypes (Carrasco et al., 2015). One way to identify this culture is via Hofstede's cultural dimensions. These six value dimensions provide insight into the cultural systems of countries and can explain cultural differences (Pheng & Yuquan, 2002).

The first dimension is **large versus small power distance,** where the large power distance society is hierarchical and where everyone knows his or her place, and the small power distance society strives for power equalisation (Hofstede, 1984). This dimension is associated with human inequality in society (Hofstede et al., 1998) and measures to what extent the less powerful individuals within organisations perceive and accept power as unequally distributed (De Jong, 2009). An unequal distribution of power implies a large power distance, where subordinates expect to be told what to do and where people are more eager to obey the rules which tell them what to do (Hofstede, 2011). These rules that tell people what to do indicate a regulatory environment, where such a regulatory environment negatively moderates the relation between board gender diversity and firm financial performance (Labelle et al., 2015). This regulatory environment implies a society with a large power distance. Therefore, a society that is characterised by a large power distance could negatively moderate the association between board gender diversity and firm financial performance. Hence, the hypotheses are as follows:

| Small Power Distance | Large Power Distance |
|---|---|
| Use of power should be legitimate and is subject to criteria of good and evil | Power is a basic fact of society antedating good or evil: its legitimacy is irrelevant |
| Parents treat children as equals | Parents teach children obedience |
| Older people are neither respected nor feared | Older people are both respected and feared |
| Student-centered education | Teacher-centered education |
| Hierarchy means inequality of roles, established for convenience | Hierarchy means existential inequality |
| Subordinates expect to be consulted | Subordinates expect to be told what to do |
| Pluralist governments based on majority vote and changed peacefully | Autocratic governments based on co-optation and changed by revolution |
| Corruption rare; scandals end political careers | Corruption frequent; scandals are covered up |
| Income distribution in society rather even | Income distribution in society very uneven |
| Religions stressing equality of believers | Religions with a hierarchy of priests |

Table 1: differences between small and large power distance (Hofstede, 2011, p. 9)

*H1a: Power distance negatively moderates the relation between board gender diversity and ROA*
*H1b: Power distance negatively moderates the relation between board gender diversity and ROE*
*H1c: Power distance negatively moderates the relation between board gender diversity and Tobin's Q*

Secondly, Hofstede distinguishes **individualism versus collectivism.** Individualism suggests that individuals in society only take care of themselves, where they have a self-concept of I. On the other hand, collectivism focuses on a tight social framework, where everyone looks after each other and the self-concept is We (Hofstede, 1984). This dimension is associated with the cohesiveness of society (Hofstede et al., 1998) and measures the extent to which society obliges its members to look after themselves or the extent to which society integrates its members into groups (De Jong, 2009). Within the collectivistic society, there is a classification of in- and out-group members, where the in-group members determine the opinions and votes (Hofstede, 2011). Since this dimension correlates with gender (Watkins et al., 1998), this might classify board members form a different sex, in this case women, as the out-group members, were there is a negative bias against outsiders in a collectivistic society (Schneid et al., 2015). This negative bias weakens the association between female board members and firm financial performance (Schneid et al., 2015). Therefore, collectivism could negatively moderate the relation between board gender diversity and firm financial performance (Schneid et al., 2015). Since the cultural dimension reflects the level of individualism, this thesis expects a positive influence when individualism is dominant. Hence, the hypotheses are as follows:

| Individualism | Collectivism |
|---|---|
| Everyone is supposed to take care of him- or herself and his or her immediate family only | People are born into extended families or clans which protect them in exchange for loyalty |
| "I" – consciousness | "We" –consciousness |
| Right of privacy | Stress on belonging |
| Speaking one's mind is healthy | Harmony should always be maintained |
| Others classified as individuals | Others classified as in-group or out-group |
| Personal opinion expected: one person one vote | Opinions and votes predetermined by in-group |
| Transgression of norms leads to guilt feelings | Transgression of norms leads to shame feelings |
| Languages in which the word "I" is indispensable | Languages in which the word "I" is avoided |
| Purpose of education is learning how to learn | Purpose of education is learning how to do |
| Task prevails over relationship | Relationship prevails over task |

Table 2: differences between individualism and collectivism (Hofstede, 2011, p. 11).

*H2a: Individualism positively moderates the relation between board gender diversity and ROA*
*H2b: Individualism positively moderates the relation between board gender diversity and ROE*
*H2c: Individualism positively moderates the relation between board gender diversity and Tobin's Q*

Thirdly, a distinction is made between **strong versus weak uncertainty avoidance**. Strong uncertainty avoidance means that the society is based on rigid codes of belief and behaviour and does not support diversity within the population of the society. Weak uncertainty avoidance on the other hand is more flexible in terms of diversity and has a higher focus on practice instead of principles (Hofstede, 1984). This third dimensions is associated with the unpredictability of the future (Hofstede et al., 1998), measures whether individuals feel comfortable or uncomfortable in unstructured situations and is focused on the extent to which countries try to control the uncontrollable (De Jong, 2009). Controlling the uncontrollable indicates a strong intolerance for deviant ideas and a strong belief that what is different is dangerous. This intolerance and belief causes a society to be oriented towards traditional

roles and social codes to reduce the level of uncertainty (Hofstede & Bond, 1984). A study implies that when there is such a focus on traditional social roles and responsibilities in terms of home and family duties for women, there are more biases against women and the environment is less collaborative, which weakens the relation between gender diversity and performance (Schneid et al., 2015). This focus on traditional social roles and responsibilities implies a society with strong uncertainty avoidance. Therefore, a society that is characterised by strong uncertainty avoidance could negatively moderate the association between board gender diversity and firm financial performance. Hence, the hypotheses are as follows:

| Weak Uncertainty Avoidance | Strong Uncertainty Avoidance |
|---|---|
| The uncertainty inherent in life is accepted and each day is taken as it comes | The uncertainty inherent in life is felt as a continuous threat that must be fought |
| Ease, lower stress, self-control, low anxiety | Higher stress, emotionality, anxiety, neuroticism |
| Higher scores on subjective health and well-being | Lower scores on subjective health and well-being |
| Tolerance of deviant persons and ideas: what is different is curious | Intolerance of deviant persons and ideas: what is different is dangerous |
| Comfortable with ambiguity and chaos | Need for clarity and structure |
| Teachers may say 'I don't know' | Teachers supposed to have all the answers |
| Changing jobs no problem | Staying in jobs even if disliked |
| Dislike of rules - written or unwritten | Emotional need for rules – even if not obeyed |
| In politics, citizens feel and are seen as competent towards authorities | In politics, citizens feel and are seen as incompetent towards authorities |
| In religion, philosophy and science: relativism and empiricism | In religion, philosophy and science: belief in ultimate truths and grand theories |

Table 3: differences between weak and strong uncertainty avoidance (Hofstede, 2011, p. 10).

*H3a: Uncertainty avoidance negatively moderates the relation between board gender diversity and ROA*
*H3b: Uncertainty avoidance negatively moderates the relation between board gender diversity and ROE*
*H3c: Uncertainty avoidance negatively moderates the relation between board gender diversity and Tobin's Q*

The fourth dimension is **masculinity versus femininity.** In a masculine society, achievement, heroism, assertiveness and material success are central. On the other hand, a feminine society values relations, modesty and caring (Hofstede, 1984). This dimension is linked to the duality of male versus female (Hofstede et al., 1998) and makes a distinction between achievement and success and taking care of others (De Jong, 2009). This distinction between achievement and success and taking care of others suggests the distinction between work and family. In a masculine society, work prevails over family and a feminine society requires a balance between work and family (Hofstede, 2011). This balance between work and family might suggest the demand for family-work programs. In a masculine society that prevails work over family, the demand for family-work programs is scarce. Hence, when these family-work programs become scarce, organisations appear to be unsupportive of gender diversity, which can result in job dissatisfaction and negative behaviour, and in the end weakens the relation between gender diversity and performance (Ali, Metz & Kulik, 2015). Therefore, a masculine society could negatively moderate the relation between board gender diversity and firm financial performance. Besides,

organisations in male-dominated contexts experience a negative association between gender diversity and performance. A possible explanation for this might be that females in a male-dominated context experience negative stereotyping, which decreases the financial performance (Joshi & Roh, 2009). Hence, the hypotheses are as follows:

| Femininity | Masculinity |
|---|---|
| Minimum emotional and social role differentiation between the genders | Maximum emotional and social role differentiation between the genders |
| Men and women should be modest and caring | Men should be and women may be assertive and ambitious |
| Balance between family and work | Work prevails over family |
| Sympathy for the weak | Admiration for the strong |
| Both fathers and mothers deal with facts and feelings | Fathers deal with facts, mothers with feelings |
| Both boys and girls may cry but neither should fight | Girls cry, boys don't; boys should fight back, girls shouldn't fight |
| Mothers decide on number of children | Fathers decide on family size |
| Many women in elected political positions | Few women in elected political positions |
| Religion focuses on fellow human beings | Religion focuses on God or gods |
| Matter-of-fact attitudes about sexuality; sex is a way of relating | Moralistic attitudes about sexuality; sex is a way of performing |

Table 4: differences between femininity and masculinity (Hofstede, 2011, p. 12).

*H4a: Masculinity negatively moderates the relation between board gender diversity and ROA*
*H4b: Masculinity negatively moderates the relation between board gender diversity and ROE*
*H4c: Masculinity negatively moderates the relation between board gender diversity and Tobin's Q*

The fifth dimension is **long-term versus short-term orientation,** which is 'related to the choice of focus for people's efforts: the future or the present and past' (Hofstede, 2011, p. 8). Values associated with the long-term orientation are assertiveness, thrift and status. On the other hand, a short-term orientation values social obligations, traditions and personal stability (Hofstede, 2011). This dimension strongly relates to economic growth (Tang & Koveos, 2008) and is associated with choosing between virtue and truth (Hofstede et al., 1998).

| Short-Term Orientation | Long-Term Orientation |
|---|---|
| Most important events in life occurred in the past or take place now | Most important events in life will occur in the future |
| Personal steadiness and stability: a good person is always the same | A good person adapts to the circumstances |
| There are universal guidelines about what is good and evil | What is good and evil depends upon the circumstances |
| Traditions are sacrosanct | Traditions are adaptable to changed circumstances |
| Family life guided by imperatives | Family life guided by shared tasks |
| Supposed to be proud of one's country | Trying to learn from other countries |
| Service to others is an important goal | Thrift and perseverance are important goals |
| Social spending and consumption | Large savings quote, funds available for investment |
| Students attribute success and failure to luck | Students attribute success to effort and failure to lack of effort |
| Slow or no economic growth of poor countries | Fast economic growth of countries up till a level of prosperity |

Table 5: differences between short-term and long-term orientation (Hofstede, 2011, p. 15).

Since this dimension contains several limitations, as discussed at the bottom of page 21, this thesis does not use this dimension and will not formulate hypotheses.

The final dimension is **indulgence versus restrained,** which is based on the literature of happiness economics and is complementary to the fifth dimension, long-term versus short-term orientation. When a society is dominated by indulgence, it is focused on the free gratification of basic human needs in terms of enjoying life and having fun. The opposite is visible when the society is restrained, where it controls gratification of human needs and uses strict social norms to regulate (Hofstede, 2011).

| Indulgence | Restrained |
|---|---|
| Higher percentage of people declaring themselves very happy | Fewer very happy people |
| A perception of personal life control | A perception of helplessness: what happens to me is not my own doing |
| Freedom of speech seen as important | Freedom of speech is not a primary concern |
| Higher importance of leisure | Lower importance of leisure |
| More likely to remember positive emotions | Less likely to remember positive emotions |
| In countries with educated populations, higher birthrates | In countries with educated populations, lower birthrates |
| More people actively involved in sports | Fewer people actively involved in sports |
| In countries with enough food, higher percentages of obese people | In countries with enough food, fewer obese people |
| In wealthy countries, lenient sexual norms | In wealthy countries, stricter sexual norms |
| Maintaining order in the nation is not given a high priority | Higher number of police officers per 100,000 population |

Table 6: differences between indulgence and restrained (Hofstede, 2011, p. 16).

Since this dimension contains several limitations, as discussed below, this thesis does not use this dimension and will not formulate hypotheses.

