Radboud University

Nijmegen School of Management

The impact of institutional quality on gender diverse boards and firm financial performance.

A comparison of firms operating in different emerging countries

Author: Rosalie van der Heide – s4247914

Supervisor: Dr. K. Burzynska

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Radboud University Nijmegen

Master Economics – International business

Abstract

Theoretical approaches as well as previous studies investigating the direct relationship between gender diversity in the board of directors and firm financial performance show contradictory results. Therefore, this thesis tries to make sense of some of these inconsistencies by investigating the moderating role of the quality of a country's institutional and legal context in which firms are located. Institutional quality is measured with two dimensions, the degree of shareholder protection and the quality of laws providing the same opportunities for women compared to men. In general, this study predicts that both dimensions positively moderate the relation between gender diverse boardrooms and firm financial performance. A cross-sectional empirical analysis studies data from 811 mostly listed firms from 18 emerging countries in 2017. Selecting multiple emerging countries extends the literature as most studies focus on developed countries or only a few emerging countries. The results show that both institutional quality dimensions seem to have no significant moderating effect on the relationship between female board representation and firm financial performance. Further research is needed to clarify the empirical inconsistent results and could take broader institutional context measures of countries into account.

Keywords: Board of directors, gender diverisity, financial performance, institutional quality, moderation effect, emerging countries

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1. Introduction

"Discrimination against women shall mean any distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field" is the official definition of discrimination against women stated in *The Convention on the Elimination of All Forms of Discrimination against women* (Assembly, 1979). This definition is received and accepted worldwide as discrimination based on gender is an continuing global issue (Charles, 2011).

One of the issues of gender discrimination that gain much attention is the underrepresentation of women in boardrooms. Despite the fact that female directors in general achieved higher education levels and have more external experience and expertise (Sabatier, 2015), as of 2018 only 16.9 percent of the board seats worldwide were occupied by women (Catalyst, 2020). In emerging countries female board representation is lower compared to developed countries with 11.2 percent and 21.6 percent female directors respectively (MSCI, 2018). If countries are compared, the highest percentages of women on boards in emerging countries are found in Papua New Guinea (33.3%) and South Africa (24.6%) while South Korea and Qatar have the lowest level of female directors of 2.3% and 0% respectively (MSCI, 2018).

To decrease gender inequality within boards there is an uprising global pressure to appoint female directors attributed to changes in society's opinion (Ramirez, 2003). As response, several countries have already taken measures (Adams & Ferreira, 2009). One approach carried out by governments has been the implementation of gender quota laws. Norway was one of the first countries that introduced a gender quota for boards of 40 percent in 2003 (Rose, 2007). Other countries such as France, Belgium and Spain imposed gender quotas for boards as well (Adams & Ferreira, 2009). Most emerging countries, except for India and Pakistan, currently have no quotas demanding women on public companies' boards (MSCI, 2018; Jamal, 2018). Instead, other approaches to achieve more gender equality are more often used. For instance, Singapore and South Africa implemented recommendations for more female board representation and both saw a 6.9 percent increase afterwards (Deloitte, 2019).

In line with these increased governmental interventions and awareness from society concerning gender issues, research on gender diverse boardrooms has increased (Campbell & Mínguez-Vera, 2008). Several studies tried to quantify the direct relationship between board

gender diversity and financial performance of firms which are mostly conducted in the United States and Europe with inconclusive results (Carter et al., 2003; Adams & Ferreira, 2009; Erhardt et al., 2003; Campbell & Minguez-Vera, 2008). A smaller amount of studies investigated this research question for emerging countries but their results are inconsistent as well (Liu, 2014; Low et al., 2015; Sanan, 2016; Lee-Kuen et al., 2017, Abdullah et al., 2016).

Several reasons are provided to explain the nature of these contradictory results and focus on variations in time periods, different country samples or the various ways financial performance is measured (Campbell & Minguez-Vera, 2008). Another way to explain the contradictory results is by the inclusion of a moderator variable (Miller & Triana, 2009). The environment in which a company operates could prevent the realization of benefits made by female directors (Miller & Triana, 2009) which could explain the empirical inconsistencies of the results found so far. Campbell & Minguez-Vera(2008) argue that conflicting results might be explained by the institutional and legal context. In this thesis we focus on the quality of two components in the institutional and legal context, namely the quality of shareholder protection and regulatory quality of laws relating to opportunities for women. Hence, the primary aim of this study is to empirically examine the impact of institutional quality as factor influencing the relationship between female board representation and firm financial performance and thereby increase our understanding of the inconsistent empirical results. The following research question is addressed:

"*How does institutional quality moderate the relationship between gender diverse boards and financial performance of firms in emerging countries?"*

This study contributes to the literature of board gender diversity and firm financial performance and has several practical implications. First of all, despite the considerable amount of studies, previous research on the relationship between gender diverse boards and firm financial performance has been mixed with some finding a positive, some a negative, and some no effect at all (Low et al., 2015; Lee-Kuen et al., 2017; Srivastava et al., 2018; Ujunwa et al., 2015; Siantar, 2016; Kagzi, 2018). According to Johnson et al. (2013), in most previous studies the national context in which firms are located is not taken into account. By adding institutional quality as moderator, this thesis contributes to the literature since research on moderator variables is limited and needs more attention (Marinova et al., 2016).

Second, while gender diversity and firm performance is heavily investigated, studies mostly focused on developed countries. The impact of female board members in emerging

countries is less studied. Due to differences in cultural aspects, governance mechanisms and economic conditions it is hard to generalize the results (Kang et al., 2007). Therefore a focus on emerging countries may contribute to understanding the impact of gender diversity for firms in these countries. In addition, by doing cross-country research and including multiple emerging countries from different continents in contrast to prior studies examining one country (Sanan, 2016; Siantar, 2016; Ujunwa et al., 2015) or a few countries (Low et al., 2015), this could further increase our understanding of gender diverse boards and firm performance (Carter et al., 2010).

Furthermore, in order to establish the desirability of a gender quota it is important to understand the impact of women in boardrooms on firm financial performance. Due to the beforementioned inconclusive results it remains a question for most emerging countries if it is economically wise to introduce those quotas. By investigating how the effectiveness of women might differ between countries with different institutional quality traits, this thesis may provide some insights regarding the attractiveness of such gender quota for a specific country. Ultimately, not for every country it may be desirable to achieve more board gender diversity by means of a mandatory gender quota (Simpson et al., 2010).

Finally, the results could be useful for firms in future hiring procedures for female executives. It is important for companies to cautiously consider the appropriate number of women in their boardrooms (Abdullah et al., 2016). For instance, if the results show that in countries with regulatory laws guaranteeing more equal opportunities for women, the extent to which women can contribute to boardrooms and subsequently firm performance increases, firms could consider to increase the level of female involvement in their boardrooms.

The remainder of this thesis is organized as follows. The next section will elaborate on existing theories and empirical literature and hypotheses are formed. Furthermore, chapter three contains the methodology of this study and the data that is used. Chapter four presents the results. Chapter five discusses the result in light of the existing literature. Also, limitations are discussed and suggestions for further research are provided. Finally, chapter six concludes.

2. Literature review and hypotheses

This chapter provides an overview of the current theoretical and empricial literature related to this study. First, board of directors and their main functions are elaborated. Furthermore, theoretical approaches and current mixed empirical results trying to explain the relationship between gender diverse boards and firm financial performance are discussed. Lastly, institutional quality as moderator is explained into more detail and hypotheses are formed.

2.1 Board of directors

Corporate boards consist of selected or nominated members and form the connection between managers responsible for day-to-day operations and shareholders in the capacity of owners of the company (Monks & Minow, 1995), with a main responsibility to the latter (Cadbury, 1999). The key role of the board is not to be involved with the daily business of a firm necessarily, but rather with monitoring management, providing them with information and advice, guaranteeing that the company conforms with current laws and regulations and also providing a link between the firm and its external environment is important (Erhardt et al., 2003; Mallin, 2004; Monks & Minow, 2004). The monitoring function of management gained attention last years (Campbell & Mínguez-Vera, 2008) and its well functioning is especially important for firms in emerging countries as they often suffer from a lack of external control mechanisms (Abdullah et al., 2016). Just the simple presence of a women on board can provide incentives for managers to perform better and pay more attention to the interest of shareholders (Demb & Neubauer, 1990).

