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Board Gender Diversity and Firm Performance
- The Moderating Role of Culture and Institutions

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Abstract

Firms around the world are facing increasing pressure to address diversity issues. While the EU has adopted a directive to achieve greater gender balance on corporate boards by 2026, the newly elected Trump administration is demanding both local and foreign firms abandon all forms of Diversity, Equity and Inclusion (DEI) policies. Yet, the literature has offered very little guidance to firms on how to approach gender diversity on boards, as findings on its performance implications have been inconclusive. This study aims to shed light on the relationship by examining the moderating role of culture and diversity regulations, thereby addressing a significant gap in the literature. Based on a sample of publicly listed companies from 36 countries, we demonstrate that board gender diversity significantly improves firm performance, and that the effect is strongly influenced by cultural and institutional factors. Accordingly, our findings offer an explanation to the inconclusive results of previous studies, while providing guidance and evidence about appropriate board diversity policies to firms and regulators alike. Future studies are encouraged to examine the interrelation between cultural factors and board gender diversity regulations.

Keywords: Board Gender Diversity, Firm Performance, Corporate Governance, Board Gender Diversity Regulations, Agency Theory, Resource Dependency Theory, Critical Mass Theory, Hofstede's Cultural Dimensions

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1. Introduction

1.1. Background

The debate on gender diversity and similar Diversity, Equity and Inclusion (DEI) initiatives have rapidly become yet another example of the growing polarization in society. At one end, many countries have introduced gender quotas and targets on company boards in order to strengthen the position of women in corporate settings. For instance, the European Union has decided that 33% of non-executives or 40% of all directors in companies should be part of the underrepresented sex (European Commission, 2022). Comparable requirements have also been adopted in emerging economies, such as in the case of India (Singhania et al., 2024: 1628). In contrast, the newly elected Trump Administration is moving the world's largest economy in the completely opposite direction. The administration has dropped federal DEI initiatives from the agenda and some of the largest firms in the country are quickly following the lead by abandoning their internal diversity policies (Wendling & Epstein, 2025). These discussions and policies are often deeply rooted in the social aspect of board gender diversity (BGD) and fail to address the wider economic significance of such practices on firm performance (FP). A heterogenous board is not only diverse in terms of gender, but rather it is diverse with respect to knowledge, experiences, and networks. The focus should therefore draw on the practical implications of greater diversity, i.e., how firm performance is affected when the composition of the board changes.

Board gender diversity studies have gradually found their way into academic research and countless studies have suggested that BGD improves different facets of firm performance. The stronger firm performance has been shown to stem from multiple sources, including the diversity of knowledge and skills brought forward by female board members, from their positive effect on corporate social responsibility, and from better quality corporate governance, among other factors (Hazaea et al., 2023: 1725). For instance, Reguera-Alvarado et al. (2017: 347) claim that firm performance improves with gender diversity because of the novel ideas and views that female directors bring to the board. That is, when the board becomes less homogenous, it can leverage a broader set of perspectives and improve

its innovative capabilities. In fact, several studies have demonstrated that BGD significantly strengthens corporate innovation (Attah-Boakye et al., 2020: 6), which would in turn improve firm performance. Other studies have suggested that gender diversity also affects financial performance through improved board decision-making. Arora (2022: 752) suggests that boards become more adept at solving problems and increase their productivity due to the diversity of thought that a heterogenous group enjoys. In other words, prior research would indicate that firms have a lot to gain from appointing gender diverse boards.