This thesis only uses four of the six dimensions and does so for several reasons. First of all, there is a lack of empirical studies on the last two dimensions, long-term versus short-term orientation and indulgence. This is the result of the lack of understanding the dimensions, since they are based on speculations and are difficult to apply (Fang, 2003). For the fifth dimension, long-term versus short-term orientation, only a few studies include this dimension due to poor reliability (Beugelsdijk, Maseland & Van Hoorn, 2015). A possible explanation for this can be that this dimension is based on Chinese data, which is very different from the data of the four other dimensions that is retrieved from the Western world. Secondly, there seem to be a philosophical flaw in the fifth dimension. This philosophical flaw is caused by the fact that the Chinese values that are the basis of the fifth dimension are not necessarily short-term and negatively oriented or long-term and positively oriented, but can be both (Fang, 2003). This suggests that determining the characteristics for the short-term or long-term orientation becomes difficult. Third, the fifth dimension is conceptualised via factor analysis, which is different from the methodology used to conceptualise the first four dimensions. Hence, the usefulness and relevance of the fifth dimension for cross-cultural research can be questioned (Fang, 2003). Since the sixth dimension, indulgence, is complementary and correlates with this fifth questionable dimension (Hofstede, 2011), the validation and reliability of this dimension might be questioned as well. Finally, both dimensions are added in addition to the first four and are based on the World Values Survey, whereas the other four dimensions are based on International Business Machine (IBM) (Beugelsdijk et al., 2015). Using another survey implies different questions and different standards, which makes it difficult to compare long-term versus short-term orientation and indulgence with the other four cultural dimensions.

## CHAPTER 3 – RESEARCH METHODOLOGY

### 3.1. Sample

The sample of the thesis consists of the countries where the direct relation between board gender diversity and firm financial performance already has been studied. Using these countries in the analysis is caused by the fact that the studies within these countries provide the basis of the research problem, where this thesis in the end aims to making sense of the inconclusive results among these different studies. The countries are Australia, the United States, the Netherlands, Hong Kong, Singapore, Denmark, Spain, Norway, France, South Korea, Malaysia, Indonesia and Nigeria. Within these 13 countries, this thesis includes only listed companies that are statutory domiciled in the country of origin (Lückerath-Rovers, 2013). This is caused by the fact that a firm statutory domiciled in another country influences the results (Lückerath-Rovers, 2013) and that listed companies are obliged to report on their financial information, which makes it easier to retrieve the required data about the financial performance. All data is retrieved from Thomson One (2016).

The national stock exchanges used are the Australian Security Exchange (Vafaei et al., 2015), New York Stock Exchange, Amsterdam Euronext Stock Exchange (AEX, AMX, ASCX) (Lückerath-Rovers, 2013), Hong Kong Stock Exchange, Singapore Exchange (Low et al., 2013), Copenhagen Stock Exchange (Rose, 2007), Mercado Continuo Espanol, the Oslo Stock Exchange, Euronext Paris, Korea Exchange, Bursa Malaysia (Low et al., 2015), Indonesia Stock Exchange (Darmadi, 2013) and Nigerian Stock Exchange (Ujunwa et al., 2015). This thesis imports these stock exchanges together with the specific country codes from the 13 countries into Thomson One, which results in a sample of around 7000 firms. Since obtaining the data is done manually, only looking at the listing status of the company's results in a sample that is too big to conduct this thesis in the given amount of time. Therefore, this thesis needs to reduce the sample.

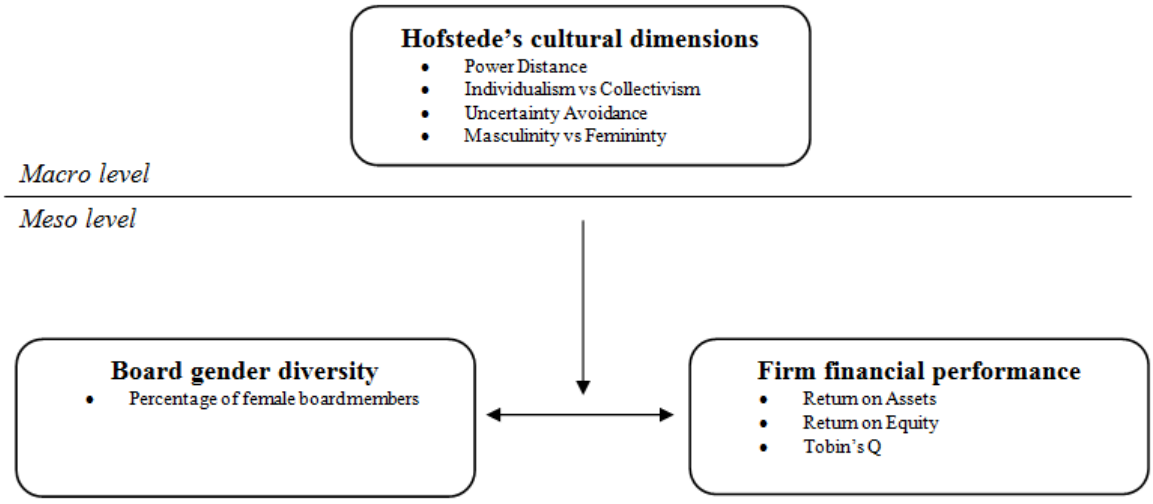
The criteria to reduce the sample is based on the studies by Vafaei et al. (2015), Boubaker et al. (2014) and Hassan et al. (2015) who use the current market capitalisation. This data is retrieved from Thomson One (2016). Using this criteria might suggest a bias in the sample, since the sample only includes firms with a high level of market capitalisation. However, when looking at ROA, ROE and Tobin's Q, a firm with a higher level of market capitalisation does not necessarily mean a higher level of these ratios. For example, the firm with the highest level of market capitalisation in France, has lower financial ratios than the firm that is ranked 17$^{th}$. Hence, using market capitalisation should not cause a bias in the sample in terms of including only high performing firms. The choice to use the current market capitalisation and not a set amount of for example net income or market value, is caused by the fact that such a set amount results in a very skewed distribution of firms within one country. When taking for example a

net income of 500 million, the total number of firms for the United States will be 282, while Denmark only has five companies with a net income above 500 million dollar. Due to this asymmetry, the fact that all data is retrieved manually and the fact that no clear rules of thumb in terms of sample size exists for multilevel analyses that are used (Field, 2009), this thesis reduces the sample to 20 firms per country which is in line with the example of Verboon & Peels (2014) that use 20 individuals per group. This results in a total sample of 260 firm. Although this is quite small, a small sample can be very useful in providing generalizable information about this specific sample (Ali et al., 2015). Appendix 1 provides an overview of the sample.

Due to the specific accounting rules in the financial services sector, the sample does not contain any firms in this financial services sector, which are characterised by an industry SIC code between 6000 and 6999, (Boubaker et al., 2014; Rose, 2007; Hassan et al., 2015). Since the information asymmetry problem in the financial services industry is different from other industries, there is a request for other accounting information, which results in differing accounting rules. Besides that, the accruals in the financial services industry, such as loan loss provisions, can be isolated and modelled individually (Beatty & Liao, 2014), which is a different accounting method.

### 3.2. Operationalisation of measurements

The conceptualisation of the thesis is as follows:




#### *3.2.1. Dependent variables*

The dependent variable in this conceptual model is firm financial performance, where this thesis uses the proxies ROA, ROE and Tobin's Q. **ROA** is measured by dividing operating earnings by total assets (Vafaei et al., 2015). **ROE** is determined by dividing net profit after tax and before abnormal earnings by shareholders' equity (Vafaei et al., 2015). **Tobin's Q** is measured by dividing the sum of the market value of equity and the book value of liabilities by the book value of total assets, where a ratio of 1.0 or higher means an effective utilisation of available resources (Campbell & Minguez-Vera, 2008) and

implies strong advantages for the company (Vafaei et al., 2015; Rose, 2007). The ratio's ROA and ROE and the different values to calculate Tobin's Q per company can be retrieved from Thomson One (2016), where a higher ratio suggests a better performance. Including these three different measures for firm financial performance provides a broad picture of the financial performance of the firm since this thesis uses both accounting- as well as market-based measures.

**Table 8**
*Panel A. Dependent variables*

| Variables | Proxy | Measurement |
|---|---|---|
| PERFORMANCE | *Return on Assets* | Operating earnings divided by total assets (accounting-based). |
| | *Return on Equity* | Net profit after tax before abnormals divided by shareholders' equity (accounting-based). |
| | *Tobin's Q* | Market value of equity plus book value of debt divided by book value of total assets (market-based). |

*3.2.2. Independent variable*

The independent variable of the thesis is board gender diversity. The proxy of this variable is the **percentage of female board members**. This is calculated by dividing the number of female board members by the total number of board members (Darmadi, 2013).

To determine the total number of board members, this thesis, as mentioned in paragraph 2.1, uses the composition of the executive board when the country has a two-tier structure and uses the top management teams when the country has a one-tier structure. In doing so, this thesis is able to compare the two groups that are responsible for the day-to-day businesses, even when the legal structure differs. To determine the percentage of female board members, this thesis uses the photographs or prefix Mr., Ms. And Mrs. in the annual reports of the companies to identify whether the board member is male or female. The thesis retrieves this data manually.

**Table 8**
*Panel B. Independent variable*

| Variables | Proxy | Measurement |
|---|---|---|
| GENDER_DIVERSITY | *Female participants in the executive board* | Percentage of female board members (number of female members divided by the total of the executive board members). |

*3.2.3. Moderator variables*

This thesis investigates the influence of a moderator variable. These moderator variables consist of the four cultural dimensions of Hofstede, namely power distance, individualism versus collectivism, uncertainty avoidance and masculinity versus femininity. The scores on these dimensions are based on the answers on surveys provided by employees of International Business Machine (IBM) corporation, where answers were represented on a scale from one to five. The mean scores on questions related to one of the dimensions resulted in an index score for the country (Hofstede, Hofstede & Minkov, 2010). These index scores can have a value between one and 100, where a score above 50 suggests a high score and a score below 50 suggests a low score. For **power distance**, the higher the value, the more hierarchical the society. For **individualism**, a high value suggests individuals who only focus on taking care of themselves, where a value below 50 suggests taking care of others and loyally, also known as a collectivistic society, and a value of 45 suggests a less collectivistic society than a value of 25 (The Hofstede Centre, 2016). For **uncertainty avoidance**, the higher the value, the more the need for rules and legal systems to control the future. For **masculinity**, a high value suggests a competitive and success oriented society, where a score below 50 suggests a cooperative and modest oriented society, also known as a feminine society, and a score of 45 suggests a less feminine society than a score of 25 (The Hofstede Centre, 2016). These scores are retrieved from The Hofstede Centre (2016).

**Table 8**
*Panel C. Moderator variables*

| Variables | Proxy | Measurement |
|---|---|---|
| CULTURAL_DIMENSIONS | *Power distance* | Power distance index number |
| | *Individualism* | Individualism index number |
| | *Uncertainty avoidance* | Uncertainty avoidance index number |
| | *Masculinity* | Masculinity index number |

*3.2.4. Control variables*

This thesis adds variables to control for other factors that can influence the financial performance of the sample firms. In doing so, this thesis is able to measure the relation between the dependent and independent variable more precisely, without the influence of other context factors. The first control variable is **industry**, since the relation between board diversity and financial performance can differ between manufacturing and service industries. The distinction between these industries is based on the Standard Industrial Classification (SIC) codes (Ali et al., 2015), which can be retrieved from Thomson One. Appendix 1 provides an overview of the distinction between manufacturing and service industries. This thesis uses a dummy variable for this control variable, where manufacturing firms are one and service firms are zero. The second control variable is the **age of the firm**, since research suggests that young firms are more profitable than old firms and have only limited bureaucratic processes (Martin-Ugedo & Minquez-Vera, 2014). This control variable uses the number of years since the firm was

founded and retrieves the data from the corporate website and annual report. The third control variable is **board size.** The literature states that board size and Tobin's Q are related, since larger boards provide more information due to the greater amount of knowledge they possess, which in the end can increase the performance (Carter et al., 2010) and that the probability of female representation increases when boards are larger (Dezso & Ross, 2012). However, a lager board can also decrease the performance due to conflicts and a lower level of group cohesion (Labelle et al., 2015). This control variable uses the number of members in the board and retrieves the data from the annual reports of the firms. The fourth control variable is **leverage**. A study suggests that leverage is negatively associated with Tobin's Q, since 'rich firms have more capacity to make regular debt payments' (Dezso & Ross, 2012, p. 1080). This control variable measures leverage by the Debt to Equity ratio and uses Thomson One to retrieve the data. The fifth control variable is **firm size**. Larger firms can attract external capital more easily, which increases their profits or decreases the profits when there is a high level of information asymmetry (Labelle et al., 2015). This control variable uses the total assets of the firms (Carter et al., 2010; Labelle et al., 2015; Vafaei et al., 2015; Ali et al., 2015) and uses Thomson One to retrieve the data. The sixth control variable is the female **Labour Force Participation (LFP).** This variable is relevant, because, if the female LFP is high, the number of females to choose from is also higher which might influence the level of gender diversity in the board. Besides, there seems to be a positive association between the female LFP and the economic development of a country and female LFP is related to the culture in an organisation (Clark, Ramsbey & Adler, 1991). This variable controls for the differences in the economic environment of the countries and uses The World Bank (2016) website to retrieve the data. The last control variable is **Gross Domestic Product (GDP)** in 2015, due to significant association between the cultural dimensions individualism versus collectivism and power distance and GDP per capita (Tang & Koveos, 2008). In addition, GDP is related the economy of a specific country and thus implies the financial health of the firms (Rajewski, 1994). This variables makes it possible to control for the difference between developed and developing countries in terms of differences in the economic environment, which is relevant for cross-country research (De Jong, 2009). The World Bank (2016) website is used to retrieve the data.