The composition of corporate boards affects how well the functions and tasks are fulfilled (Marinova et al., 2016) and variety in the boardroom composition is widely identified as a critical component able to impact firm outcomes (Kang et al., 2007). When more diverse boards are assumed to fullfill their functions and tasks better, this suggests that it indirectly influences firm performance (Dalton et al., 1999; Kiel & Nicholson, 2003). The variety in composition can be interpreted in terms of age, gender, educational background and nationality (Campbell & Minguez-Vera, 2008) and is frequently used in previous studies. Gender diversity is one of the most important variables defining boardroom diversity (Lee-Kuen et al., 2017) and will therefore be the focus in this study.

2.1.1 Boardroom gender diversity

Diversity in boardrooms, based on gender, has been an important research topic last years caused by the fact that female directors are underrepresented (Lee-Kuen et al., 2017). Besides that it is a heavily researched issue, gender diversity gained attention in politics as well as society (Kang et al., 2007). Economic reasons are often used as one of the major arguments by proponents for more gender diversity within boardrooms. This is based on the assumption that gender diversity enables more economic activity and increases a firm's competitive advantage subsequently leading to higher firm financial performance (Campbell & Mínguez-Vera, 2008). On the other hand, ethical arguments state that it is not acceptable to discriminate and exclude people based on gender (Singh et al., 2004) and that the inclusion of women should not be used as mean but as a goal in itself (Brammer et al., 2007).

Although the presence of women in boardrooms is increasing, the figures are still low. When emerging countries are compared to developed countries, the level of female directors is in lower for the former (Catalyst, 2020). For instance, in contrast to the 23.4 percent for the United States and 39.6 percent for Norway, only 13.7 percent and 11.1 percent of the directors in Singapore and China are women (MSCI, 2018). A few of the factors that prevent those women to achieve leadership roles are more severe gender stereotypes and male-oriented organizational environments (Choi & Park, 2014). Another factor explaining the differences lies in the country's institutional environment. Governments introduced policies, rules or quotas to accomplish more gender diversity among corporate boards and to conform to social pressures and especially quotas have large impact (Adams & Ferreira, 2009; Ramirez, 2003).

Until now, mostly developed countries require firms to hire a minimum number or percentage of female directors (MSCI, 2019). Emerging countries are more reluctant and only India and Pakistan implemented mandatory gender quotas (MSCI, 2019). Instead, other initiatives such as diversity policies in corporate governance codes and recommendations by governments are more frequently used in emerging countries to promote diversity (Deloitte, 2019). The introduction of these policies and quotas are often based on the idea that women positively influence the functioning of boards and ultimately firm financial performance (Abdullah et al., 2016). However, the next section will show that theoretical perspectives as well as empirical results to support this idea are inconclusive.

2.2 Theoretical approaches on gender diversity and firm performance

There are different theories with underlying motivations trying to explain how gender diversity within boards affect firm performance. The following theories are presented below: agency theory, resource dependence theory, human capital theory and social psychological theory. The cumulative effect of these theories however is unclear.

Agency theory

According to the agency theory, efficient board supervision and monitoring of managers is important to reduce agency problems caused by different interests of management and shareholders (Fama & Jensen, 1983). Improved monitoring to reduce potential agency problems could be achieved by more diverse boards (Erhardt et al., 2003). More diverse boards, which can be achieved by including by more women, are argued to be more independent and develop better monitoring procedures, both resulting in better monitoring and controlling (Carter et al. 2003; (Lee-Kuen et al., 2017). Women are also motivated to observe management more closely and held them responsible for mistakes (Triana et al., 2014). Moreover, empirical research shows that female directors tend to be more active in their monitoring role (Liu et al., 2014). However, overmonitoring by the board can have adverse effects and mostly occurs in countries with strong governance (Adams & Ferreira, 2009). For firms operating in emerging markets, well monitoring of managers is assumed to be rather important since good corporate governance systems and external control mechanisms are often underdeveloped (Adams & Ferreira, 2009; Abdullah et al., 2016).

Resource dependence theory

Obtaining the needed recources in the external environment of firms is essential to survive and is central to the resource dependence theory (Pfeffer & Salancik, 2003). For the most optimal firm performance, boards are considered to be able to provide the link between a company and the needed external resources to achieve this (Ujunwa et al, 2015). Board composition is used as indicator of the capacity of the board to provide these critical resources (Hillman et al., 2009). Because a more diverse board allows for more options to consider (Carter et al., 2003), it is more effective in its functioning due to the provision of additional valuable resources, which subsequently can result in higher firm performance (Carter et al., 2010). In addition, gender diverse boards gain access to a larger pool of resources because of more diverse networks (Ali & Ng, 2013). Female directors are argued to be of a substantial benefit in emerging markets

because of their effectiveness in linking the firm with vital resources overseen by females (Hillman et al., 2007).

Human capital theory

The capabilities of a person in terms of education, competences and skills and how they can be utilized to positively impact the firm and its outcomes are central in the human capital theory (Becker, 1964; Terjesen et al., 2009). Gender diversity ensures unique human capital within a boardroom (Terjesen et al., 2009). It seems that women perform different roles than men on boards and therefore both add complementary value to the board due to their unique human capital (Hillman et al., 2002). Consequently, this theory suggests that board gender diversity influences board outcomes and in turn financial performance and although it does not explicitly foresee a positive impact on firm performance it highly suggests that this will be the case (Carter et al., 2010).

Social psychological theory

The last theory, social psychological theory, argues that the effect of board gender diversity may exterts both positive and negative effects. If social barriers are present, it raises the likelihood that the input of minorities is taken less seriously (Westphal & Milton, 2000). Evidence shows that persons with a majority status (male directors) regularly challenge the influence of minority members (female directors) and as a consequence, female directors will not have or only have a small influence on the decision making within boardrooms (Hambrick et al., 1996; Westphal & Milton, 2000). It is also argued that the social psychological process plays an important part in cooperation between members. A group that is more homogenous tends to be more productive and less emotional conflicts arise (Williams & O'Reilly, 1998). Therefore, the inclusion of women could negatively impact firm performance and could be a reason why firms prefer a less diverse board.

However, there are still arguments that support the diversity of gender and its positive effect on firm performance. For instance, potential positive effects can arise from including more women on board since it leads to more creative ideas and perspectives (Siantar, 2016). This improves the decision-making processes and therefore can contribute to better firm financial performance (Campbell & Minguez-Vera, 2008). The downside is that more perspectives could make the decision process more complex and lowers the speed of making important decisions (Lau & Murnighan, 1998; Campbell & Minguez-Vera, 2008), thereby offsetting the potential positive impacts. Overall, research on the psychological theory does not

provide a clear answer for what the effect of female board representation on firm performance is.

2.3 Empirical results

Similar to the theoretical inconsistencies, empirical research examining the relationship between gender diverse boards and firm financial performance has shown inconsistent results. While some studies find evidence for a positive relationship between both variables, others find evidence for a negative relationship and also empirical evidence for no relationship is found.

One line of studies state that the inclusion of more women leads to better firm performance. Research conducted by Liu et al. (2014) using a sample from Chinese boardrooms show that in general a positive relation exists between boardroom gender diversity and firm performance, although this relationship only holds for the percentage of female directors. The presence of one women has no significant influence on firm performance, while for boards containing three or more women the positive effect becomes significant and increases in strength, thereby offering support for the critical mass theory claiming that at least three women are necessary to generate significant effects (Kristie et al., 2011).

Similarly, Lee-Kuen et al. (2017) did not find a significant link between the presence of a female director and firm performance investigating firms in Malaysia, but the percentage of women in boardrooms in fact was positively associated with firm performance. This suggests that merely the presence of one women is not enough to affect market expectations of increased competitive advantage improving Tobin's Q (Lee-Kuen et al., 2017). While Liu et al. (2014) used the token status theory to explain the insignificance, family ownership is used by Lee-Kuen et al. (2017) to speculate about the insignificance since many Malaysian firms have high levels of family ownership.

Likewise, Low et al. (2015) investigated gender diversity in South Korea, Hong Kong, Malaysia and Singapore and showed that a higher percentage of women in boardrooms lead to higher firm performance. Interestingly, their results implicate that the first female director has a positive and significant impact on firm financial performance, in contrast to the outcomes of Lee-Kuen et al. (2017) and Liu et al. (2014). Contrary to their expectations, when cultural environment is added as moderating factor, the benefits of more women on boards decrease for countries with a more supportive attitude towards women and vice versa. Low et al. (2015) speculate that tokenism and gender stereotypes might cause the appointment of women to fulfill social expectations leading to this negative moderating effect.