Nevertheless, the current body of BGD literature has been unable to conclusively establish that a positive relationship exists between increased diversity and financial performance, and many studies have pointed to no effect or the opposite effect (Hazaea et al., 2023: 1716-1717). For instance, Marquez-Cardenas et al. (2022: 801) and Marinova et al. (2015: 1786) found no noticeable effect on firm performance. Others have argued that greater diversity may in fact have a deleterious effect on the board, e.g., by negatively affecting team performance and the psychological climate in firms (Schneid et al., 2014: 735). However, the literature has yet to consider many factors that may moderate this relationship. Mohsni et al. (2021: 2) highlight the numerous calls in the literature to address this gap in order to better understand the inconclusive results that previous studies have produced. They specifically emphasize the relevance of national culture as a moderating variable, as it has been found to directly affect the decisions of corporate executives and thereby the financial outcomes of firms. Moreover, the authors point out that the bulk of the literature has examined developed nations, whereas other regions have often been neglected. Considering the vast cultural differences between countries, it is likely that board gender diversity would affect organizational dynamics and the work of the board differently depending on the prevailing culture. In fact, prior research has shown that culture does affect corporate governance outcomes (Naghavi et al., 2021: 634), which would in its own right affect firm performance. Yet, the number of studies looking into the moderating effect of culture remains negligible. These serious limitations in the current literature warrant a deeper exploration into the relationship between board gender diversity and firm performance (Sarpong-Danquah, 2022: 496). Accordingly, examining the relationship further becomes vital to understand if and how cultural

and institutional factors may affect performance outcomes. Similarly, understanding these factors would also help explain the inconclusive results of previous studies. Thus, by integrating three core perspectives of international business (IB), namely economic (performance outcomes), managerial (board structure) and sociopolitical (cultural and institutional context) (Guillén, 2001: 7768-7771), this study examines the impact of board gender diversity from an IB perspective. Therefore, the study will have implications both for the IB literature as well as the management of multinational firms.

1.2. Problematization

As evidenced by the discussion above, the BGD literature is still in need of more empirical and theoretical research. The link between increased board gender diversity and the financial performance of firms has yet to be robustly determined and explained. It remains unclear whether greater diversity leads to positive, negative, or insignificant financial outcomes, and how these outcomes vary in different contexts. Hazaea et al. (2023, p. 1738) argue in their systematic review of the literature that very little research has been conducted on how culture may affect this relationship, which constitutes a major research gap within the literature. Despite the recent proliferation of board gender diversity studies, the literature has seen almost no attempts to connect cultural contexts to the performance implications of board gender diversity. This research gap appears quite remarkable, considering the role culture has traditionally played in influencing women's place in society as well as its relevance to organizational outcomes. Culture is known to affect both the composition of corporate boards but also governance practices (Amin et al., 2025: 2; Li & Harrison; 2008a: 382). It would, e.g., be unreasonable to assume that a board in Sweden functions identically to one in the U.S. or China. Higher levels of board gender diversity may therefore lead to divergent results in different national cultures. Trying to construct a universal policy for BGD or even trying to understand the phenomenon without considering cultural factors would consequently be problematic, as prior studies have demonstrated that corporate governance practices are shaped by the local culture (Daniel et al., 2012: 388). The subject is also particularly relevant for multinational companies that are embedded in multiple cultural environments. On the one hand, they experience more pressure from stakeholders regarding DEI issues (Fitzsimmons

et al., 2023, pp. 1402-1403), but they must also navigate these expectations in a variety of cultural contexts. Doing so, however, would undeniably be difficult in the absence of a solid understanding of BGD and its implications. Broadening our understanding of the effects and the underlying mechanisms of increased board gender diversity would hence have tangible benefits both for firms and policymakers as they attempt to adopt the optimal approach.