**Table 8**
*Panel D. Control variables*

| Variables | Proxy | Measurement |
|---|---|---|
| INDUSTRY | *Industry* | Based on SIC code |
| FIRM_AGE | *How long the firms exists* | Number of years since the firm was founded |
| BOARD_SIZE | *Board size* | Total number of board members |
| LEVERAGE | *Debt to Equity ratio* | Total debt divided by total equity |
| FIRM_SIZE | *Size of the firm* | Total assets in billions |
| LFP | *Labour Force Participation* | Percentage of female participation in the labour market |
| GDP | *Gross Domestic Product* | GDP per country in billions |

### 3.3. Statistical analysis

This thesis uses multilevel regression analyses to examine the relation between the variables. These analyses are used when some variables are clustered in other variables (Field, 2009). This thesis clusters the variables on the meso level, the percentage of female board members and firm financial performance, into different countries at the macro level, characterised by Hofstede's cultural dimensions. By using this multilevel method, this thesis allows the model that investigates the relation between board gender diversity and firm financial performance to vary among the different countries (Field, 2009). In doing so, this thesis only focuses on the board composition and the financial performance in the year 2015. The reasons for using the data of one financial year is, first of all, to be able to conduct the thesis in the given amount of time and second of all, the macro-culture in which a company operates is very hard to change (Calori & Sarnin, 1991), which makes it less relevant to include multiple years to investigate the influence of culture on the relation between board diversity and financial performance.

In doing so, the multilevel analysis consists of different subsequent steps. The first step is including the control variables, industry, firm age, board size, leverage, firm size, LFP and GDP, to see the association between these variables and the dependent variable. The second step is adding the independent variable, the percentage of female board members, into the model. The third step consists of including the cultural dimensions as a moderator variable by adding interaction effects into the model. These interaction effects means including interaction variables that are the multiplication of the independent variable and the moderator variables (Cohen, Cohen, West & Aiken, 2003). This thesis tests all moderator variables separately in order to study the main effects of each cultural dimension.

However, before performing this third step, two actions need to be undertaken. The first action consists of centring the variables percentage of female board members and the four cultural dimensions. 'Centring refers to the process of transforming a variable into deviations around a fixed point' (Field, 2009, p. 740). Centring variables is done by subtracting the mean value from all scores (Field, 2009) and is important, since it overcomes the problem that the output of SPSS shows the relation between board gender diversity and firm financial performance when the moderator variables are zero. Centring the variables is done when a value of zero is meaningless (Field, 2009), and since the lowest moderator value is eight, a value of zero is meaningless. Therefore, the output does not show the real results when not centring the variables.

The second action is creating the interaction variables. This is done by multiplying the centred variable of the percentage of female board members by the centred variables of the different moderators. The products are Female*PowerDistance, Female*Individualism, Female*UncertaintyAvoidance and

Female*Masculinity. These products are put into the analysis separately and as fixed effects (Verboon & Peels, 2014).

When performing these multilevel analyses, this thesis also investigates the relation between board gender diversity and firm financial performance when including a critical mass. Such a critical mass 'suggests that only when a certain threshold is reached, the impact of a subgroup becomes more pronounced' (Lückerath-Rovers, 2013, p. 497). For example, the benefits of female board members are likely to be higher when the board consist of at least three female board members (Lückerath-Rovers, 2013). Hence, the number of female board members has to be significant enough to increase the influence and value of the female board members (Low et al., 2015). To find out whether this critical mass is present, this thesis uses a dummy variable. Via trial and error, this dummy variable receives a value of one to indicate a certain percentage of female board members till the highest percentage, or zero otherwise. For example, a percentage of 30% (Low et al., 2015) till the highest percentage receives a value of one, where all other percentages receive a value of zero to see whether this thesis contains a critical mass. Including this dummy variable and using trial and error might show that from a certain percentage of female board members, there is a significant relation with the financial performance of the firm, where this relation is not significant otherwise.

Also, the relation between female representation and financial performance can be exposed to a reversed causality. This means that there is the possibility that in times of weak firm performance, the demand for diversity in the board increases (Lückerath-Rovers, 2013), or that better performing firms are 'more likely to respond to pressure to conform the aspirational norm of gender diversity, because they have a greater need for legitimacy, or because they have greater latitude and excess resources to do so' (Dezso & Ross, 2012, p. 1083). Studies conducted at multiple points in time are able to conclude more about this causality, but even then no conclusion about causality can be drawn. Since this thesis only uses data from the year 2015, this thesis is not able to draw any conclusions about the causality of the relation between board gender diversity and firm financial performance.

To investigate the relation, the following equation is developed, where $\beta i$ means the coefficients and $\varepsilon i$ is the error term (Hooghiemstra, 2012):

**PERFORMANCE** = $\beta 0$ + $\beta 1$GENDER_DIVERSITY + $\beta 2$CULTURAL_DIMENSIONS + $\beta 3$GENDER_DIVERSITY*CULTURAL_DIMENSIONS + $\beta 4$INDUSTRY + $\beta 5$FIRM_AGE + $\beta 6$BOARD_SIZE + $\beta 7$LEVERAGE + $\beta 8$FIRM_SIZE + $\beta 9$LFP + $\beta 10$GDP + $\varepsilon i$

## CHAPTER 4 – RESULTS

This chapter presents the results of the analyses. First, this chapter shows the results in terms of testing the four assumptions of the regression analysis. Second, this chapter explains the multilevel analysis in more detail. Third, this chapter presents the descriptive statistics and the correlation between the variables. Fourth, this chapter shows the results of testing the direct relation between board gender diversity and the three financial performance measures, including the results of the critical mass analysis. Finally, this chapter shows the results of including Hofstede's cultural dimensions as moderator variables.

### 4.1. Assumptions regression analysis

Since the multilevel analysis is an extension of a normal regression, the first step is to test the four assumptions of the regression analysis. These are normality, linearity, multicollinearity and homoscedasticity. It is not problematic when these assumptions are not met, but it makes it impossible to generalise the conclusions to a population other than the sample (Field, 2009).

#### *4.1.1. Normality*

To test whether the variables are normally distributed, this thesis performs a frequency analysis, where the skewness and kurtosis of the variables are important values. To test for normality, this thesis creates z-scores by dividing the value of skewness and kurtosis by the standard deviation of skewness and kurtosis. If this value is greater than 1.96, the value is significant and suggests that the variables are not normally distributed (Field, 2009). When testing the assumption in this study, results imply that some variables are not normally distributed. ROA, ROE, Tobin's Q, the percentage of female board members, the age of the firm, leverage, total assets, GDP and masculinity all have significant values of skewness and kurtosis, which suggests a lack of normality. Therefore, this thesis violates the assumption of normality and is unable to generalise the conclusions to the general population.

#### *4.1.2. Linearity*

To test this assumption, this thesis uses scatterplots to see whether there is a linear relation among the dependent and independent variables. Since there are three different proxies for the dependent variable, Appendix 2 contains three different scatterplots. These scatterplots show a small linear relation between the three dependent and the independent variables. Therefore, this study meets the assumption of linearity.

#### *4.1.3. Multicollinearity*

To test this assumption, this thesis uses the correlation matrix and the tolerance and the variance inflation factor (VIF) values to determine whether there is multicollinearity. 'VIF indicates whether a predictor has a strong linear relation with the other predictor(s)' (Field, 2009, p. 224) and tolerance value is

determined by dividing 1 by VIF (Field, 2009). The general rules state when the VIF value is above 10 or the tolerance value is below .10, there is problematic multicollinearity (Field, 2009). In addition, when analysing the correlation table, a correlation of .70 or higher suggest problematic multicollinearity. According to the tolerance and VIF value, there is no multicollinearity, but the correlation table shows a strong relation between the two cultural dimensions power distance and individualism (-.778) (see Appendix 6). This means that countries that experience a large power distance are more collectivistic and countries with a small power distance are more individualistic. The academic literature predicted this strong negative relation, so this is no surprise (Hofstede et al., 2010). However, since the multilevel analyses tests these variables separately, this correlation causes no problems in terms of multicollinearity. Therefore, this study meets the assumption of no perfect multicollinearity.

#### *4.1.4. Homoscedasticity*

To test this assumption, this thesis looks at the scatterplot of the variables, presented in Appendix 2. This scatterplot is developed by a graph of the *ZRESID on the Y-axis and *ZPRED on the X-axis. The scatterplot should look like a random array of dots and not like a funnel to meet the assumption of homoscedasticity (Field, 2009). To test this random array of dots, a fit line can be put into the plot. A straight line suggests homoscedasticity. In this thesis, for all of the dependent variables, there is a straight line. Therefore, this study meets the assumption of homoscedasticity.

### 4.2. Multilevel analysis

This thesis uses multilevel regression analyses to examine the main relations among the percentage of female board members, the three measures for financial performance and the four moderator variables. A multilevel regression analysis obtains hierarchical data. This implies grouping research units within a variable on a higher level. For example, employees are grouped within organisations. In this case, the employees are the first level, where for every higher level, in this case the organisations, studies need to develop a separate variable that divides the employees into the different groups (Verboon & Peels, 2015). This deviation originates from the idea that working in the same organisation makes the employees more similar to each other, which implies that these cases are not independent of each other. Since a lack of independence is problematic, including this higher level that implies contextual variables can overcome this problem (Field, 2009).

In this study, the first level reflects the direct relation between the percentage of female board members and the financial performance within the different organisations. The second level reflects the influence of the countries in which these organisations are located (see Appendix 3). The multilevel analysis then examines the deviation of the direct relation between board gender diversity and firm financial performance within the different countries. In other words, there is a general association between board gender diversity and firm financial performance for all countries (fixed effect), where the multilevel

analysis tests the presence of a deviation (random effect) from this fixed effect per country. The multilevel analysis thus examines whether the association among variables differs among groups, in this case countries, and tests whether the relation depends on the country in which the organisation is located. These countries can influence the intercept of the regression line (random intercept), the slope of the regression line (random slope), or both. The choice which effect to investigate is dependent on the expectations of the researcher (Verboon & Peels, 2015). This thesis uses the random intercept model due to the inclusion of a moderating effect. Including this moderator effect causes that the slope of the line that represents the relation between the dependent and independent variable changes for the different values of the moderator variable. When using the random slope model, the model already corrects for the differences among the slopes that represent the relation, which causes that the effect of the moderator variable is not visible. Therefore, to be able to examine and visualize the effect of a moderator variable, the random intercept model is a better fit.

### 4.3. Descriptive statistics and correlations

Appendix 4 contains an overview of the descriptive statistics and Appendix 5 contains an overview of mean levels of ROA, ROE, Tobin's Q and the percentage of female board members per country. Looking at these descriptive statistics, the four countries with the highest percentage of female board members are, respectively, the United States, Malaysia, Norway and Indonesia. When looking at the financial performance measures, Indonesia has the highest financial performance on all measures, where Malaysia and the United States are also present in the top four of all financial performance measures. Furthermore, Appendix 6 contains the correlations between the independent and control variables.

### 4.4. Association between board gender diversity and firm financial performance

Although this thesis has no separate hypotheses for the direct relation between the independent variable and the dependent variable due to the inconclusive results in the current academic literature, this thesis tests the direct relation between the percentage of female board members (independent variable) and the financial performance of the firm (dependent variable) in the different countries, without the moderator variables (step 2). In doing so, the analysis tests the relation for the three different financial performance measures, ROA, ROE and Tobin's Q. Model 2 in Appendix 7 presents the output of this direct relation for the three financial performance measures separately.

The results of the analysis imply that only the association between the percentage of female board members and Tobin's Q is significant (3.330; $p < .01$). This suggests that a higher percentage of female board members is positively related to the financial performance of the firm in terms of Tobin's Q for the whole population (fixed effect). Neither ROA, nor ROE are significant, which suggests that the percentage of female board members is only associated the market-based future performance of the firm.

An important calculation to determine how much of the deviation is contributed by the different countries is the Intra Class Correlation (ICC). In other words, the ICC explains how much of the variation in the model is caused by including different groups. A high ICC suggests that a large amount of the variance is caused by the presence of different groups, while a low ICC suggests that the different groups do not explain the variance in the data (Verboon & Peels, 2014). Appendix 8 contains the calculation of the ICC. The ICC is 14.52%, which means that 14.52% of the variance in firm financial performance is caused by the different groups, in this case countries. However, this variance is not significant (.979; $p = .086$), which suggests that nothing can be asserted about the influence of the firms location on the relation between board gender diversity and firm financial performance in terms of Tobin's Q. This non-significance is probably caused by the fact that this thesis contains only a limited number of countries in the sample (Verboon & Peels, 2014).