Another line of studies state that there is an adverse impact of female board representation on firm performance and contrasting results are found in the Malaysian context by Abdullah et al. (2016). The positive impact of female directors on return on assets may be attributed to the excellent monitoring skills of women (Abdullah et al., 2016). On the contrary, common and often embedded in emerging countries are negative social perceptions towards women in leader positions and this could be the main reason explaining why gender diverse boards have a negative effect on Tobin's Q (Abdullah et al., 2016). Since female board representation is measured with a dummy only showing whether or not there is at least one women present on board, it is not possible to examine how both components of firm performance are affected by different levels of female representation. Furthermore, Darmadi (2013) shows that the presence of a female director has an adverse impact on firm performance of Indonesian firms in terms of ROA and the percentage of women has a negative effect on Tobin's Q. The high level of family ownership is used to explain this negative effect since women could be hired based on their family ties rather than on their expertise and skills.

Lastly, also some studies state that there is no impact at all. In research conducted by Siantar (2016), no significant relationship was found between female board representation and financial performance of listed Indian firms. Although the correlation matrix indicated a positive and significant effect, the results from the regression analysis were insignificant. Similarly, Ujunwa et al. (2012) found that the percentage of women has no significant effect on firm financial performance. Similar to Lee-Kuen et al. (2017), strong family ties of firms are used to explain for this insignificance.

Appendix I displays an overview of relevant empirical evidence from studies that focused on gender diversity and firm performance in emerging countries. Relatively speaking, most studies are conducted in India, most likely due to the Companies Act in 2013. The implementation of this gender quota for boardrooms gave the unique opportunity to study the performance effects afterwards.

2.3.1 Key insights

The discussed empirical results show positive as well as negative or insignificant results. Several reasons are provided to explain the inconsistent empirical literature. According to Carter et al. (2010), data from different countries or the use of different time periods can have a large impact on the outcomes. The effect of gender diverse boardrooms could be very localized (Siantar, 2016) and as the evidence shows, within countries different results arise. For instance in India, where positive (Sanan, 2016) as well as negative (Srivastava et al., 2018) and

insignificant results are found (Kagzi, 2018; Siantar, 2016). Furthermore, different empirical methods might affect the relationship resulting to variations in outcomes (Randoy et al., 2006) and when some key variables are not included problems of omitted variables could occur (Campbell & Minguez-Vera, 2008). As already mentioned, another possibility that might explain the contradictory findings is the presence of a moderator variable (Miller & Triana, 2009). Studies that used a moderator often concentrate on ownership characteristics of firms (Lee-Kuen et al., 2017; Abdullah et al., 2016) or the cultural environment (Low et al., 2015). It seems that the countries in which firms operate can be decisive for female directors to create firm value (Miller & Triana, 2009). Therefore this thesis argues that the national context may moderate the relationship between gender diverse boards and firm performance. The fact that the national context is important is also confirmed by Zhang (2020), who argues that most studies focus on moderators at group level, while the broader context could also be influential. According to Abdullah et al. (2016), the institutional context is next to the cultural environment a factor that shapes the impact of gender diverse boards on firm performance. Moreover, Campbell & Mínguez-Vera (2008) argue that the legal and institutional context might explain the inconsistencies. Accounting for this institutional context may contribute to our underderstanding of the relationship between gender diversity within boardrooms and firm performance (Konrad et al., 2016). Therefore, we add an institutional context variable as moderating factor to find an explanation for the variation in outcomes in emerging countries.

2.4 Gender diversity, financial performance and institutional quality

Institutional quality is a "broad concept that captures law, individual rights and high quality government regulation and services" (Bruinshoofd, A., 2016, p. 1). In this thesis, we focus on the quality of the legal and institutional context captured by governmental regulations and laws. More specifically, two quality dimensions, namely the extent to which shareholder protection is guaranteed (Attah-Boaky et al., 2020) and the extent to which countries' laws provide gender equality (Post & Byron, 2015; Hyland et al., 2020) are used to form the hypotheses.

2.4.1 Shareholder protection quality

The degree to which countries have guaranteed and arranged protection for shareholders differs (Djankov et al., 2008). According to Cadbury (1999), the main responsibility for directors lies by the shareholders of the firm and the degree to which the board of directors are encouraged or feel pressed to utilize the various skills, knowledge and experience of female board members

could be dependent on the extent of shareholder protection (Post & Byron, 2015). When the protection of shareholders is inadequate, board directors are less driven and encouraged to improve their decisions and monitoring of managers since it is harder to hold them accountable for mistakes (Post & Byron, 2015). This increases the probability that the unique human capital in terms of education, competences and skills of female directors that can add value to the firm will be taken less serious. In addition, García-Meca et al. (2015) argue that in low-level protection countries, it will be less likely that women are found in influential positions further decreasing the influence female board members might have.

On the contrary, when countries have a higher quality of shareholder protection shareholders can more easily sue or replace directors who show opportunistic behaviour and do not behave in the best interest of the shareholders. It increases the likelihood that the input of female board members is taken more serious which could improve the decision-making process and subsequently firm performance (Post & Byron, 2015). In addition, women are more motivated to observe management closely and held them responsible for their mistakes (Triana et al., 2014) and tend to be more active in their monitoring role (Liu et al., 2014). These monitoring capabilities of women are assumed to have the most significant effect in countries that lack strong corporate governance systems which is common in emerging countries (Adams & Ferreira, 2009) and therefore is expected to further impact firm performance in a positive way. For these arguments, we hypothesize that shareholder protection quality positively moderates the relation between female board representation and financial performance of companies:

Hypothesis 1 (H1): *There is a positive moderating effect of shareholder protection on the relationship between gender diverse boardrooms and accounting performance (1a) and market performance (1b) in emerging countries.*

2.4.2 Quality of laws concerning gender equivalence

Discrimination based on gender is assumed to be very persistent and visible in regulations and laws (Hyland et al., 2020). The degree to which countries provide similar access for women in comparison to men regarding economic prospects and resources differs (Hausmann et al., 2012). We expect that in countries with laws providing more equal opportunities for women in terms of economic involvement, schooling and employment (Hausmann et al., 2012), the positive effect of female directors on firm financial performance is twofold.

First, when women are granted more more access to economic opportunities, education and resources, it increases the likelihood that women obtain the suitable skills and knowledge for leadership positions (Wright et al., 1995). These improved qualities and capabilities increase the likelihood that boards utilize these skills and knowledge of women increasing the potential positive effect of women on board actions and subsequently firm outcomes (Post & Byron, 2015). Also, laws might indirectly reflect society's attitude towards women and if society has a more positive mindset towards women and is more encouraging to let them fulfill leadership roles, women feel more supported to employ their unique human capital in boardrooms and appear to have the needed support to positively affect firm performance (Hoobler et al., 2018).

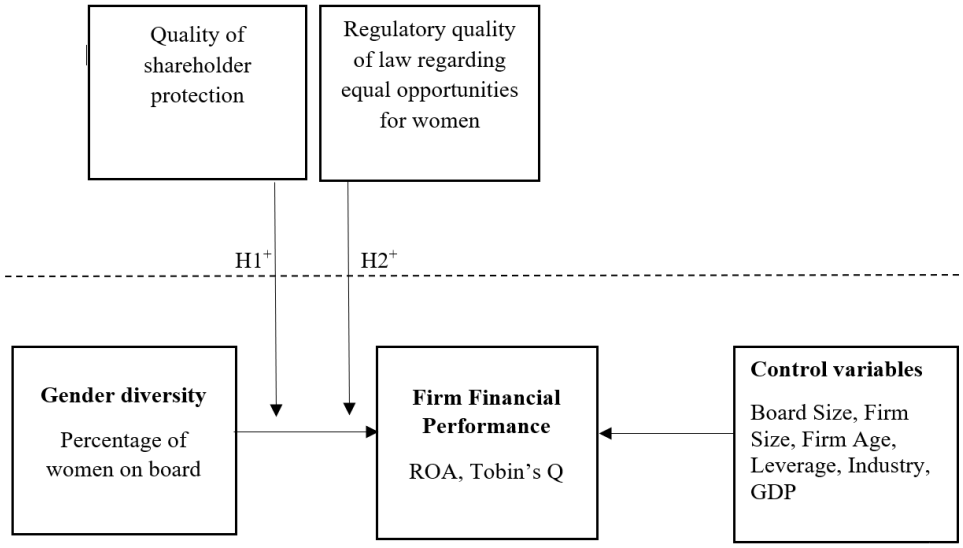
Second, in countries with more gender equality captured in the institutional environment women can have a positive effect on the legitimacy for the company from stakeholders leading to positive impacts on firm performance (Abdullah et al., 2016). The legitimacy of women in leadership positions is normally more under pressure in emerging countries since women in boardrooms are more underrepresented compared to developed countries and societies are often more sceptical about women fulfilling the director position which can result in negative effects (Abdullah et al., 2016; GMI, 2013). Legitimacy from external parties is based on the idea that a company's activities are legitimized by acknowledging current values, rules and laws (Liu et al., 2014). If the current values, rules and laws point towards more equality for women, institutional investors in those countries as one of the firm's external parties put pressure on companies to increase gender diversity in their boards and benefitting firms responding to this (Byoun et al., 2016). Moreover, in the eyes of employees and customers women on boards can provide valuable legitimacy for the firm (Hillman et al., 2009; Brammer et al., 2007). For these arguments, we hypothesize that the regulatory quality concerning equal access and opportunities for women positively moderates the association between female board representation and financial performance of companies:

Hypothesis 2 (H2): *There is a positive moderating effect of regulatory quality for the equivalence of women on the relationship between gender diverse boardrooms and accounting performance (2a) and market performance (2b) in emerging countries.*

2.4.3 Conceptual model

Based on the arguments and hypotheses, figure 1 gives a visual overview of the relationship that will be empirically tested in this study.