Despite the many proponents of board gender diversity, not all believe in the merits of a gender diverse board. Critics of such initiatives have expressed concern about moving away from merit-based board nominations and the consequent performance implications for companies (Folkestad, 2024). In their examination of more than 1600 publicly traded companies, Solal and Snellman (2019) found that investors were generally skeptical about wider female representation among corporate boards. Stock prices saw a negative development in the first two years after the appointment of female board members, indicating a lack of confidence in the abilities of the firm. The authors argue that the negative effects on market capitalization stem from a perceived shift in corporate focus among investors. Appointing female board members would, in the minds of investors, indicate a greater emphasis on sustainability goals and a deviation from a pure value maximization strategy. This would suggest that investors view these companies as less attractive investment opportunities, which may have far-reaching consequences for such firms. For instance, Azoria Partners in the United States is launching a managed fund that invests in S&P 500 companies but excludes those that are actively pursuing a DEI agenda in their hiring processes (Pollard & Fontanella-Khan, 2024). The reluctance to invest in gender diverse companies is further supported by findings suggesting that greater female representation is directly linked to higher levels of equity undervaluation among public companies (Ranjeeni & Naidu, 2024: 530). These considerations imply that publicly listed firms must carefully balance their DEI agendas against the risk of alienating their key stakeholders. In their study, Ranjeeni and Naidu (2024: 530) concluded that improved awareness about the effects of board gender diversity would help eliminate the unfavorable stereotypes that prevail among investors today. That is, a better understanding of the performance implications of board gender diversity would help companies navigate their way through their commitments to both investors and society at large.

Understanding the consequences of greater diversity will only become more relevant in the coming years. An increasing number of countries are introducing new regulations and targets to even out the gender distribution of corporate boards and many firms have already begun adopting such policies (Gupta et al., 2021: 119). Such insight is undoubtedly needed, as female executives remain underrepresented on corporate boards around the world (Singhania et al., 2024: 1626). However, the nature of these regulations varies from one country to another. Some countries have adopted mandated gender quotas, while others rely on voluntary guidelines to persuade companies to increase gender diversity on their boards (Kang et al., 2023: 4). While previous studies have examined which legal approaches have been the most effective at promoting board gender diversity (e.g., Labelle et al., 2015; Mensi-Klarbach et al., 2019; Hamplová et al., 2022; Kang et al., 2023), very little is known about how firm performance is altered under differing regulatory environments. It remains unclear if increased gender diversity may affect firm performance differently in countries with voluntary board gender targets, as opposed to those with legally mandated quotas. Gaining deeper insight into the effects of these policies is required to enable sound decision-making among policymakers. Legislators need a better understanding of not only the social effects of diversity regulations, but also the financial consequences firms are faced with when adopting such laws. By extension, firms would directly benefit if policymakers adopted regulations that have been shown to result in the most desirable financial outcomes. By examining the institutional settings across countries, i.e., both voluntary and involuntary board gender quotas, this study addresses yet another gap in the literature (Hosny & Elgharbawy, 2022: 578) and contributes towards a better understanding of the evolving regulatory environments firms face. In other words, this study also makes a theoretical contribution to the literature by examining the thus far unknown role of institutional factors that may moderate the relationship between board gender diversity and firm performance.

1.3. Purpose

Given the inconclusive results of previous studies and the limited understanding of crucial moderating factors, this study aims to fill this gap in the current body of BGD literature. The aim is to investigate whether board gender diversity affects the financial performance of firms and whether this effect may vary across different cultural and institutional contexts. More specifically, we seek to examine whether key cultural dimensions, i.e., power distance, masculinity, and uncertainty avoidance alter the relationship between BGD and firm performance. Additionally, the effects of differing policy approaches are studied by examining the effects of both voluntary and mandatory diversity regulations. Considering the overarching area of interest in the present study, the following research questions were formulated:

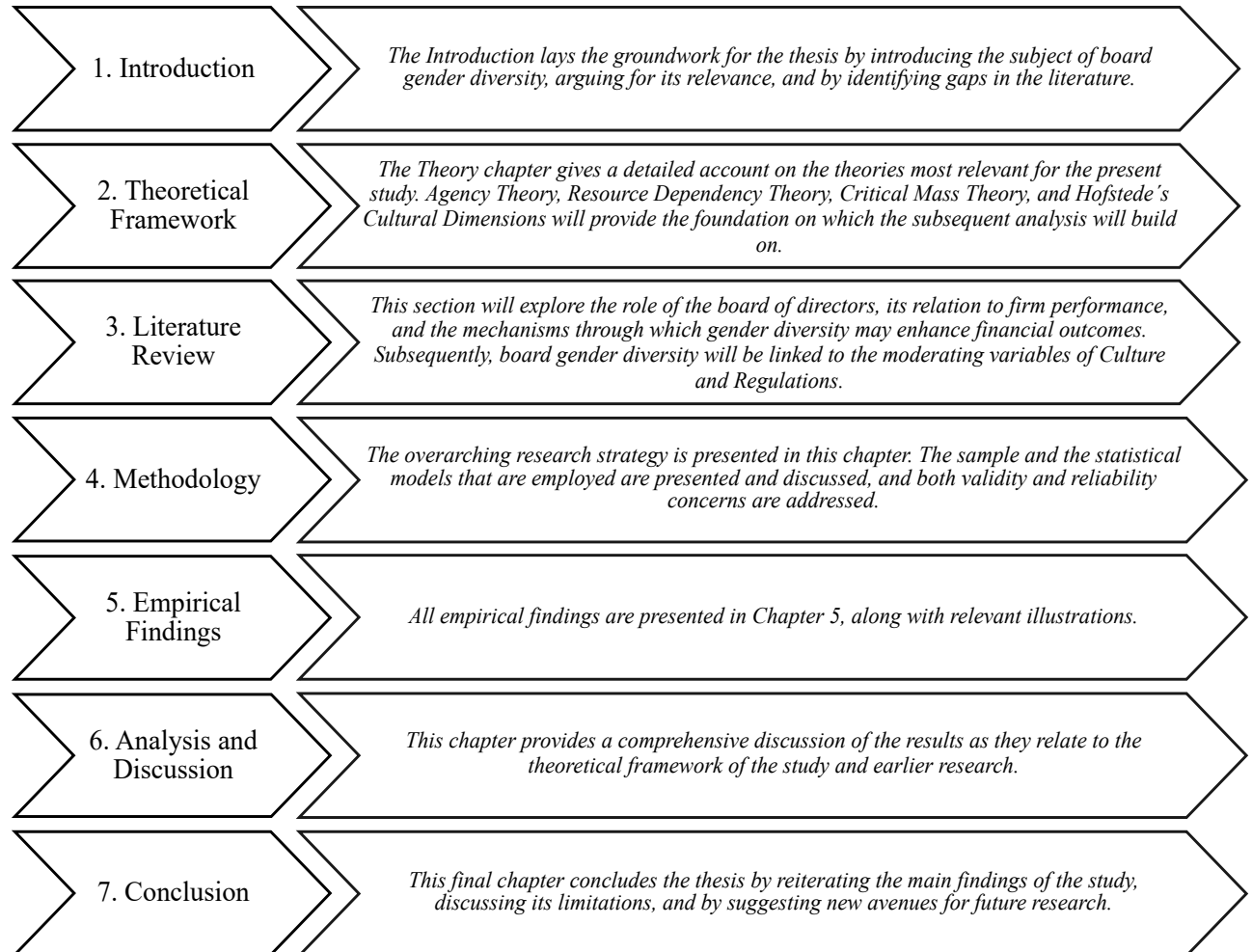
- *To what extent does board gender diversity influence the financial performance of publicly listed firms?*
- *To what extent is the relationship moderated by the cultural dimensions of masculinity, power distance and uncertainty avoidance?*
- *To what extent is the relationship moderated by the institutional factors of board gender diversity regulations?*

1.4 Outline

The following parts of the thesis will present the theoretical framework, the literature, and the methodology that form the foundation for the study, after which the empirical findings are presented, analyzed, and final conclusions are drawn. The introductory part of this thesis introduces the subject of board gender diversity and further draws on the problematization and the aim of this study. In the theory chapter, we introduce and discuss the most relevant theories in detail, while also assessing their limitations. Further, the third chapter will explore the current literature and previous findings regarding board gender diversity, its effect on firm performance, and the moderating factors that may affect this relationship. In the fourth chapter, the methodology of this study is presented and discussed, while the empirical results that are derived from the data-analysis are presented in chapter 5. In the sixth chapter

we analyze and discuss the empirical findings and how they relate to the theoretical framework and earlier research on the subject. In the seventh and final chapter of this study, we conclude our findings and present the main theoretical and practical implications as well as recommendations for future research. A detailed illustration of the structure of the thesis is provided in Figure 1 below.