In terms of the control variables, leverage (-.002; $p < .01$) and LFP (-.006; $p < .05$) have a negative and significant relation with ROA. This means the higher the level of leverage and LFP, the lower the value of ROA. For ROE, LFP (-.017; $p < .01$) has negative association and GDP (.000; $p < .01$) has a positive association. This means that the higher the level of LFP, the lower the value of ROE and the higher the level of GDP, the higher the value of ROE. Furthermore, the results imply no significant associations for Tobin's Q, which means that nothing can be asserted about the influence of these control variables when testing the relation between board gender diversity and firm financial performance in terms of Tobin's Q. Since these results are similar to the results when the independent variable is not included (step 1), this thesis does not discuss model 1.

*Critical Mass*

As stated in chapter three, this study tests whether a certain percentage of female board members needs to be met before the relation between board gender diversity and firm financial performances becomes significant, also known as a critical mass. By using dummy variables in combination with trial and error, the results suggest that when the percentage of female board members is between 28% and 33%, there is a positive and significant association between female board members and the financial performance of the firm in terms of ROA. However, a percentage lower than 28% and higher than 33% causes the relation to be non-significant, which implies that the strength of the relation between female board members and firm financial performance decreases before 28% and after 33%.

For ROE, the relation with the percentage of female board members stays non-significant when including any percentage as a dummy variable. In terms of Tobin's Q, the relation with the percentage of female board members becomes non-significant when including a percentage of 45%. Hence, it seems that the strength of the relation between female board members and the financial performance in terms of Tobin's Q decreases after 45%.

### 4.5. Moderator analysis

The next step is including Hofstede's cultural dimensions as a moderator in this multilevel analysis by adding the centred interaction variables (step 3).

#### *4.5.1. Moderation effect of power distance*

##### *4.5.1.1. Financial performance in terms of ROA*

The first analysis examines the relation between the percentage of female board members and ROA, while testing the influence of power distance as a moderator variable on this relation. The results imply that the interaction variable that represents the multiplication of the percentage of female board members and power distance is significant and positive (.004; $p < .05$). This suggests a positive interaction effect where power distance strengthens the relation between the percentage of female board members and the financial performance in terms of ROA. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and ROA becomes steeper when the society is characterised by a large power distance as visualised in situation 2 in Appendix 9. Hence, **hypothesis H1a is not supported**, since the hypothesis states that power distance negatively moderates the relation between board gender diversity and firm financial performance. **However, power distance does moderate the relation in the opposite direction**, were the discussion contains a possible explanation for this opposite direction.

In terms of the control variables in the model, the results show that leverage (-.002; $p < .001$) and LFP (-.006; $p < .05$) have a negative and significant relation with ROA. This implies that the higher the level of leverage and LFP, the lower the financial performance in terms of ROA.

##### *4.5.1.2. Financial performance in terms of ROE*

The second analysis examines the relation between the percentage of female board members and ROE, while testing the influence of power distance as a moderator variable on this relation. The interaction variable that represents the multiplication of the percentage of female board members and power distance is not significant (-.001; $p = .100$). This suggests that power distance does not strengthen nor weaken the association between board gender diversity and financial performance. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and ROE does not change when the society is characterised by a large power distance as visualised in situation 1 in Appendix 9. Hence, **hypothesis H1b is not supported.**

In terms of the control variables in the model, LFP and GDP seem to be significant. LFP (-.021; $p < .05$) has a negative significant relation, which means the higher the level of LPF, the lower the financial

performance in terms of ROE. GDP (.000; p < .01) has a positive significant effect and means that the higher the level of GDP, the higher the financial performance in terms of ROE.

*4.5.1.3. Financial performance in terms of Tobin's Q*

The third analysis examines the relation between the percentage of female board members and Tobin's Q, while testing the influence of power distance as a moderator variable on this relation. The results imply that the interaction variable that represents the multiplication of the percentage of female board members and power distance is significant and positive (.115; p < .05). This suggests a positive interaction effect where power distance strengthens the relation between board gender diversity and firm financial performance in terms of Tobin's Q. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and Tobin's Q becomes steeper when the society is characterised by a high power distance as visualised in situation 2 in Appendix 9. Hence, **hypothesis H1c is not supported**, since there seems to be a positive influence of power distance on the relation between board gender diversity and firm financial performance. **However, power distance does moderate the relation in the opposite direction**, were the discussion contains a possible explanation for this opposite direction.

In terms of the control variables in the model, the results show that LFP (-.278; p < .05) is significant and negative. This implies that the higher the level of LFP, the lower the financial performance in terms of Tobin's Q.

Model 3 in Appendix 7 presents the results for all three financial performance measures.

*4.5.2. Moderation effect of individualism*

*4.5.2.1. Financial performance in terms of ROA*

The fourth analysis examines the relation between the percentage of female board members and ROA, while testing the influence of individualism as a moderator variable on this relation. The results imply that the interaction variable that represents the multiplication of the percentage of female board members and individualism is not significant (-.002; p = .173). This suggests that individualism does not strengthen nor weaken the association between board gender diversity and financial performance, in this case ROA. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and ROA does not change when the society is characterised by individualism as visualised in situation 1 in Appendix 9. Hence**, hypothesis H2a is not supported.**

In terms of the control variables in the model, the only variable that has a significant and negative association with ROA is leverage (-.002; $p < .01$). This implies that the higher the level of leverage, the lower the financial performance in terms of ROA.

*4.5.2.2. Financial performance in terms of ROE*

The fifth analysis examines the relation between the percentage of female board members and ROE, while testing the influence of individualism as a moderator variable on this relation. The interaction variable that represents the multiplication of the percentage of female board members and individualism is not significant (-.006; $p = .274$). This suggests that individualism does not strengthen nor weaken the association between board gender diversity and financial performance, in this case ROE. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and ROE does not change when the society is characterised by individualism as visualised in situation 1 in Appendix 9. Hence, **hypothesis H2b is not supported.**

In terms of the control variables in the model, the results again show that LFP (-.020; $p < .05$) and GDP (.000; $p < .05$) are associated with ROE. LFP has a significant, but negative effect, which implies that the higher the level of LFP, the lower the financial performance in terms of ROE. GDP has a significant and positive effect, which implies that the higher the level of GDP, the higher the financial performance in terms of ROE.

*4.5.2.3. Financial performance in terms of Tobin's Q*

The sixth analysis examines the relation between the percentage of female board members and Tobin's Q, while testing the influence of individualism as a moderator variable on this relation. The results imply that the interaction variable that represents the multiplication of the percentage of female board members and individualism is significant and negative (-.106; $p < .01$). This suggests a negative interaction effect where individualism weakens the association between board gender diversity and financial performance in terms of Tobin's Q. To illustrate, when the percentage of female executives increases, the slope of the line that represents the relation between board gender diversity and Tobin's Q becomes flatter or even negative when the society is characterised by individualism as visualised in situation 3 in Appendix 9. Hence, **hypothesis H2c is not supported,** since the hypothesis stated that individualism positively moderates the relation between board gender diversity and firm financial performance. **However, individualism does moderate the relation in the opposite direction**, were the discussion contains a possible explanation for this opposite direction.

In terms of the control variables in the model, no control variables are significant.

Model 4 in Appendix 7 presents the results for all three financial performance measures.

*4.5.3. Moderation effect of uncertainty avoidance*

*4.5.3.1. Financial performance in terms of ROA*

The seventh analysis examines the relation between the percentage of female board members and ROA, while testing the influence of uncertainty avoidance as a moderator variable on this relation. The results imply that the interaction variable that represents the multiplication of the percentage of female board members and uncertainty avoidance is not significant (-.001; p = .619). This suggests that uncertainty avoidance does not strengthen nor weaken the relation between board gender diversity and financial performance, in this case ROA. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and ROA does not change when the society is characterised by a strong uncertainty avoidance as visualised in situation 1 in Appendix 9. Hence, **hypothesis H3a is not supported.**

In terms of the control variables in the model, results show a significant and negative association with leverage (-.002; p < .01) and LFP (.006; p < .05). This implies that the higher the level of leverage and LFP, the lower the financial performance in terms of ROA.

*4.5.3.2. Financial performance in terms of ROE*

The eighth analysis examines the relation between the percentage of female board members and ROE, while testing the influence of uncertainty avoidance as a moderator variable on this relation. The results imply that the interaction variable that represents the multiplication of the percentage of female board members and uncertainty avoidance is not significant (.003; p = .633). This suggests that uncertainty avoidance does not strengthen nor weaken the relation between board gender diversity and firm financial performance in terms of ROE. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and ROE does not change when the society is characterised by a strong uncertainty avoidance as visualised in situation 1 in Appendix 9. Hence, **hypothesis H3b is not supported.**

In terms of the control variables in the model, LFP (-.017; p <.05) and GDP (.000; p < .05) are significant. LFP has a significant, but negative effect, which implies that the higher the level of LFP, the lower the financial performance in terms of ROE. GDP has a significant and positive effect, which implies that the higher the level of GDP, the higher the financial performance in terms of ROE.

*4.5.3.3. Financial performance in terms of Tobin's Q*

The ninth analysis examines the relation between the percentage of female board members and Tobin's Q, while testing the influence of uncertainty avoidance as a moderator variable on this relation. The direct relation between the percentage of female board members and Tobin's Q is still significant, but

the interaction variable that represents the multiplication of the percentage of female board members and uncertainty avoidance is not (-.043; p = .380). This suggests that uncertainty avoidance does not strengthen nor weaken the relation between board gender diversity and firm financial performance in terms of Tobin's Q. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and Tobin's Q does not change when the society is characterised by a strong uncertainty avoidance as visualised in situation 1 in Appendix 9. **Hence, hypothesis H3c is not supported.**

In terms of the control variables in the model, no control variables are significant.

Model 5 in Appendix 7 presents the results for all three financial performance measures.

### *4.5.4. Moderation effect of masculinity*

#### *4.5.4.1. Financial performance in terms of ROA*

The tenth analysis examines the relation between the percentage of female board members and ROA, while testing the influence of masculinity as a moderator variable on this relation. The results imply that the interaction variable that represents the multiplication of the percentage of female board members and masculinity is significant and positive (.005; p < .05). This suggests a positive interaction effect where masculinity strengthens the association board gender diversity and firm financial performance in terms of ROA. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and ROA becomes steeper when the society is characterised by masculinity as visualised in situation 2 in Appendix 9. Hence, **hypothesis H4a is not supported**, since it stated that masculinity negatively moderates the relation between board gender diversity and firm financial performance. **However, masculinity does moderate the relation in the opposite direction**, were the discussion contains a possible explanation for this opposite direction.

In terms of the control variables in the model, the results show a negative and significant association for both leverage (-.002; p < .01) and LFP (-.006; p < .05). This implies that the higher the level of leverage and LFP, the lower the financial performance in terms of ROA.

#### *4.5.4.2. Financial performance in terms of ROE*

The eleventh analysis examines the relation between the percentage of female board members and ROE, while testing the influence of masculinity as a moderator variable on this relation. The interaction variable that represents the multiplication of the percentage of female board members and masculinity is not significant (.012; p = .144). This suggests that masculinity does not strengthen nor weaken the

association between board gender diversity and firm financial performance in terms of ROE. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and ROE does not change when the society is characterised by masculinity as visualised in situation 1 in Appendix 9. Hence, **hypothesis H4b is not supported**.

In terms of the control variables in the model, both LFP (-.020; $p < .01$) and GDP (.000; $p < .01$) are significant. LFP has a significant, but negative effect, which implies that the higher the level of LFP, the lower the financial performance in terms of ROE. GDP has a significant and positive effect, which implies that the higher the level of GDP, the higher the financial performance in terms of ROE.

*4.5.4.3. Financial performance in terms of Tobin's Q*

The twelfth analysis examines the relation between the percentage of female board members and Tobin's Q, while testing the influence of masculinity as a moderator variable on this relation. The direct relation between the percentage of female board members and Tobin's Q is still significant, but the interaction variable that represents the multiplication of the percentage of female board members and masculinity is not significant (.065; $p = .300$). This suggests that masculinity does not strengthen nor weaken the relation between board gender diversity and financial performance in terms of Tobin's Q. To illustrate, when the percentage of female board members increases, the slope of the line that represents the relation between board gender diversity and Tobin's Q does not change when the society is characterised by masculinity as visualised in situation 1 in Appendix 9. Hence, **hypothesis H4c is not supported.**

In terms of the control variables in the model, no control variables seem to be significant.

Model 6 in Appendix 7 presents the results for all three financial performance measures.

**4.6. Summary results**

The analyses above suggest that power distance positively moderates the relation between board gender diversity and ROA and Tobin's Q, individualism negatively moderates the relation between board gender diversity and Tobin's Q, uncertainty avoidance does not moderate the relation with any of the financial measures and masculinity positively moderates the relation between board gender diversity and ROA. Although no hypotheses are supported, some results show an effect of the moderators in the opposite direction in comparison to the formulated hypotheses.