Figure 1: Conceptual model



3.1 Research Method

3.1 Data sample

The sample for this thesis consists of 811 mostly listed firms from 18 emerging countries for which data was available. The companies are retrieved from Eikon using the Worldscope constituents list. The reason for using this list instead of national stock exchanges that are often used is due the fact that Eikon does not contain the national stock exchanges for multiple emerging countries. The companies that are included on this list are mainly companies listed on their national stock exchanges or firms that are included in global indexes (Thomson Financial, 2007). Table 1 provides an overview of the sample composition of firms. Firms that are not geographically located in the distinct country are excluded since it might influence the results (Lückerath-Rovers, 2013). Also, following the convention in literature, only nonfinancial firms are included in our sample (Liu et al., 2014; Lee-Kuen et al., 2017). The investigation year 2017 is chosen, since data to measure shareholder protection quality is available for this year latest. Therefore a more recent year is not possible. We only use data for one year due to time limitations and cross-sectional data is suitable because this study is interested in the effect of institutional quality on the association between gender diversity in boards and firm performance in the first place, but not how the impact is over time.

Table 1: Sample composition

Country	Number of companies	Percent
Argentina	27	3.3
Brazil	72	8.9
Chile	31	3.8
China	157	19.4
Colombia	20	2.5
Hong Kong	105	12.9
India	83	10.2
Indonesia	33	4.1
Malaysia	47	5.8
Mexico	25	3.1
Peru	15	1.8
Philippines	20	2.5
Russia	29	3.6
Singapore	24	3.0
South Africa	42	5.2
South Korea	36	4.4
Thailand	28	3.4
Turkey	17	2.1
Total	**811**	**100**

3.2 Variables measurement

3.2.1 Dependent variable

The dependent variable of this study is the financial performance of firms. In order to improve the reliability of the estimations, this paper used both accounting-based and market-based measurements for performance: return on assets (ROA) and Tobin's Q (TOBQ). ROA is an accounting-based peformance measure which is computed as follows: net income is divided by the book value of a firm's assets (Ujunwa et al., 2012). It is a good indicator of how well assets have been utilized to achieve income for shareholders (Carter et al., 2010). A higher ratio indicates higher effectiveness, since the firm generates more profits with less investment (Campbell & Mínguez-Vera, 2008).

The ratio of Tobin's Q is measured as follows: the market value of a company is divided by the book value of the firm's total assets (Zhang, 2020). In contrast to return on assets that provide insights based on events that already have taken place, Tobin's Q reveals expectations of future performance and reflects the growth potential of a firm (Demsetz & Villalonga, 2001). A ratio of 1.0 or higher indicates efficient utilization of resources (Campbell & Minguez-Vera, 2008). The Asian equity market is argued to be more subjected to speculative trading (Low et al., 2015) and this might cause biases when Tobin's Q is used for these countries. Despite these concerns, Tobin's Q is still used by many researchers (Lee-Kuen et al., 2017; Abdullah., 2016; Liu et al., 2014) and will therefore be used as one of our performance measures. The ratio of return on assets and values to calculate Tobin's Q are retrieved from Eikon.

3.2.2 Independent variable

The independent variable of this study is gender diversity in the board of directors. Different measures are used in the literature to quantify board gender diversity representing the distribution of female and male board directors. In prior research, boardroom gender diversity is often measured by the percentage of women on boards (PWOB) and is used in this paper to measure gender diversity as well (Darmadi, 2013; Siantar, 2016; Liu, 2014; Lee-Kuen et al., 2017). Eikon is used to retrieve data for this variable. Secondly, to examine whether the critical mass of 30% female directors is necessary to achieve a significant effect on firm performance we dummy-coded the variable (DWOB). The value is 1 if the percentage of gender diversity is equal to or higher than 30% and 0 otherwise (Low et al., 2015).

3.2.3 Moderator variable

The moderator variable in this paper is institutional quality. Institutional quality is measured with two dimensions, namely the quality of shareholder protection and quality of equivalence for women in the regulatory and legal institutional environment. Shareholder protection quality (SHAREQ) is measured with the World Bank's (2017) strength of investor protection index. This index is the mean of the following three dimensions: the degree of disclosure, the degree to which directors are kept liable and the ease with which shareholders can sue directors for misbehaviour (World Bank, 2017). The index ranges from zero (some or no investor protection) to ten (highest amount of investor protection) and data is available from 2007-2017.

Regulatory and legal equality of women (LAWQ) is measured using the Women, Business and the Law index. This dataset focuses on legislature that facilitate access for women concerning their economic participation (Hyland et al. 2020) and contains data for 1970 to 2019. The index score is based on the average of each country's value for the eight topics focusing on laws and regulations concerning mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets and pensions. The scores are obtained from the World Bank (2017). A higher score indicates more equal gender laws and the highest possible score a country can get is 100. For instance, Malaysia's average WBL score was 50.0 in 2017, implying that women were given half the number of rights compared to men.

3.2.4 Control variables

In order to control for other influences on the dependent variable next to board gender diversity, multiple variables are included in line with previous studies. This allows us to better ascertain the effect of gender diverse boards on firm financial performance. First, the size of a firm's board (BSIZE) is included, since previous research shows that board size is related to both gender diversity and firm performance although the impact on the latter is not entirely clear. The probability that boards are represented by more women increases with the size of boards (Deszo & Ross, 2012). A higher number of board members could have a positive influence on firm financial performance, since larger boards are assumed to posses a greater amount of knowledge and information leading to more efficient decision-making and having more ties to external resources (Carter et al., 2010; Jackling & Johl, 2009). On the contrary, when an increase in board size leads to more conflicts among members and more agency related problems it can also decrease performance (Carter et al., 2010; Labelle et al., 2015). Board size is measured as the total number of board members and this variable is retrieved from Eikon. Moreover, firm age (AGE) is included, because of its effect on firm financial performance

although the direction of this effect is inconclusive as well. The increased experience of older firms could have a positive impact on firm financial performance, although research also suggests that older firm may be subjected to increased bureaucratic and managerial issues decreasing firm performance (Majumdar, 1997; Martin-Ugedo & Minguez-Vera, 2014). Firm age is measured as the total years since incorporation and retrieved from Eikon. The third control variable that is included is size of a firm (FSIZE). Firm size is assumed to positively influence financial performance, because larger firms have more competitiveness (Dogan & Yildiz, 2013) and benefit from larger economies of scale (Smith et al., 2006). Furthermore, for larger firms it is more easier to obtain external capital that enhances performance for firms with less information asymmetry and reduces profits for firms that suffer from high information asymmetry levels (Labelle et al., 2015). Firm size is measured as total assets and retrieved from the database Eikon. Furthermore, the debt level or leverage ratio (LEV) is included because prior studies show that the level of debt is negatively related to our financial performance measures Tobin's Q and ROA (Dezso & Ross, 2012; Jackling & Johl, 2009). Data to calculate the percentage of debt level is obtained from Eikon and is measured by dividing the total debt of a firm by its total assets multiplied by 100. Also, the association between gender diverse boards and financial performance of firms can differ between industries (Carter et al., 2010). Therefore, industry (IND) is included as fifth control variable. A dummy variable is created that makes a distinction between service and manufacturing firms where service firms get a value of 1 and 0 otherwise. The Standard Industrial Classification (SIC) codes are used to differentiate between these two industry categories and is retrieved from Eikon. The sixth and last control variable is Gross Domestic Product (GDP). This variable is added to account for economic differences between the sample countries. In addition, GDP is also expected to say something about the financial health of firms since it is related to the economy a firm operates in (Rajewski, 1994). The GDP of each country is retrieved from the World Bank (2017). Table 2 on the next page provides a summary of all used variables in this study.