Figure 1. *Structure of the Thesis.*



Source: Authors' own creation.

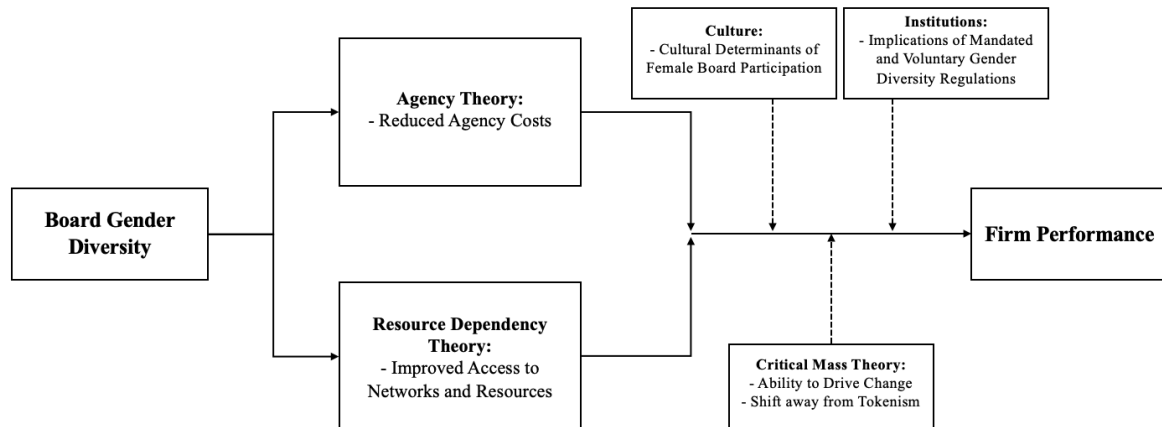
2. Theoretical Framework

2.1 Theoretical Model

This section presents the conceptual model that is employed in the study, after which the theoretical components are presented in more detail. Figure 2 illustrates our model which proposes a link between board gender diversity and firm performance, where the former has a positive relationship with the financial outcomes of the firm. Firstly, the presence of female directors is expected to reduce the agency costs that firms face. Agency costs are assumed to decrease as a result of improved monitoring, board independence, and decision-making, which in turn would enhance firm performance. Secondly, diversity would also ensure the company better access to critical resources and networks in its surrounding environment by leveraging the broader networks of a heterogenous group. By doing so, the firm would improve its strategic decision-making through better access to relevant information, consequently improving its performance. A detailed examination of the interrelation between board gender diversity and the aforementioned mechanisms will be presented in chapter 3.

The relationship between board gender diversity and firm performance, however, is moderated by three factors. Firstly, the model proposes that the effect is strengthened when women constitute a critical mass on the board of directors. In other words, the minority needs to be large enough in order to influence the strategy and direction of the company. Secondly, national culture is expected to either strengthen or weaken the relationship between board diversity and firm performance. This effect is determined by the levels of power distance, masculinity, and uncertainty avoidance present in the country. Lastly, the mode of regulation adopted by the country, i.e. mandatory or voluntary gender diversity targets, is expected to influence the relationship. More specifically, voluntary or so-called soft measures are believed to strengthen the positive effect of gender diversity.

Figure 2. Theoretical Model.



Source: Authors' own creation.

2.2 The Role and Composition of the Board

Boards of directors are often made up of both internal and external directors, and typically have two primary functions, as explained by Minciullo (2019: 14-15). On the one hand, they are in charge of setting the overarching strategy of the firm and exercising their authority in key decisions regarding internal policies, rules, and compensation-related questions. On the other hand, the board fulfills a key governance mechanism in that it monitors that shareholder interests are looked after by the executives of the firm. They are also becoming increasingly involved in managing external stakeholders to address issues of societal importance, e.g., related to the company's social and environmental impact. Managing all types of stakeholders and the firm's activities is undoubtedly of great importance, as the directors have the ultimate legal liability for the company's actions. The board of directors is hence an integral part of the modern-day corporation with an increasingly influential role in the management of the firm.