# CHAPTER 5 – CONCLUSION

## 5.1. Summary

The academic literature that examines the relation between board diversity and firm financial performance is extensive. However, when focusing on gender diversity within the board, the results of the studies are inconclusive. This thesis aims to make sense of these inconclusive results by including a variable that might moderate the relation between board gender diversity and firm financial performance. More specifically, since most studies examine the relation in different countries, this thesis examines how culture might moderate the relation between board gender diversity and firm financial performance. Studies that examine such a moderator effect are scarce and need more effort. Hence, this thesis contributes to the academic literature and tries to answer the following research question: *How do country cultural dimensions moderate the relation between board gender diversity and firm financial performance?*

Using Hofstede's cultural dimensions, this thesis concludes that power distance, individualism and masculinity do influence the relation between board gender diversity and certain measures for firm financial performance. Since the moderator variables do not moderate the relation with all the different financial performance measures, no general conclusions about the influence of the cultural dimensions on the relation between board gender diversity and firm financial performance can be drawn. What can be concluded is that there is some kind of influence of culture on the relation, since significant results occur in the analyses, which makes it possible to make more sense of the inconclusive results in the current empirical literature.

## 5.2. Discussion

When analysing the results before including the moderators, some interesting findings occur. First of all, the association between board gender diversity and firm financial performance in this sample is only significant for Tobin's Q. This is elaborated by the resource dependency theory that implies that gender diversity increases the access to valuable resources, which results in a higher firm performance (Carter et al., 2010; Boubaker et al., 2014). However, the resource dependency theory suggests a causal relation, which cannot be concluded within this thesis. Hence, this thesis concludes that the higher the percentage of female board members, the higher the level of Tobin's Q. This implies an association between board gender diversity and the financial performance in terms of market- and future-based performance (Campbell & Minquez-Vera, 2008) and no clear association with the accounting- and past-based measures ROA and ROE. This is contrary to the studies that found significant relations for ROA and ROE (Vafaei et al., 2015; Erhardt et al., 2003; Martin-Ugedo & Minguez-Vera, 2014; Lückerath-Rovers, 2011; Low et al., 2015). A possible explanation for this might be that the firms in the sample are more future oriented instead of achieving the highest performance right now. Secondly, the results confirm a

critical mass. This suggests that, for this sample, when the percentage of female board members is between 28% and 33%, a significant association between board gender diversity and firm financial performance in terms of ROA occurs. The fact that such a critical mass exists is in line with the reasoning of Lückerath-Rovers (2013) and Low et al. (2015). It is interesting for future research to investigate this critical mass in more detail and in other samples.

When including the moderator variables, the results suggest that some control variables are significant and that some cultural dimensions do moderate the relation between board gender diversity and some of the financial performance measures.

First of all, it seems that a negative association almost always exists between the two control variables, leverage and LFP, and ROA. For ROE, a negative association with LFP and a positive association with GDP exist, which is according to the expectations in paragraph 3.2.4. A possible explanation for this is that both LFP and GDP indicate the economic development of a specific country and might influence the financial health and performance in terms of ROA and ROE of the firms in general. Despite the expected associations between the two control variables, board size and leverage, and Tobin's Q (Carter et al., 2010; Dezso & Ross, 2012), the results do not suggest these associations.

Secondly, power distance positively moderates the relation between board gender diversity and financial performance in terms of ROA and Tobin's Q, where the financial performance in terms of ROE is not significant. This is inconsistent with the findings of Labelle et al. (2015) who conclude that more regulation, which characterises a large power distance, negatively moderates the relation between board gender diversity and ROA. A possible explanation for this opposite effect can be caused by enabling or coercive forms of power. As stated by Jordan & Messner (2012) control and formalisation can be perceived as positive when it enables people to perform their tasks, but can also be perceived as negative when the formalisation and control coerces peoples effort and compliance. The fact that power distance positively moderates the relation between board gender diversity and firm financial performance instead of negatively might be caused by the fact that the hierarchical structure and rules in the societies are perceived as enabling instead of coercive.

Thirdly, individualism negatively moderates the relation between board gender diversity and firm financial performance in terms of Tobin's Q, where the relations with ROA and ROE are not significant. This is inconsistent with the findings of Schneid et al. (2015), who suggest that a more collectively oriented society negatively moderates the relation between board gender diversity and Tobin's Q. A possible explanation for this opposite effect is that an individualistic society consists of individuals that do not want to be a part of the collective, were in a collectivistic society, individuals work together and are all included, despite the difference in gender, to maximise the utility of the group (Schneid et al.,

2015). The fact that an individualistic society negatively moderates the relation between board gender diversity might be caused by the lack of acceptance of and collaboration among individuals that has consequences for the financial performance of the firm.

Fourthly, uncertainty avoidance does not moderate the relation between board gender diversity and any of the financial performance measures. This is inconsistent with the findings of Schneid et al. (2015) who conclude that social roles and responsibilities in terms of home and family duties, which characterises strong uncertainty avoidance, negatively moderates the relation between board gender diversity and financial performance. A possible explanation for this lack of significant results is that this cultural dimension is focused on avoiding future uncertainty (Pheng & Yuquan, 2002). Since this thesis only uses data from the year 2015, the moderating influence of uncertainty avoidance on the relation between board diversity and firm financial performance might not be visible.

Finally, masculinity positively moderates the relation between board gender diversity and firm financial performance in terms of ROA, where the relations with ROE and Tobin's Q are not significant. This is inconsistent with the findings of Joshi & Roh (2009) and Ali et al. (2015), who conclude that a society that is characterised by a masculine context negatively moderates the relation between board gender diversity and performance. A possible explanation for this opposite effect might be that women act as their gender stereotypes and have a more feminine self-concept in a feminine society and the difference between male and female stereotypes is smaller in a masculine society (Hofstede et al., 1998). Since this difference between male and female stereotypes is smaller in a masculine society, females might be perceived as less divergent which in the end might positively influence the relation between board gender diversity and firm financial performance.

### 5.3. Policy recommendations

This thesis provides several possible recommendations for policy makers. First of all, since LFP is negatively associated with ROA and ROE, more female participation in the labour market does not always implies financial benefits for firms. In addition, ROE and GDP are positively associated, which suggests that economic environment of a country has consequences for the financial health of specific firms. Therefore, policy makers should take the demand for female labour participation (LFP) and the economic environment of a country (GDP) into account when analysing the financial health and performance of firms.

Second, this thesis contributes to the current empirical literature in terms of using a contextual moderator effect and doing cross-country diversity research. The results suggest that societies characterised by a large power distance could experience benefits from female board members, whereas the same benefits could occur for masculine societies. On the other hand, societies characterised by individualism could

experience downsides of female board members. A possible recommendation might be that societies with a large power distance, that are collectivistic and that are characterised by masculinity could benefit from gender equality initiatives. However, the results are not significant for all financial performance measures which implies that there is still no consensus about the influence of cultures on the relation between board gender diversity and firm financial performance, including the causality of the relation. This causality means that better performing firms can be more or less eager to appoint female board members instead of the other way around. Therefore, policy makers in different countries should not blindly adopt gender equality initiatives and should carefully analyse the influence of culture and the causality of the relation before appointing more women on corporate boards.

Finally, in line with these gender equality initiatives, the results in this thesis suggest that when the percentage of female board members is between 28% and 33%, firms experience more benefits in terms of financial performance. This implies a critical mass. Although this critical mass needs to be examined in more detail, a possible recommendation would be to lower the gender equality quotas that represent the required percentage of female board members to a quota between 28% and 33% in general. However, policy makers are not always interested in financial performance, which suggest a limitation of this research.

### 5.4. Limitations and possibilities for future research

This thesis is subject to several limitations, which opens up possibilities for future research. First of all, there are some methodological limitations. Due to time reasons, the sample is small, since this thesis only uses 13 different countries. It is preferred to have more than 20 contexts/groups in the level two variable (Field, 2009), in this case countries. Also, this thesis uses SPSS due to the researcher's familiarity with this program, but using SPSS to perform a multilevel analysis is not the best program, since SPSS has vague window interfaces and does not produce all the relevant estimates (Field, 2009). To overcome this problem, this thesis used a Syntax file to perform the analysis. Furthermore, due to time reasons, this thesis only considers data about board gender diversity and financial performance data from the year 2015. Including another financial year or multiple years might cause different results, since the year 2015 might be subjected so specific peculiarities in terms of board composition and financial performance. Finally, a lot of variables lack the assumption of normality, which makes it impossible to draw conclusions for the general population. Future research could use a larger sample that includes more countries to increase the change of significant outcomes, could use another statistical program that better fits a multilevel analysis, investigate other financial years and use variables that are normally distributed to enhance the reliability and validity of the results.

Second, there are limitations in terms of the dependent variables. This thesis uses ROA, ROE and Tobin's Q as financial performance measures since the studies conducted in the 13 different countries

all use at least one of these measures and since these measures represents both accounting- as well as market performance aspects. However, there are other measures that can be used to indicate the financial performance of the firm, such as earnings per share and return on invested capital (Bahhouth, Maysami & Gonzalez, 2014). Besides, it is interesting to look at non-financial performance indicators, such as customer satisfaction, since board diversity might not always influence the financial performance but could provide benefits for organisations in terms of non-financial performance. These non-financial performance measures can be seen as an addition to the financial measures, since these financial measures do not provide a total picture of the firm performance and do not satisfy the information needs of all stakeholders (Milost, 2013). Future research could include other financial performance measures and some non-financial performance indicators while investigating the relation between board gender diversity and firm performance.

Third, there are limitations in terms of the independent variable. This thesis only examines board diversity by looking at the gender distribution within this board since the literature about gender diversity is extensive and the fact that the inconclusive results in the existing empirical literature invalidate the consensus that exist about the benefits of gender diversity. However, there are other board characteristics, such as age and ethnic background (Horwitz, 2005), that could be associated to the performance of the firm. Future research could take other diversity characteristics into account when investigating the relation between board diversity and firm financial performance.

Fourth, in line with the limitation of the independent variable, this thesis only examines the percentage of female representation in the board. Including only the percentage of female board members and not the number or presence of female board members is caused by the fact that this thesis focuses on board diversity, which implies both male and female directors. Using the percentage better reflects this diversity. Also, this percentage of female board members does not reflect to what extent the female board members are involved in the financial decision making processes and the day-to-day financial management. Future research could investigate the relation between board gender diversity and firm financial performance by using a different proxy for board gender diversity and could perform a case study by conducting interviews with male and female board members and analysing conversations within the board to examine the real role and influence of female board members. Such qualitative studies contribute to the academic literature, since most studies in this field only examine the quantitative relation between board gender diversity and firm performance. In doing so, the qualitative study should take a more performative view to investigate the influence of human and non-human actors on the actions and roles of female board members.

Fourth, there are some limitations in terms of the moderator variable. This thesis assumes that culture has something to do with the inconclusive results since the studies conducted in different countries

suggest varying results and the fact that studies concluded that culture can influence the diversity-performance link (Low et al., 2015; Festing et al. 2015; Schneid et al., 2015). However, there can be other reasons why these results are inconclusive. For example, Hassan et al. (2015) state that HR policies, the strategy and the culture within organisations can influence the relation between board gender diversity and firm financial performance. Also, other sources that do not indicate cultural characteristics might influence the relation, such as geographic location. Furthermore, this thesis specifically uses Hofstede's cultural dimensions as an indicator for the differences between countries since it is perceived as the basic theoretical framework (Carrasco et al., 2015) and the fact that the literature about Hofstede's cultural dimensions is extensive. However, there are other sources that indicate country cultural characteristics, such as GLOBE. Future research could investigate the moderating effect of organisational characteristics, country characteristics or other frameworks of cultural dimensions on the relation between the two variables.

Finally, it is interesting for future research to include addition control variables. First, the board characteristics experience, skills and education could be included. This is caused by the fact that these three characteristics have a positive effect on the performance of the firm (Labelle et al., 2015). Second, the ownership structure of the firms could be included. For example, a firm could be owned by only shareholders, could be a partnership, or even family-based, where there is evidence that family-based ownerships can be related to the financial performance of the firm (Low et al., 2015). This thesis does not include these control variables since all date is retrieved manually and the data of these variables were not always available or too difficult to gather in the given amount of time. Future research could include these board characteristics and ownership structures as a control variable to increase the validity.

Regardless of the limitations of the study, this thesis still contributes to the academic literature by providing new insights about the relation between board gender diversity and financial performance.