Table 2: Measurement and operationalisation of variables

Variable	Variable Label	Measurement
Dependent variables		
Firm Performance	*ROA*	Net income divided by total assets
	log(TOBQ)	Sum of market value divided by the book value of total assets
Independent variable		
Board gender diversity	*PWOB*	Percentage of female members
	DWOB	Dummy variable with value of 1 when board comprises of at least 30 percent women
Moderator variables		
Institutional Quality	*SHAREQ*	Average of three dimensions concerning disclosure, liability and impeachment
	LAWQ	Average of eight topics: mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets and pensions
Control variables		
Board size	*BSIZE*	Number of members on a board
Firm age	*log(AGE)*	Years since incorporation
Firm size	*log(FSIZE)*	Total assets
Leverage	*LEV*	Total debts divided by total assets multiplied by 100
Industry	*IND*	Classified as production or service firm
Gross Domestic Product	*log(GDP)*	GDP per country in billions

3.3 Research model

This study uses cross-sectional data in the year 2017. An Ordinary Least Square (OLS) regression is used to empirically test the hypotheses using the statistical tool STATA. This research strategy is in line with previous research investigating gender diversity and firm performance (Sanan, 2016; Lee-Kuen et al., 2017; Low et al., 2015; Ionoscu et al., 2018).

In order to be able to examine the moderating effect of both institutional quality dimensions, interaction variables are included that are formed by simply multiplying the independent variable with both moderator variables (Cohen et al., 2003). Before the multiplications are created, the independent variable and both moderator variables are centered. Centering implies that a constant (the mean of the variable here) is subtracted from every score of this variable (Field, 2009) and is done in case a value of zero has no meaning (Field, 2009). Since the lowest value is 4.2 for shareholder protection as moderator a value of zero has no meaning. By centering the variables, it overcomes the problem that the regression results display the relationship between female board representation and financial performance when shareholder protection and quality of regulatory laws are zero (Field, 2009). After centering the

main effect of the independent variable is for the other moderator variable's mean and vice versa.

3.4 Research equation

To investigate the moderating role of shareholder quality on the relationship between gender diverse boards and firm financial performance, the following cross-sectional regressions are performed for hypothesis 1a and 1b:

Return on Assets $= \beta_0 + \beta_1 PWOB + \beta_2 SHAREQ + \beta_3 PWOB*SHAREQ + \beta_4 BSIZE + \beta 5\log(AGE) + \beta 6\log(FSIZE) + \beta_7 LEV + \beta_8 IND + \beta_9 \log(GDP) + \varepsilon$

log(Tobin's Q) = $\beta_0 + \beta_1 PWOB + \beta_2 SHAREQ + \beta_3 PWOB*SHAREQ + \beta_4 BSIZE + \beta 5\log(AGE) + \beta 6\log(FSIZE) + \beta_7 LEV + \beta_8 IND + \beta_9 \log(GDP) + \varepsilon$

To investigate how the regulatory law quality guaranteeing equal opportunities for women might moderate the relationship between gender diverse boards and firm financial performance, the following cross-sectional regressions are performed for hypothesis 2a and 2b.

Return on Assets $= \beta_0 + \beta_1 PWOB + \beta_2 LAWQ + \beta_3 PWOB*LAWQ + \beta_4 BSIZE + \beta 5\log(AGE) + \beta_6 \log(FSIZE) + \beta_7 LEV + \beta_8 IND + \beta_9 \log(GDP) + \varepsilon$

log(Tobin's Q) $= \beta_0 + \beta_1 PWOB + \beta_2 LAWQ + \beta_3 PWOB*LAWQ + \beta_4 BSIZE + \beta 5\log(AGE) + \beta_6 \log(FSIZE) + \beta_7 LEV + \beta_8 IND + \beta_9 \log(GDP) + \varepsilon$

Log indicates that the variables are transformed to their natural logarithms and is further explained in section 4.2.

4. Results

4.1 Descriptive statistics

Table 3 shows significant differences between the sample countries for the board characteristics and both firm performance measures. South African firms had the highest level of female board representation (24.3%), followed by Malaysia (20.3%) and India (13.6%). In South Korean firms women are poorly represented (1.2%), comparable to the 1.6% found by Low et al. (2015). In addition, 97.6% of the South African and Indian firms have at least one women in their boardroom. This latter percentage is no surprise as Indian listed and other large public firms are obliged to include one or more women to their boardroom (Deloitte, 2019). The fact that this percentage is not 100% could be due to the fact that not all firms in this sample are necessarily listed and probably not large enough to meet this gender quota. Interesting is that South African firms have the similar high percentage of firms with at least one female director while there is no mandatory gender quota. South Korean firms again are poorly represented with only 8.3% of firms having at least one female director. Regarding board size, Mexico has the largest boards with an average of 13.9 members, while Indonesian boards are almost half the size with 6.4 directors. When looking at firm financial performance, Argentinian firms had the highest financial performance both for ROA and Tobin's Q. The lowest firm financial performance for both measures are generated by Colombian firms.

Table 3: A comparison of board characteristics and firm performance between countries

Country	Board Size	% Female directors	% Firms with at least one female director	ROA	Tobin's Q
Argentina	13.22	5.83	44.4	15.92	3.09
Brazil	9.33	9.42	58.3	6.28	1.75
Chile	8.39	6.98	45.2	5.26	1.51
China	10.06	10.13	62.4	6.76	1.98
Colombia	8.4	11.82	71.4	5.24	1.15
Hong Kong	10.68	10.98	67.3	6.67	2.09
India	11.1	13.57	97.6	10.02	3.10
Indonesia	6.36	9.48	44.1	10.53	2.4
Malaysia	9.36	20.33	87.2	7	2.38
Mexico	13.92	8.13	60	6.47	1.75
Peru	9.73	7.55	46.7	6.14	1.44
Philippines	10.2	8.45	57.1	6.43	1.73
Russia	10.86	6.49	51.7	11.49	1.31
Singapore	9.33	10.87	66.7	6.02	1.46
South Africa	11.40	24.29	97.6	5.99	1.6
South Korea	7.64	1.23	8.3	7.30	1.62
Thailand	13.29	12.49	89.3	7.95	2.31
Turkey	11.59	9.94	64.7	10.3	1.71

Table 4 shows the descriptive statistics of all untransformed variables in this study. On average, ROA as proxy for firm financial performance shows a positive value for the sample companies of 7.6%. Hence, these firms are able to utilize their assets efficiently in generating profits. The minimum and maximum value show a large range from -35.2 % to 46.1% indicating that there are large differences among firms, where some firms are highly efficient and others not. For the performance measure Tobin's Q the value shows an average for the sample firms of 2.03. Since this ratio is higher than 1 it indicates that the market value of those companies is greater than their replacement costs, and implicates future growth opportunities (Marinova et al., 2016). Also here significant differences among companies exists. The lowest value of Tobin's Q is 0.38 while firms operating very efficiently and are assumed to have more growth potential obtained a Tobin's Q ratio of 19.10. Continuing, companies have on average 11.0% female directors. Some firms have no female directors at all, while the maximum percentage of female board members is 57.1%. From all the companies, only 8% of them reached the critical mass, indicating that at least 30% of the board members are women. Boardrooms in this sample contains on average 10 members, with a minimum of 1 and a maximum of 28 directors.

Table 4: Statistical description of the data

Variable	N	Mean	St. Dev.	Minimum	Maximum
Dependent variables:					
ROA	811	7.58%	7.35%	-35.23%	46.1%
TOBQ	811	2.03	1.82	0.38	19.10
Independent variable:					
PWOB	811	11.0%	10.91	0	57.14
DWOB	811	0.08	0.28	0	1
Moderator variables:					
SHAREQ	811	6.36	1.15	4.2	8.3
LAWQ	811	76.4	9	50	95
Control variables:					
BSIZE	811	10.23	3.29	1	28
AGE	811	38.23	24.91	4	194
FSIZE	811	$1.39e^{07}$	$3.08e^{07}$	37,299	$3.42e^{08}$
LEV	811	27.2%	18.1%	0%	126.9%
IND	811	0.4	0.49	0	1
GDP	811	3,264,850	4,497,917	20,191.76	$1.23e^{7}$

4.2 Variable tests

The variables are tested for the following assumptions in order to be able to perform the best available Ordinary Least Square regression: normal distribution, multicollinearity and heteroscedasticity.