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## APPENDIX

### Appendix 1 – Sample overview

**Table 7**
*Sample selection*

| Stock Exchange | Firms included in the sample | SIC Industry code |
|---|---|---|
| **Australian Security Exchange** | BHP Billiton | 1011 |
| | Rio Tinto | 1011 |
| | Telstra | 4813 |
| | CSL | 8731 |
| | Wesfarmers | 5311 |
| | Woolworths | 5411 |
| | Transurban Group | 4231 |
| | Woodside Petroleum | 1311 |
| | Brambles | 8742 |
| | Amcor | 3221 |
| | Sydney Airport Holdings | 4581 |
| | Newcrest Mining | 1041 |
| | Ramsay Health Care | 8062 |
| | Cimic Group | 8711 |
| | Oil Search | 1311 |
| | Foretescure metals group | 1011 |
| | Stockland Corporation | 1531 |
| | Origin Energy | 1311 |
| | Caltex Australia | 2911 |
| | APA Group | 4922 |
| **New York Stock Exchange** | Exxon Mobile | 2911 |
| | Johnson & Johnson | 2834 |
| | General Electric Company | 3511 |
| | AT&T | 4813 |
| | Procter & Gamble | 2841 |
| | Wal-Mart Stores | 5331 |
| | Verizon Communications | 4813 |
| | Coca-Cola | 2081 |
| | Pfizer | 2834 |
| | Visa | 7389 |
| | Chevron | 2911 |
| | Oracle | 7372 |
| | Home Depot | 5211 |
| | Walt Disney | 4833 |
| | Philip Morris | 2111 |
| | Merck & Co | 2834 |
| | Pepsi | 2080 |
| | International Business Machines | 7373 |
| | Altria Group | 2111 |
| | Bristol-Myers Squibb | 2834 |
| **Euronext Amsterdam** | Royal Dutch Shell | 1311 |
| | Unilever | 2844 |
| | Heineken | 2082 |
| | ASML Holding | 3559 |

| | | |
|---|---|---|
| | Relx NV | 2721 |
| | Philips | 3845 |
| | Akzo Nobel | 2851 |
| | Ahold | 5411 |
| | Altice | 4813 |
| | KPN | 4813 |
| | Wolters Kluwer | 7372 |
| | DSM | 2869 |
| | Randstad Holding | 7363 |
| | Grandvision | 5995 |
| | Vopak | 4491 |
| | Gemalto | 7371 |
| | Boskalis Westminster | 1629 |
| | TNT Express | 4215 |
| | OCI | 2873 |
| | Aalberts Industries | 3498 |
| **Hong Kong Stock Exchange** | China Mobile | 4813 |
| | Cnooc | 1311 |
| | CK Hutchison Holdings | 5999 |
| | Sun Hung Kai Properties | 1531 |
| | Sands China | 7011 |
| | China Unicom | 4812 |
| | China Overseas Land & Investment | 1531 |
| | MTR Corporation | 4111 |
| | Delian Wanda Commercial Properties | 1542 |
| | Cheung Kong Infrastructure Holdings | 1541 |
| | Cheung Kong property Holdings | 1531 |
| | CLP Holdings | 4911 |
| | Power Assets Holdings | 4911 |
| | Henderson Land Development | 1531 |
| | Hong Kong and China Gas | 4924 |
| | China Resources Land | 1531 |
| | CGN Power | 4911 |
| | Galaxy Entertainment group | 7011 |
| | WH Group | 0751 |
| | Hengan International Group | 2676 |
| **Singapore Exchange** | Singapore Telecommunications | 4812 |
| | Wilmar International | 2074 |
| | Jardine Cycle & Carriage | 3711 |
| | Singapore Airlines | 4512 |
| | Capitaland | 1542 |
| | Keppel Corporation | 3731 |
| | Singapore Technologies Engineering | 3728 |
| | Genting Singapore | 7011 |
| | Global Logistic Properties | 8742 |
| | Singapore Press Holdings | 2711 |
| | Comfortdelgro | 4111 |
| | Hutchinson Port Holdings Trust | 4491 |
| | Golden Agri-Resources | 2074 |
| | Sembcorp Industries | 4911 |
| | UOL Group | 1542 |
| | Olam International | 2034 |

| | | |
|---|---|---|
| | SATS | 4581 |
| | Sia Engineering Company | 4581 |
| | United Industrial | 1542 |
| | SembCorp Marine | 3731 |
| **Copenhagen Stock Exchange** | Novo Nordisk | 2834 |
| | Ap Moeller Maersk | 4412 |
| | Coloplast | 3842 |
| | Pandora | 3911 |
| | Vestas Wind System | 3511 |
| | Carlsberg | 2082 |
| | Novozymes | 2869 |
| | CHR Hansen Holding | 2869 |
| | Genmab | 8731 |
| | DSV | 4213 |
| | ISS | 7349 |
| | H. Lundbeck | 2834 |
| | William Demant Holding | 3845 |
| | Per Aarsleff | 1611 |
| | Koebenhavns Lufthavne | 4581 |
| | TDC | 4813 |
| | Rockwoll International. | 3296 |
| | GN Store Nord | 3845 |
| | Royal Unibrew | 2082 |
| | DFDS | 4412 |
| **Mercado Continuo Espanol** | Inditex | 5621 |
| | Telefonica | 4813 |
| | Iberdrola | 4911 |
| | Endesa | 4911 |
| | Aena | 4581 |
| | Gas Natural SDG | 4924 |
| | Amadeus IT Holding | 7373 |
| | Grifols | 2836 |
| | Ferrovial | 1611 |
| | Repsol | 2911 |
| | Abertis Infraestucturas | 4231 |
| | Red Electrica Corporaci | 4911 |
| | ACS Actividades de Constucion Y Servic | 1611 |
| | Enagas | 4922 |
| | Gamesa | 3511 |
| | Zardoya Otis | 3534 |
| | Acciona | 4911 |
| | Mediaset Espana | 4833 |
| | Cellnex Telecom | 4812 |
| | Distribuidora Internacional de Alimentac | 5411 |
| **Oslo Stock Exchange** | Statoil | 2911 |
| | Telenor Group | 4813 |
| | Yara International | 2873 |
| | Norsk Hydro | 3334 |
| | Orkla | 2038 |
| | Marine Harvest | 0273 |
| | Schibsted | 2711 |
| | Salmar | 2092 |

| | | |
|---|---|---|
| | Leroy Seafood Group | 2092 |
| | Kongsberg Gruppen | 3812 |
| | Veidekke | 1611 |
| | Det Norske Oljeselskap | 1311 |
| | TGS-Nopec Geophysical | 8713 |
| | XXL | 5941 |
| | Halfslund | 4911 |
| | Austevol Seafood | 2092 |
| | Tomra Systems | 4212 |
| | Norwegian Air | 4512 |
| | AF Gruppen | 1542 |
| | Opera Software | 7372 |
| **Euronext Paris** | Sanofi | 2834 |
| | Total | 2911 |
| | L'Oréal | 2844 |
| | Louis Vuitton | 2337 |
| | Orange | 4813 |
| | Danone | 2023 |
| | Vinci | 1611 |
| | Air Liquide | 2813 |
| | Engie | 4911 |
| | Hermes International | 3171 |
| | Schneider Electric | 3643 |
| | Christian Dior | 2337 |
| | Pernod Ricard | 2085 |
| | Vivendi | 7812 |
| | Safran | 3724 |
| | Renault | 3711 |
| | Essilor | 3851 |
| | Electricite de France | 4911 |
| | Cie Saint Gobain | 5039 |
| | Carrefour | 5411 |
| **Korea Exchange** | Samsung Electronics | 3674 |
| | Korea Electric Power | 4911 |
| | Hyundai Motor Company | 3711 |
| | Amorepacific | 2844 |
| | Samsung C&T | 7996 |
| | Hyundai Mobis | 3711 |
| | LG Chem | 2869 |
| | SK Hynix Incorporation | 3674 |
| | Naver | 7375 |
| | Posco | 3312 |
| | KIA motors | 3711 |
| | SK Innovation | 2911 |
| | LG Household & Health Care | 2844 |
| | KT & G | 2111 |
| | SK Telecom | 4812 |
| | Samsung SDS | 7373 |
| | SK C&C company | 7373 |
| | Amorepacific Group | 2844 |
| | LG | 3651 |
| | LG Electronics | 3651 |

| | | |
|---|---|---|
| **Bursa Malaysia** | Tenga Nasional | 4911 |
| | IHH Healthcare | 8062 |
| | Petronas Chemicals Group | 2869 |
| | Axiata | 4812 |
| | Sime Darby | 0161 |
| | Maxis | 4812 |
| | Petronas Gas | 1321 |
| | Misc | 4499 |
| | Digi.com | 4812 |
| | Genting | 7011 |
| | IOI Corporation | 0119 |
| | Genting Malaysia | 7011 |
| | Kuala Lumpur Kepon | 0119 |
| | Telekom Malaysia | 4812 |
| | Petronas Dagangan | 5171 |
| | PPB Group | 2041 |
| | Nestle | 2026 |
| | YTL Corporation | 4911 |
| | HAP SENG Consolidated | 5191 |
| | British American Tobacco | 2111 |
| **Indonesia Stock Exchange** | Hanjaya Mandala Sampoerna | 2111 |
| | Telekomunikasi Indonesia | 4831 |
| | Unilever Indonesia | 2841 |
| | Astra International | 5012 |
| | Gudang Garam | 2111 |
| | Indofood CBP Sukses Makmur | 2098 |
| | Indocement Tunggal Prakarsa | 3241 |
| | Kable Farma | 2834 |
| | Perusahaan Gas Negara | 4924 |
| | Indofood Sukses Makmur | 2098 |
| | Semen Indonesia | 3241 |
| | Charoen Pokphand Indonesia | 2048 |
| | United Tractors | 1241 |
| | Elang Mahkota Teknologi | 4388 |
| | Matahari Department Store | 5311 |
| | Surya Citra Media | 4833 |
| | Sarana Menera Nusantara | 4899 |
| | Bumi Serpong Damai | 1531 |
| | Mitra Keluarga Karyasehat | 8062 |
| | Jasa Marga | 4231 |
| **Nigerian Stock Exchange** | Dangote Cement | 3241 |
| | Nigerian Breweries | 2082 |
| | Lafarge Africa | 3241 |
| | Forte Oil | 5172 |
| | Seplat Petroleum development | 1311 |
| | Guinness Nigeria | 2082 |
| | Seven-up Bottling | 2086 |
| | PZ Cussons Nigeria | 2844 |
| | International Breweries | 2082 |
| | Dangote Sugar Refinery | 2062 |
| | Julius Berger | 1611 |
| | Flour Mills | 2041 |

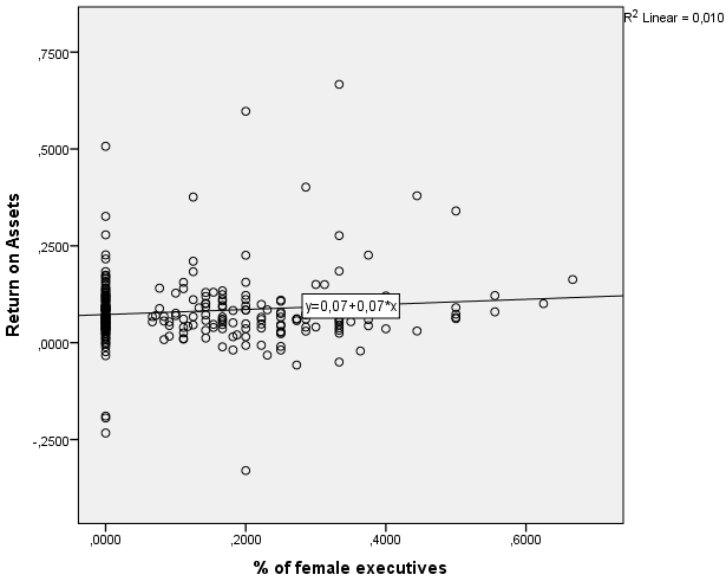
| | | |
|---|---|---|
| | Total | 5541 |
| | Mobil Oil | 5172 |
| | UAC | 2096 |
| | AshakaCem | 3241 |
| | Transnational Corporation | 7011 |
| | Oando | 2992 |
| | Presco | 2079 |
| | Transcorp Hotels | 7011 |

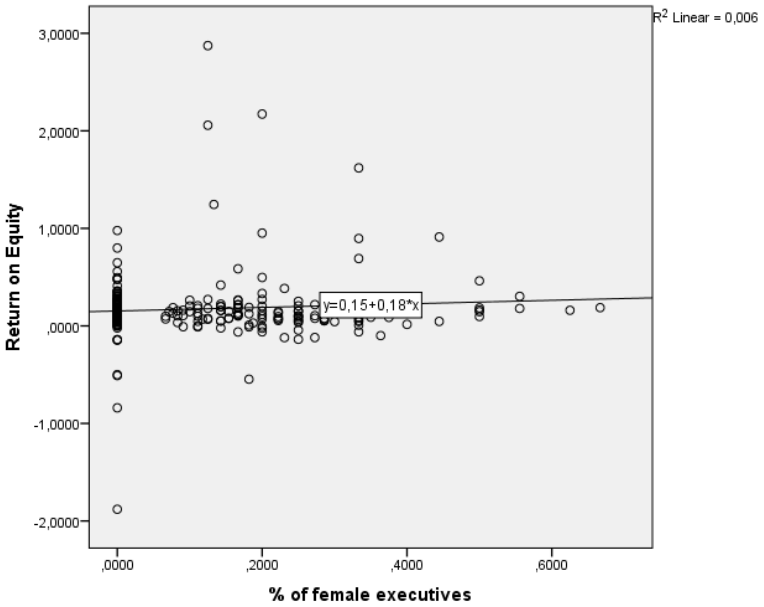
**Service industry**
48 = Communications
87= Engineering & management services
53= General merchandise stores
54= Food stores
42= Trucking and warehousing
45= Transportation by air
73= Business services
59 = Miscellaneous retail
44= Water transportation
27= Printing and publishing
70= Hotels and other lodging places
41= Local and interurban passenger transit
49= Electric, gas and sanitary services
56= Apparel and accessory stores
78= Motion pictures
79= Amusement & Recreation services
51= Wholesale trade – nondurable goods
80= Health services
50= Wholesale trade – durable goods
43= US Postal services.
55= Automotive dealers & service stations

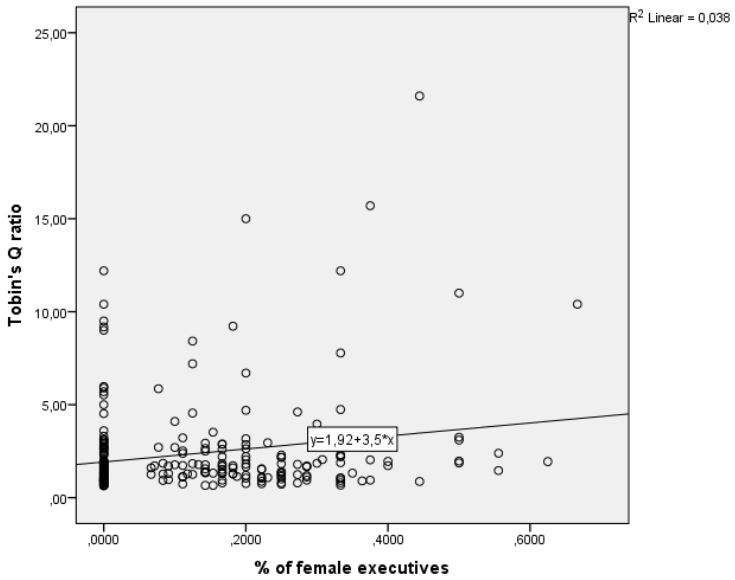
**Manufacturing industry**
12= Coal mining
01= Agricultural production-crops
36= Electronic & other electronic equipment
02= Agricultural production-livestock
23= Apparel and other textile products
31= Leather and leather products
33= Primary metal industries
37= Transportation equipment
39= Miscellaneous manufacturing industries
16= Heavy construction, ex building
38= Instruments and related products
52= Building materials & garden supplies
21= Tobacco products
29= Petroleum and coal products
28= Chemicals and allied products
35= industrial machinery and equipment
20= Food and kindred products
10 = Metal mining
13=Oil and gas extraction
32= Stone, Clay and Glass products
15= General building contractors
34= Fabricated metal products
26= Paper and allied products

## Appendix 2 – Assumptions

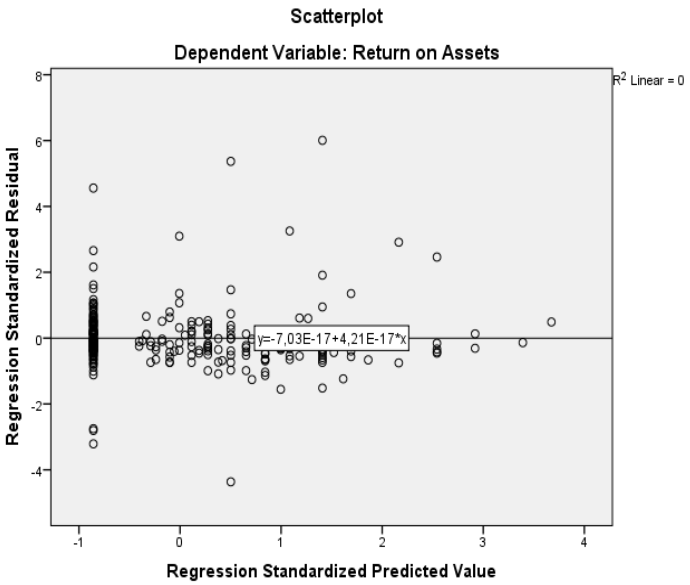
*2.1. Linearity*

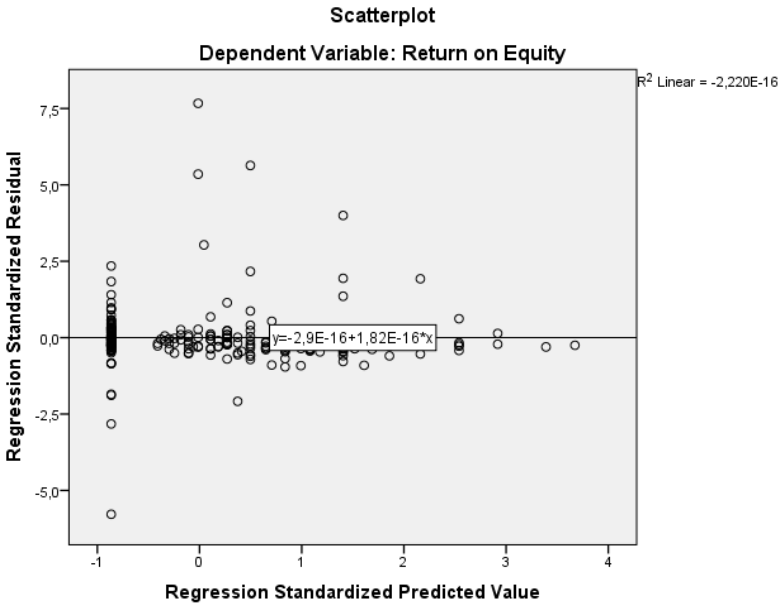


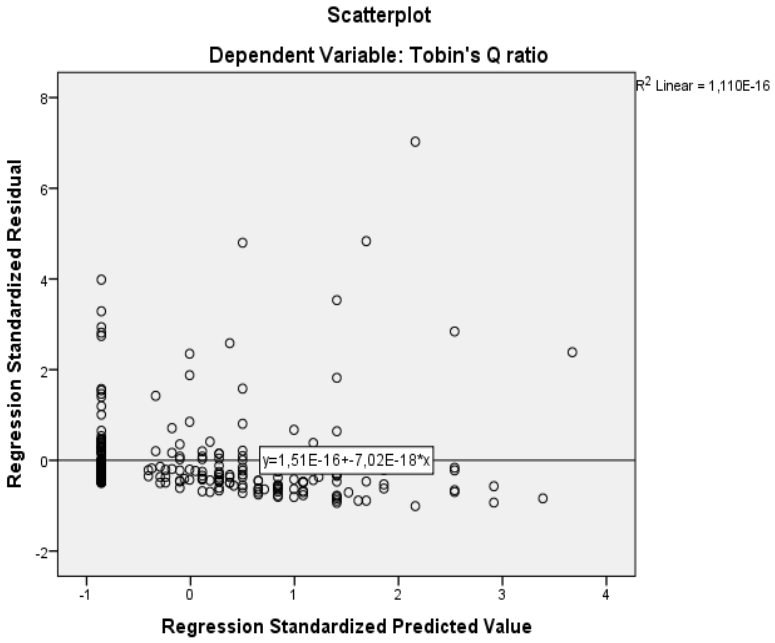



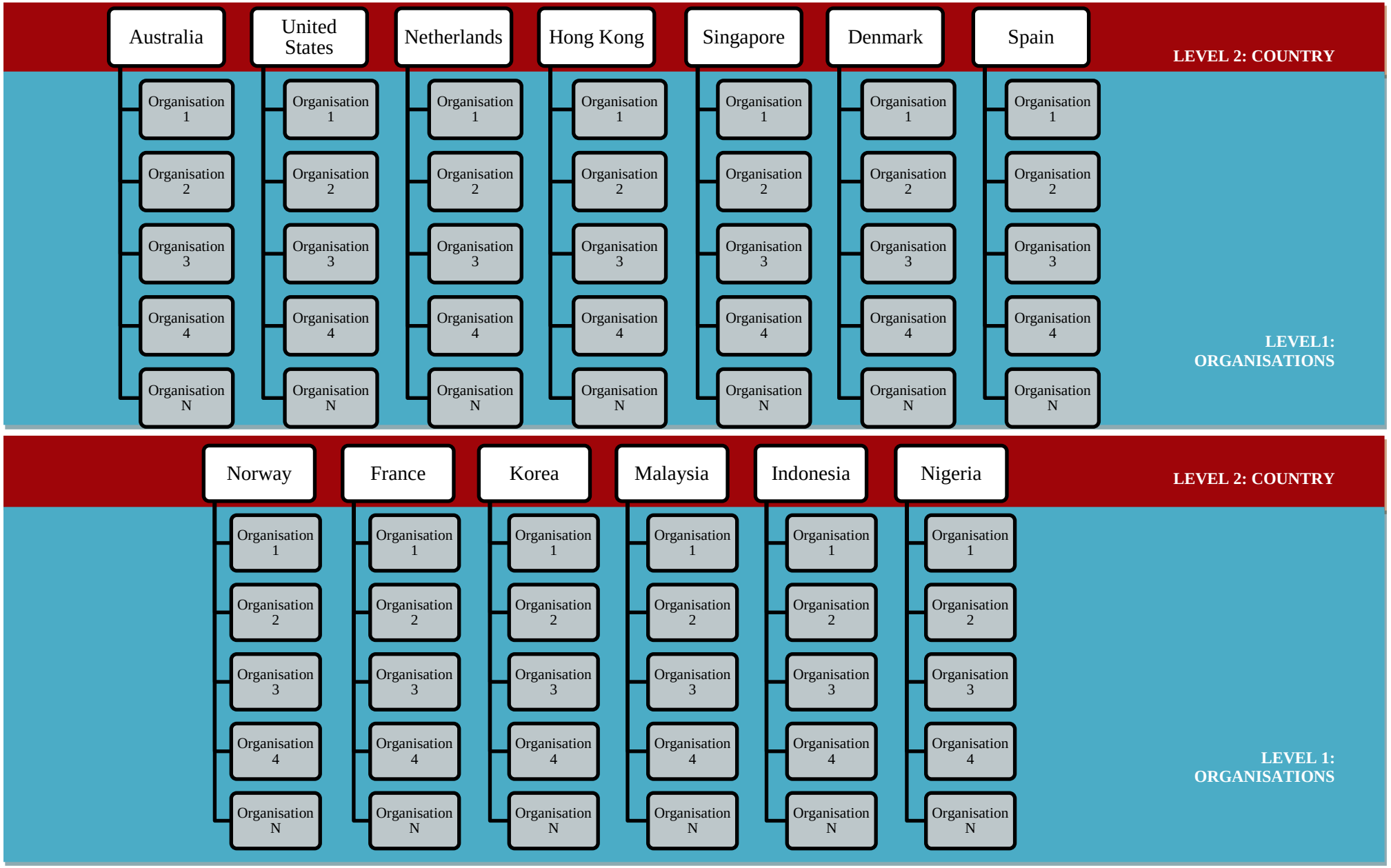
*2.2. Homoscedasticity*



**Appendix 3 – Hierarchical structure multilevel analysis**



## Appendix 4 – Descriptive statistics

**Table 9**
*Descriptive statistics*

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| *Dependent Variables* | | | | | |
| Return on Assets | 257 | 8.2% | 9.5% | -33.0% | 66.7% |
| Return on Equity | 259 | 17.77% | 35.1% | -188.0% | 287.4% |
| Tobin's Q | 257 | 2.38 | 2.62 | .63 | 21.6 |
| *Independent Variables* | | | | | |
| % Female board members | 256 | 12.7% | .14.7% | 0.00% | 66.7% |
| *Control Variables* | | | | | |
| Industry | 259 | .55 | .499 | 0 | 1 |
| Firm age | 259 | 74.1 | 62.95 | 1 | 400 |
| Board size | 256 | 7.29 | 3.74 | 1 | 20 |
| Leverage | 257 | 1.48 | 8.50 | .00 | 135.14 |
| Assets | 259 | 34,770.41 | 67,376.07 | .45 | 508,144.00 |
| Labour Force Participation | 259 | 44.12% | 3.52% | 36.10% | 47.70% |
| Gross Domestic Product | 259 | 2,198,342.58 | 4,463,478.72 | 290,896.00 | 17,419,000.00 |
| *Moderator Variables* | | | | | |
| Power distance | 259 | 57.50 | 22.68 | 18 | 100 |
| Individualism | 259 | 50.61 | 28.33 | 14 | 91 |
| Uncertainty avoidance | 259 | 50.32 | 23.19 | 8 | 86 |
| Masculinity | 259 | 42.00 | 17.72 | 8 | 62 |