4.2.1 Normal distribution

All variables used in this study are tested for normality. By plotting graphs of each variable it seems that some variables are not normally distributed. In addition, a Skewness-Kurtosis test is performed. If the p-value is less than or equal to 0.05 the test rejects the hypothesis that assumes normality. The results confirm that indeed some variables, are not normally distributed. For these variables namely Tobin's Q, firm size, firm age and GDP the natural logarithms are taken to achieve an approximately normal distribution in order to comply with the OLS assumption of normality (Studenmund, 2014). The transformation is done because all deviations from normality are large. After transformation, for each variable a histogram is generated and the transformed variable show an approximate normal distribution. Hence, the transformations are maintained. The transformation of the dependent variable Tobin's Q is carefully taken, since this variable is related to all the other variables in our model. Table 5 shows the descriptive statistics of these transformed variables. It should be noted that due to the transformation into their natural logarithms, the values are no longer naturally interpretable.

Table 5: Descriptive statistics of transformed variables

Variable	N	Mean	St. Dev.	Minimum	Maximum
log(TOBQ)	811	0.49	0.60	-0.96	2.94
log(FSIZE)	811	15.46	1.39	10.53	19.65
log(AGE)	811	3.46	0.62	1.39	5.27
log(GDP)	811	14.04	1.48	9.91	16.33

4.2.2 Heteroscedasticity

Furthermore, the variables are tested for heteroscedasticity with a Bruesch-Pagan /Cook-Weisberg that is performed after each regression. The null hypothesis states that the error term is homoscedastic and hence has a constant variance. The results of these test are significant and thus the null hypothesis is rejected at a significance level of 1%. Hence, this implies that there is a problem of heteroscedasticity and the error term demonstrates an increasing variance. To correct for this, all regressions are executed with robust standard errors.

4.2.3 Multicollinearity

To test the independent variables for multicollinearity, a correlation matrix is generated. Table 6 shows the relationships between all variables used in this study. Gender diversity is positively correlated with ROA and Tobin's Q, being only significant at 1% level for the latter. Gender diversity does not show any high correlation to the other explanatory variables. Control variables that are significantly correlated with both performance measures are firm size and debt level. The negative direction of the association between debt level and firm performance is according to the expectations while for firm size, the expected direction in research is mostly positive. Also, GDP is significantly and negatively correlated with ROA.

Overall, the correlation matrix shows that none of the independent variables have a correlation of 0.7 which is normally used as threshold indicating that there is a problem of multicollinearity (Kennedy, 2008). An additional check to test for multicollinearity is done by a Variance Inflation Factor (VIF) test that is performed after each regression. The rule of thumb for this test is normally 10, which means that values greater than 10 indicate problematic multicollinearity (Field, 2009). According to the computed VIF values, which are all far below 10 it can be concluded that our data is not subject to multicollinearity.

Table 6: Pearson Correlation Matrix

Variable	*log(TOBQ)*	*ROA*	*PWOB*	*SHAREQ*	*LAWQ*	*BSIZE*	*log(AGE)*	*log(FSIZE)*	*LEV*	*IND*	*log(GDP)*
log(TOBQ)	1.0000										
ROA	0.6081***	1.0000									
PWOB	0.0977***	0.0158	1.0000								
SHAREQ	-0.0207	0.0091	0.1411***	1.0000							
LAWQ	-0.1619***	-0.110***	-0.1343***	-0.1139***	1.0000						
BSIZE	-0.0435	-0.0200	0.0674	0.0038	0.0785**	1.0000					
log(AGE)	-0.0442	-0.0125	0.0360	0.2060***	0.0364	0.1005***	1.0000				
log(FSIZE)	-0.4771***	-0.298***	-0.1336***	-0.1590***	0.0493	0.1877***	-0.0303	1.0000			
LEV	-0.3011***	-0.309***	-0.0294	-0.0639*	-0.0188	0.0601*	-0.0243	0.2413***	1.0000		
IND	-0.0022	-0.0096	-0.0075	0.1014***	0.0103	0.0566	-0.1445***	-0.0129	0.0793**	1.0000	
log(GDP)	0.0106	-0.0763**	-0.0574	-0.5631***	-0.0023	-0.0796**	-0.2258***	0.3398***	0.0415	-0.145***	1.0000

Notes: *, **, *** are respectively significance level of 10%, 5%, 1%. See table 2 for variable definitions.

4.3 Regression analysis

4.3.1 Gender diverse boards and firm financial performance

Prior to investigating the possible moderating role of institutional quality on the relationship between female board representation and financial performance of companies, this section investigates the direct relationship. Since the empirical results in current literature as well as theoretical predictions are contradictory and the main focus of this thesis is to investigate how a moderating factor could explain this there is no separate hypothesis set for the direct association. Results of the regressions testing the relationship between the percentage of female directors and both dependent variables are presented in table 7. Regression (1) represents the dependent variable ROA and (2) the ratio of Tobin's Q. The number of observations is for both regressions 811. The explanatory power is 15.14% for the first regression and 30.36% for the second. This reflects the percentage of variance in both dependent variables that can be explained by the variance in the independent variables. In regression (1), gender diversity measured with the percentage of female directors shows a small negative effect on ROA, but this effect is insignificant (-0.0187; p =0.47). This suggests that increasing the percentage of women in boardrooms does not lead to a significant change of the actual performance of a company. In regression (2), the results show that the regression coefficient of the percentage of female directors on Tobin's Q is positive, but this effect is also insignificant (0.002; p=0.3). Hence, there is no statistical indication found that the relationship between gender diversity and Tobin's Q is significantly different from zero. This insignificance is in line with previous studies (Siantar, 2016; Kagzi, 2018; Ionascu et al., 2018). Referencing to the theoretical approaches discussed in section 2, the results suggest that the positive effects of more gender diverse boardrooms on board functions and subsequently firm performance may not be applicable for firms in this sample.

In terms of the control variables, the level of leverage and the size of a firm show a significant relationship with both performance measures. Firm size shows a significant and negative effect on ROA as well as Tobin's Q. This means that the larger the firm, the lower the values of ROA and Tobin's Q. Although this effect is expected to be mainly positive, empirical research also found a negative relationship between both variables which is ascribed to more agency related problems in larger companies (Campbell & Minguez-Vera, 2008). The percentage of debt also shows a significant negative impact on both firm performance measures which is in line with our expectations (Dezso & Ross, 2012; Jackling & Johl, 2009). Lastly, the country's GDP and board size have a small positive and significant effect on Tobin's Q. As already mentioned, the effect of board size on firm performance in literature is unclear (Carter

et al., 2010; Jackling & Johl, 2009; Labelle et al., 2015). A possible explanation for the significant effect of GDP on Tobin's Q could be explained by the fact that the ratio of Tobin's Q reflect growth opportunities of a firm and investors could expect that wealthier countries possess more growth opportunities for companies.

To investigate whether a certain level of female board involvement is necessary to obtain a significant impact on firm financial performance (Low et al., 2015), also known as critical mass, a dummy variable was created. The regressions are repeated with this variable representing a critical mass of at least 30% female board members and the results are displayed in regressions (3) and (4). The number of observations remain the same as regressions (1) and (2) and the goodness of fit reflected by R^2 slightly changes to 16.28% and 30.34% respectively. For ROA as financial performance measure, the results in regression (3) show that that the effect of this variable became strongly negative, significant at 1% level. When focusing on Tobin's Q as dependent variable, the coefficient of the critical mass variable in regression (4) is now negative but insignificant (-0.06; $p = 0.38$). Both results are contrary to the expected positive and significant effect on firm financial performance when the critical mass is reached (Low et al., 2015) and are further discussed in section 5.1. Regarding the control variables, the direction and significance remains similar. Leverage and the size of the firm still have a significant negative impact on ROA as well as Tobin's Q. Moreover, the positive direction and significance of board size and GDP on Tobin's Q remains the same.