## Appendix 5 – Mean levels per country

**Table 10**

*Panel A. Mean scores dependent variables*

| | ROA | ROE | Tobin's Q |
|---|---|---|---|
| Australia | 7.40% | 7.55% | 1.87 |
| United States | 9.43% | 35.68% | 2.67 |
| Netherlands | 5.38% | 16.51% | 1.67 |
| Hong Kong | 7.83% | 13.75% | 1.32 |
| Singapore | 4.46% | 8.35% | 1.24 |
| Denmark | 10.41% | 18.32% | 4.13 |
| Spain | 7.51% | 22.04% | 2.06 |
| Norway | 4.77% | 7.45% | 2.11 |
| France | 5.00% | 8.86% | 1.73 |
| Korea | 7.37% | 14.74% | 2.19 |
| Malaysia | 12.44% | 35.88% | 2.93 |
| Indonesia | 16.59% | 47.49% | 5.23 |
| Nigeria | 7.50% | 47.06% | 1.63 |

**Table 10**

*Panel B. Mean scores and standard deviation %female per country*

| Country | Observations | Mean | St. Dev. |
|---|---|---|---|
| Australia | 19 | 16.98% | 15.34% |
| United States | 20 | 19.89% | 8.78% |
| Netherlands | 20 | 11.22% | 16.59% |
| Hong Kong | 20 | 4.56% | 9.53% |
| Singapore | 20 | 12.83% | 18.41% |
| Denmark | 20 | 6.52% | 11.32% |
| Spain | 19 | 14.32% | 14.76% |
| Norway | 20 | 17.22% | 14.45% |
| France | 20 | 13.53% | 11.36% |
| Korea | 19 | 2.77% | 7.22% |
| Malaysia | 20 | 18.41% | 13.73% |
| Indonesia | 20 | 17.10% | 20.78% |
| Nigeria | 20 | 8.97% | 12.84% |

## Appendix 6 – Correlations

**Table 11**

*Correlation independent, control and moderator variables*

| | %Female | Industry | Firm age | Board size | Leverage | Assets | LFP | GDP | PDI | IND | UCA | MAS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| %Female | 1.000 | | | | | | | | | | | |
| Industry | .126* | 1.000 | | | | | | | | | | |
| Firm age | -.002 | .135** | 1.000 | | | | | | | | | |
| Board size | .256** | .009 | .074 | 1.000 | | | | | | | | |
| Leverage | -.056 | -.090 | -.077 | -.045 | 1.000 | | | | | | | |
| Assets | -.014 | .010 | .129* | .199** | .043 | 1.000 | | | | | | |
| LFP | -.086 | .066 | .202** | .068 | .048 | .196** | 1.000 | | | | | |
| GDP | .146* | .039 | .193** | .354** | .003 | .552** | .166** | 1.000 | | | | |
| PDI | .024 | -.062 | -.227** | .011 | -.065 | -.102 | -.751** | -.226** | 1.000 | | | |
| IND | .121 | .054 | .350** | .221** | .090 | .259** | .657** | .456** | -.778** | 1.000 | | |
| UCA | -.014 | .057 | .108 | .052 | .018 | .141* | .025 | .067 | .007 | .123* | 1.000 | |
| MAS | .055 | -.057 | -.125* | .211** | -.089 | .199** | -.328** | .340** | .540** | -.257** | -.021 | 1.000 |

* Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed); *** Correlation is significant at the 0.001 level (2-tailed)

## Appendix 7 – Multilevel analysis

**Table 12**

*Panel A. Dependent variable ROA*

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Estimates** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** |
| % Female board members | | | .044 | .041 | .030 | .041 | .033 | .042 | .041 | .042 | .049 | .041 |
| **Control variables** | | | | | | | | | | | | |
| Industry *(ref=service)* | .007 | .012 | .009 | .011 | .007 | .012 | .008 | .012 | .009 | .012 | .009 | .012 |
| Firm age | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 |
| Board size | .000 | .002 | .000 | .002 | .000 | .002 | .000 | .002 | .000 | .002 | .000 | .002 |
| Leverage | -.002* | .000 | -.002** | .000 | -.002** | .000 | -.002** | .000 | -.002** | .000 | -.002** | .001 |
| Total assets | -.000 | .000 | .000 | .000 | .000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 |
| Labour Force Participation | -.006* | .002 | -.006* | .002 | -.008* | .003 | -.007 | .003 | .006* | .002 | -.006* | .002 |
| Gross Domestic Product | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| **Moderator variables** | | | | | | | | | | | | |
| Power Distance | | | | | -.001 | .000 | | | | | | |
| Individualism | | | | | | | .000 | .000 | | | | |
| Uncertainty Avoidance | | | | | | | | | -.000 | .000 | | |
| Masculinity | | | | | | | | | | | -.000 | .001 |
| **Interaction variables** | | | | | | | | | | | | |
| Female * Power Distance | | | | | .004* | .002 | | | | | | |
| Female * Individualism | | | | | | | -.002 | .001 | | | | |
| Female * Uncertainty Avoidance | | | | | | | | | -.001 | .002 | | |
| Female * Masculinity | | | | | | | | | | | .005* | .002 |

* Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed); *** Correlation is significant at the 0.001 level (2-tailed)

**Table 12**

*Panel B. Dependent variable ROE*

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Estimates** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** |
| % Female board members | | | .042 | .155 | .004 | .156 | -.005 | .160 | .049 | .157 | .035 | .155 |
| **Control variables** | | | | | | | | | | | | |
| Industry *(ref=service)* | -.069 | .044 | -.068 | .044 | -.072 | .044 | -.071 | .044 | -.067 | .045 | -.070 | .044 |
| Firm age | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 |
| Board size | .002 | .005 | .001 | .006 | .003 | .006 | .001 | .006 | .002 | .006 | .003 | .006 |
| Leverage | -.003 | .003 | -.003 | .003 | -.003 | .003 | -.003 | .003 | -.003 | .003 | -.003 | .003 |
| Total assets | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 |
| Labour Force Participation | -.017** | .006 | -.017** | .006 | -.021* | .010 | -.020* | .009 | -.017* | .007 | -.020** | .007 |
| Gross Domestic Product | .000** | .000 | .000** | .000 | .000** | .000 | .000* | .000 | .000* | .000 | .000** | .000 |
| **Moderator variables** | | | | | | | | | | | | |
| Power Distance | | | | | -.001 | .002 | | | | | | |
| Individualism | | | | | | | .001 | .001 | | | | |
| Uncertainty Avoidance | | | | | | | | | -.000 | .001 | | |
| Masculinity | | | | | | | | | | | -.002 | .002 |
| **Interaction variables** | | | | | | | | | | | | |
| Female * Power Distance | | | | | .011 | .007 | | | | | | |
| Female * Individualism | | | | | | | -.006 | .005 | | | | |
| Female * Uncertainty Avoidance | | | | | | | | | .003 | .007 | | |
| Female * Masculinity | | | | | | | | | | | .012 | .009 |

* Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed); *** Correlation is significant at the 0.001 level (2-tailed)

**Table 12**

*Panel C. Dependent variable Tobin's Q*

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Estimates** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** |
| % Female board members | | | 3.330** | .011 | 2.930** | 1.108 | 2.873* | 1.115 | 3.190** | 1,126 | 3.335** | 1.117 |
| **Control variables** | | | | | | | | | | | | |
| Industry *(ref=service)* | .096 | .319 | .205 | .316 | .165 | .314 | .147 | .313 | .212 | .317 | .200 | .317 |
| Firm age | -.001 | .003 | -.000 | .003 | -.001 | .003 | -.000 | .003 | -.001 | .003 | -.001 | .003 |
| Board size | .021 | .047 | -.002 | .047 | .012 | .047 | .004 | .047 | -.004 | .047 | .001 | .047 |
| Leverage | -.009 | .019 | -.005 | .018 | -.008 | .018 | -.008 | .018 | -.005 | .018 | -.008 | .018 |
| Total assets | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 | -.000 | .000 |
| Labour Force Participation | -.136 | .092 | -.123 | .091 | -.278* | .111 | -.140 | .119 | -.115 | .097 | -.175 | .093 |
| Gross Domestic Product | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| **Moderator variables** | | | | | | | | | | | | |
| Power Distance | | | | | -.036 | .017 | | | | | | |
| Individualism | | | | | | | -.006 | .017 | | | | |
| Uncertainty Avoidance | | | | | | | | | -.006 | .014 | | |
| Masculinity | | | | | | | | | | | -.028 | .019 |
| **Interaction variables** | | | | | | | | | | | | |
| Female * Power Distance | | | | | .115* | .048 | | | | | | |
| Female * Individualism | | | | | | | -.106** | .038 | | | | |
| Female * Uncertainty Avoidance | | | | | | | | | -.043 | .049 | | |
| Female * Masculinity | | | | | | | | | | | .065 | .063 |

* Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed); *** Correlation is significant at the 0.001 level (2-tailed)

## Appendix 8 – Intra Class Correlation

**Table 13**
Estimates of Covariance Parameters – Tobin's Q

| | | Estimates | Std. Error |
|---|---|---|---|
| Residual | | 5.766702 | .530561 |
| Intercept [subject = country] | Variance | .979273 | .571215 |

*Formula:*

ICC = G / (G + *e*) (Verboon & Peels, 2014, p. 73)

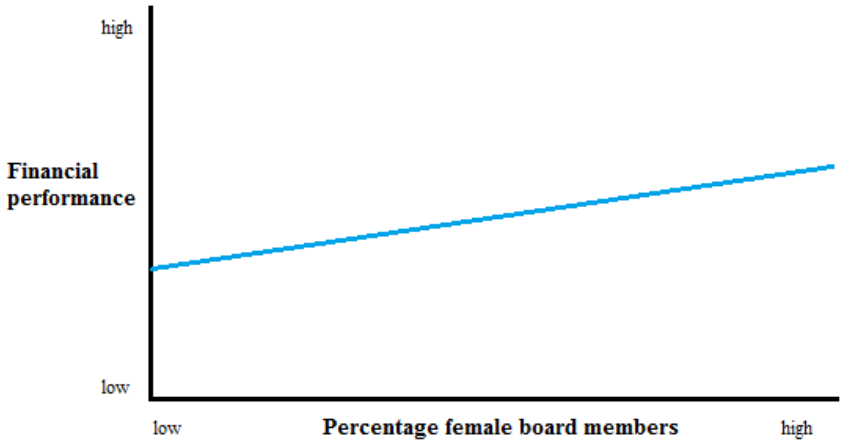
G = Intercept estimate = .979273

*e* = Residual estimate = 5.766702

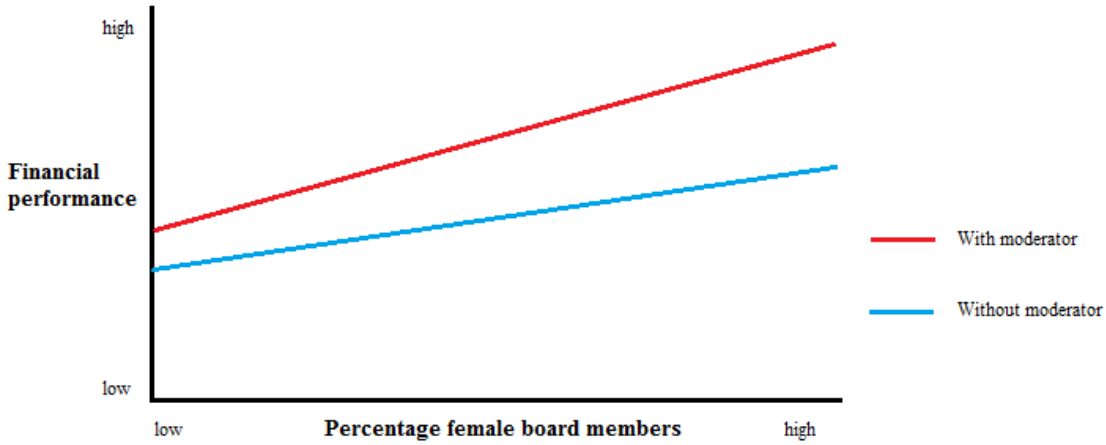
ICC = .979273 / (.979273 + 5.766702) = 0.1452 = 14.52%

**Appendix 9 – Visualisation interaction effects**

**Situation 1**: no interaction effect




**Situation 2:** positive interaction effect




**Situation 3:** negative interaction effect