Table 7: OLS regression using robust standard errors

	(1) (ROA)	(2) log(TOBQ)	(3) (ROA)	(4) log(TOBQ)
PWOB	-0.019	0.002		
	(-0.73)	(1.03)		
DWOB			-2.97 ***	-0.058
			(-3.00)	(-0.88)
BSIZE	0.105	0.014 ***	0.098	0.015 ***
	(1.40)	(2.79)	(1.32)	(2.90)
log(AGE)	0.021	-0.024	0.012	-0.023
	(0.05)	(-0.74)	(0.03)	(-0.71)
log(FSIZE)	-1.365 ***	-0.220 ***	-1.387 ***	-0.223 ***
	(-5.81)	(-14.20	(-5.90)	(-14.31)
LEV	-0.103***	-0.006 ***	-0.105 ***	-0.01 ***
	(-6.50)	(-5.99)	(-6.62)	(-6.01)
IND	0.122	0.034	0.045	0.033
	(0.25)	(0.94)	(0.09)	(0.88)
log(GDP)	0.126	0.080 ***	0.107	0.08 ***
	(0.68)	(6.46)	(0.58)	(9.26)
Constant	28.710 ***	2.844 ***	29.559 ***	2.912 ***
	(5.61)	(9.08)	(5.80)	(9.26)
R^2	0.1514	0.3036	0.1628	0.3034
F-statistic	13.81	37.99	14.73	38.32
N	811	811	811	811

Notes: The first number in each cell is the regression coefficient. For the OLS estimates, t-statistics are below each coefficient in parentheses. *, **, **, indicate significance at the 10%, 5% and 1% levels, respectively.

4.3.2 Moderator role of institutional quality

4.3.2.1 Moderating effect of shareholder protection quality

To recall, hypothesis 1 expects that the shareholder protection quality in the country where companies are located positively moderates the relationship between boardroom gender diversity and firm financial performance. Results of the regression testing this moderating effect are presented in regression (1) for ROA as dependent variable and (2) for Tobin's Q as dependent variable. The number of observations is 811 in both regressions. The explanatory power for the first regression is 15.41 % and 30.38% for the second regression. In regression (1), the coefficient of the interaction variable PWOB*SHAREQ is negative with a value of -0.020 but insignificant since the p-value equals 0.34. This implies that shareholder protection quality of a country does not moderate the relationship between gender diversity within boardrooms and return on assets. In other words, the strength of this relationship does not become stronger or weaker for increasing levels of shareholder protection. Subsequently, hypothesis 1a cannot be confirmed. For Tobin's Q as firm financial performance measure, regression (2) shows that the interaction coefficient is slightly positive (0.001) but insignificant as well (p = 0.67). This suggests that shareholder protection quality does not positively

moderate the association between female board representation and Tobin's Q as was predicted. Subsequently, hypothesis 1b cannot be confirmed.

The control variables that show a significant effect on financial performance are the size of the firms and level of debt. These variables show in both regressions a negative and significant impact on ROA and Tobin's Q respectively. Hence, the bigger the firm and the higher the leverage of a company, the lower the value of both financial performance measures. Moreover, also board size and a country's GDP positively influence Tobin's Q. The more directors there are in a corporate board and the wealthier a country, the higher the ratio of Tobin's Q.

4.3.2.2 Moderating effect of regulatory quality

Hypothesis 2 expects that the quality of laws providing equality for women in the company's country location has a positive moderating effect on the relation between female board representation and firm financial performance. Regression (3) and (4) in table 8 display the results of the regression testing this moderating effect. Also here, the number of observations for both regressions are 811 with a goodness of fit of 16.67% and 32.56% for regression (1) and (2) respectively. The coefficient for the moderating effect of the quality of laws on gender diversity and ROA is slightly positive but insignificant as well (0.004; $p = 0.310$). This indicates that this institutional dimension does not moderate the relation between the percentage of female directors and return on assets as financial performance measure. Therefore, hypothesis 2a cannot be confirmed. Regarding the main effects, the moderator LAWQ has a small negative impact on ROA (-0.11; $p < 0.001$) where the percentage of female directors is equal to the mean value of 11.0%. Lastly, when Tobin's Q is taken as our dependent variable, the results in regression (4) show that the coefficient of the moderator is equal to zero with and insignificant since the p-value is 0.253. This implies that regulatory law quality does not weaken or strengthen the association between gender diversity and firm performance when a county's law provide more equal opportunities for women compared to men. Since the coefficient is zero also in case of a significant result there appears to be no moderating effects. Therefore, hypothesis 2b cannot be confirmed. Regarding the main effects, also here the effect of law quality on Tobin's is negative and significant as well (-0.011; $p < 0.001$).

For the effect of control variables on firm financial performance, firm size and leverage are both significant and negative related Tobin's Q and ROA. Hence, the bigger the firm and the higher the leverage of a company, the smaller the value of both financial performance

measures. In addition, two control variables that have a positive and significant impact on Tobin's Q are GDP and the size of a board.

Table 8: OLS regression with robust standard errors

	(1) (ROA) (H1a)	(2) log(TOBQ) (H1b)	(3) (ROA) (H2a)	(4) log(TOBQ) (H2b)
PWOB	-0.013	0.002	-0.03	0.001
	(-0.55)	(1.05)	(-1.19)	(0.36)
BSIZE	0.101	0.014 ***	0.116	0.016 ***
	(1.37)	(2.71)	(1.54)	(3.15)
log(AGE)	0.053	-0.023	0.039	-0.021
	(0.13)	(-0.70)	(0.09)	(-0.63)
log(FSIZE)	-1.35 ***	0.220 ***	-1.343 ***	-0.218 ***
	(-5.81)	(-13.94)	(-5.81)	(-14.36)
LEV	-0.103 ***	-0.006 ***	-0.104 ***	-0.007 ***
	(-6.48)	(-6.01)	(-6.71)	(-6.20)
IND	0.152	0.034	0.163	0.037
	(0.31)	(0.95)	(0.33)	(1.04)
log(GDP)	-0.015	0.079 ***	0.108	0.079 ***
	(-0.06)	(4.92)	(0.58)	(6.45)
SHAREQ	-0.302	-0.004		
	(-1.11)	(-0.21)		
LAWQ			-0.11 ***	-0.011 ***
			(-3.60)	(-4.88)
PWOB*SHAREQ	-0.020	0.001		
	(-0.96)	(0.42)		
PWOB*LAWQ			0.004	0.000
			(1.02)	(1.14)
Constant	30.27 ***	2.87 ***	28.33 ***	2.83 ***
	(5.53)	(9.02)	(5.75)	(9.34)
R^2	0.1541	0.3038	0.1667	0.3256
F-statistic	11.15	31.13	12.44	35.35
Observations	811	811	811	811

Notes: The first number in each cell is the regression coefficient. For the OLS estimates, t-statistics are below each coefficient in parentheses. *, **, **, indicate significance at the 10%, 5% and 1% levels, respectively.

5. Discussion

5.1 Interpretations of the results

Based on the results of the regressions in table 7, this study does not find a significant relationship between the percentage of female directors and financial performance of firms. Although the correlation matrix show a positive and significant effect between the percentage of female directors and firm performance measured by Tobin's Q, the results of the regression analysis seem not able to provide empirical evidence for the theories explaining how female board representation in boardrooms might positively affect firm financial performance. The insignificant results are consistent with Kagzi (2018), Siantar (2016) and Ionascu et al. (2018). A possible explanation for this insignificant effect may be the lower percentage of female board representation common in emerging countries in combination with a higher number of firms that do not have any female director at all. This could make it more difficult to investigate the impact on firm performance. Also, the matter of family ownership common in emerging countries and used by other studies to explain the insignificant results as well may be applied to this study as well (Ujunwa et al., 2012; Lee-Kuen et al., 2017).

When the variable is included that represent the critical mass of 30%, the results show that the effect of this variable on return on assets as dependent variable becomes significant but negative. This is in contrast to the expectations and results of previous studies (Kristie et al., 2011; Low et al., 2015). It is interesting to delve deeper into this and further investigate it with a larger numbers of firms. The negative effect might be explained by the fact that when companies are performing poorly, they might want to distract investors and shareholders from their inferior performance by including more female board member (Lückerath-Rovers, 2013).

Results testing the first hypothesis concerning the moderating effect of shareholder protect quality on ROA and Tobin's Q are insignificant. Other factors that are more directly relevant to the board may provide more incentives for them to increase their efficiency and effectiveness. Since emerging countries are known for more inadequate regulatory oversight and weak formal institutions (Alon & Hageman, 2017), board of directors could feel less pressure to actually fulfill their functions better also when shareholder protection is high. The second hypothesis testing the moderating effect of the quality of laws providing the same economic opportunities is also insignificant. The fact that countries have more equal laws for women does not guarantee that these laws will be actually implemented by lower level institutions and therefore offer women the same possibilities as men, especially in emerging

countries. In addition, laws are actionable and can change in a relatively short period of time but norms and attitudes towards women take more time to change (Hyland et al., 2020). Hence, for the increased potential legitimacy effects to occur more time may be needed since the view regards women in leadership position is often skeptical in emerging countries (Abdullah et al., 2016).

5.2 Limitations and suggestions for future research

This study has some limitations to address that form the basis for recommendations for future research. Some methodological issues form the first limitation The sample size in this thesis is small. Although 18 emerging countries are included, the number of firms is not very large with a total of 811. Due to this small sample size, it is harder to generalize the results. Future research could combine multiple databases to retrieve and gather more data on gender diversity and hence increase the number of firms included in the sample. In addition to the sample limitation, this thesis contains cross-sectional data on gender diversity and firm performance for one financial year 2017. This implicates that the outcomes might not be representative for other financial years, due to different economic conditions or specific situations for board gender diversity belonging to this distinct year. Future research could therefore include more years and consider panel data analysis. Although the institutional environment normally does not show large changes in a relative short period of time, changes that affect the values of both our institutional quality dimensions might influence the results as well. Therefore including more years could lead to additional valuable insights. Besides, future research could make use of a two-stage least squares method by means of an instrumental variable approach to deal with potential issues of endogeneity (Carter et al., 2003; Low et al., 2015). Lastly, due to time reasons the amount of board control variables is limited since the gathering of these variables is normally more difficult. The regression results show that only a few control variables included have a significant effect on firm financial performance. For future studies it could be valuable to add more control variables related to board characteristics such as experience, age, education since these might have a effect on firm performance (Labelle et al., 2015).

Moreover, in this thesis gender diversity in boardrooms is measured with the percentage of female board directors. This in contrast to other studies (Lee-Kuen et al., 2017; Darmadi, 2013) using multiple ways to measure female board representation. The fact that the presence or number of female directors are not included is justified by the fact that this study is concerned with board gender diversity, which represents the distribution of male of female board

members. However, there are more complete diversity measures, Shannon index and Blau index, used in multiple scientific fields (Campbell & Minguez-Vera, 2008) which could be interesting for future research to include. The benefits of these " indices is that they take into account both the number of gender categories (two) and the evenness of the distribution of board members among them" (Campbell & Minguez-Vera, 2008, p.442). In addition, the fact that a higher percentage of female directors reflect more gender diverse boards does not guarantee that women are appointed to positions in which they can actually exert influence. Within boards, directors have different functions and roles and therefore it could be interesting to further differentiate between these functions and roles to increase the understanding of the impact women actually have.

Furthermore, to measure firm financial performance, data on Tobin's Q and Return on Assets is retrieved from the same year as gender diversity. However, in some studies lagged values of performance are used (Liu et al., 2014). The reason behind this is that the effect of gender diversity might take some time to be seen in the financial results. Future research could therefore take this into account by including lagged values of firm financial performance which also has the benefit of reducing potential reverse causality biases (Carter et al., 2010). Besides, other firm performance measures could be included to increase the validity of the results. Measures that represent accounting-based performance are return-on-equity and employee productivity and stock performance and shareholders could be added to reflect market performance (Combs et al., 2005).

Finally, in this thesis we assume that the contradictory findings in current empirical studies might be contingent on the quality of the legal and institutional context continuing on previous studies (Campbell & Minguez-Vera, 2008; Abdullah et al., 2016). However, the insignificant moderating effect that is found could be due to the fact that other factors may be of more influence. These factors may include geographic location or cultural variables that are already showed their significant moderating effect (Low et al., 2015). In addition, to measure institutional quality only two dimensions are used. Therefore, future research could use for instance a broader measure such as the index of World Bank Governance Indicators to mirror the institutional quality of a country (WGI, 2020).

6. Conclusion

One of the issues of gender discrimination that gain much attention last decades is the underrepresentation of women in boardrooms. Although the number of women in boardrooms is increasing, women are still outnumbered by men in leadership positions. Next to more awareness from society and media last decades, research on gender diversity in boardrooms increased as well (Campbell & Minguez-Vera, 2008). One of the investigated aspects is the effect of board gender diversity on firm financial performance. An extensive body of research investigated how board gender diversity influenced firm financial performance in the United States and Europe, but with inconclusive results. Less research was conducted to examine this relationship for emerging countries, and lead to inconsistent results as well.

The main goal of this thesis is to try to make sense of some of these contradictories and used a moderating factor, quality of the institutional and legal context of a country, to investigate this. The research questions is as follows: "*How does institutional quality moderate the relationship between gender diverse boards and financial performance of firms in emerging countries?"* In this study, we argue that the quality of legal and institutional context, measured by the strength of shareholder protection and the extent to which women are offered the same opportunities as men recorded by law positively moderates this relationship. To study this effect a sample of 811 firms from 18 emerging countries is used for 2017.

The results of the regression analyses investigating the direct effect of the percentage of female directors on return on assets and Tobin's Q as financial performance measures were insignificant. This finding indicates that a higher percentage of women in boardrooms does not lead to a significant change in firm financial performance. When we include a dummy variable reflecting the critical mass of 30% female directors, the result on our dependent variable Tobin's Q remain insignificant. However, contrary to the expectations the outcome became significant and negative for ROA as dependent variable. This suggests that when the board of directors consists of more than 30% women, this has a negative effect on Return on Assets.

Contrary to our expectations, the results of the regressions investigating the moderating effect of shareholder quality on the relationship between female board representation and firm financial performance is insignificant. This suggests that the strength of this relationship does not become stronger or weaker for increasing levels of shareholder protection. Similarly, results regarding the moderating effect of the quality of laws are insignificant as well. In this regression

analysis, the main effect of the moderator quality of law was significantly and negative related to both Tobin's Q and ROA.

Our results have several theoretical contributions and practical implications for governments or management of firms. First, the study contributes to the literature by adding a national context variable as moderator and doing cross-country research. Second, by focusing on emerging countries this study contributed to the emerging literature on gender diversity within these countries. Third, also some practical implications for management of firms, government or policymakers are provided. Since both moderating effects are insignificant, it is difficult to determine whether countries with a higher quality on these aspects benefit more from the introduction of a gender quota or inclusion of more women into their boardrooms. However, the lack of significance on the direct relationship, that became negative and significant for return on assets when the critical mass is included, further accentuates the importance of taking the introduction of gender quota's carefully into consideration. Since it may not necessarily increase the value of the firms, perhaps the implementation of a gender quota is more a matter of what is ethically the right thing to do.

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Appendix

Appendix I – Literature review

Author (year)	Data (n, type, country, year)	Measurement gender diversity	Measurement firm performance	Model	Main results
Abdullah (2016)	841 listed Malaysian firms (2008)	Dummy	ROA, Tobin's Q	OLS	Positive (ROA) Negative (Tobin's Q)
Darmadi (2013)	353 listed Indonesian firms (2007)	Dummy percentage, gender heterogeneity index	ROA, Tobin's Q	Cross-sectional analysis	Negative
Ionascu et al. (2018)	343 listed Romanian firms (2012-2016)	Percentage / dummy	ROA, Tobin's Q	OLS, 2SLS	Insignificant (positive for subsample)
Kagzi (2018)	200 public Indian firms (2010-2014)	Blau index	Tobin's Q	GGM	Insignificant
Lee-Kuen et al. (2017)	76 listed Malaysian firms (2009-2013)	Dummy, percentage, Blau Index, Shannon index	Tobin's Q	OLS, FE	Positive for percentage / insignificant for presence
Liu (2014)	2000 Chinese firms (1999-2011)	Dummy, number of women / percentage	ROS, ROA	FE, FE with lagged variables, FE with IV, Arellano-Bond, GGM	Positive
Low et al. (2015)	5503 listed firms from Hong Honk, South Korea, Malaysia, Singapore (2012-2013)	Percentage	ROE	OLS, 2SLS regression	Positive
Sanan (2016)	148 public Indian firms (2008-2009 / 2012-2013)	Percentage	ROA, Tobin's Q	OLS, FE	Positive
Siantar (2016)	804 listed Indian firms (2006-2015)	Percentage	ROA, Tobin's Q	DiD regression	Insignificant
Srivastava et al. (2018)	300 public Indian firms (2001-2015)	Number	COE, ROA	FE, RE, pooled OLS	Negative effect (COE) positive effect (ROA)
Ujunwa et al. (2015)	122 quoted Nigerian firms (1991-2008)	Percentage	ROA	FE	Negative