Much research has recently been devoted to gender diversity in corporate boardrooms, and the subject continues to attract interest. New policies and regulations regarding diversity issues continue to grow in importance but our understanding of the phenomenon still lacks sufficient depth. In their review of the literature, Reddy and Jadhav (2019: 1) note that the factors that are linked to greater board diversity

have been extensively researched. They explain that many factors have been found to affect the gender composition of boards, such as the characteristics of the firm, the industry, as well as the directors on the board themselves. Conversely, studies on the performance implications of greater board diversity have produced strikingly inconclusive results. These gaps in our understanding bear testament to the need for further research on the subject, given the important role of the board in managing firm performance.

2.3 Agency Theory

Every firm is a result of a unique combination of different stakeholders, each with their own personal goals and agendas. All firms must work towards aligning the best interest of the company, with those of its employees and managers. However, conflicts of interest often arise as a direct result of incompatible ambitions (Panda & Leepsa, 2017: 79). This phenomenon is better known as the agency problem, and it has long sparked an interest in the academic community. Ever since the 1970s, the issue has been studied extensively and it has resulted in one of the most frequently used theoretical frameworks in business, namely the agency theory (Pepper & Gore, 2015: 1045).

The agency problem generally involves two parties, i.e., a principal and an agent, where the former is tasked with serving the latter (Bosse & Phillips, 2016: 276). In the corporate world, the situation is often characterized by separation of ownership between the principal and the agent. The principal generally holds an equity investment in the firm, whereas the agent lacks such an equity position, which may result in a conflict of interest. According to Bosse and Phillips (2016: 278), these conflicts are likely to arise between the parties due to two key factors. Firstly, both the principal and the agent are assumed to be driven by the desire to maximize their own personal utility. Rarely do these two goals align perfectly together, which may create a rift between the parties and result in opportunistic behavior. Secondly, the authors point out that the situation is often characterized by information asymmetry, where the principal has little insight into the actions and intentions of the agent.

One of the central tenets of the theory revolves around agency costs. These are costs that the company or shareholder incurs when it fails to effectively align its interests with those of the agent, i.e., the executive (Ang et al., 2000: 83). These costs include both hiring and then monitoring an agent's performance and the eventual residual loss the firm suffers when its agents make poor decisions that are not in the best interest of the company (Jensen, 2005: 6; Panda & Leepsa, 2017: 84). Incurring such costs, in turn, will have an impact on the financial performance of the firm (Florackis, 2008: 37). In other words, the company incurs monitoring costs in an effort to minimize the greater residual cost that opportunism would cause. While it would be impossible to completely eliminate agency costs as long as the manager and the shareholder are not one and the same, agency theory does suggest some remedies. For instance, a higher level of board independence would enhance the board's ability to monitor management and reduce agency costs (Shan, 2019: 207). The reduction in agency costs would, in turn, enhance the performance of the firm. As a result, agency theory has frequently formed the theoretical basis for earlier studies that have examined the relationship between board gender diversity and firm performance. These studies have generally attributed the performance gains of gender diverse boards to their superior monitoring capabilities and increased independence (Hazaea et al., 2023: 1725). That is, when firms fall victim to the self-interest of managers, they are likely to suffer from poor performance (Poletti-Hughes & Briano-Turrent, 2019: 81) and consequently see positive financial effects when board supervision improves.

As has been demonstrated by its frequent use in the literature, agency theory provides a valuable perspective to examining and explaining the effects of board gender diversity. Nonetheless, the theory has also received its fair share of criticism, and some authors have challenged its applicability outside of the traditional principal-agent setting. According to Wiseman et al. (2012: 203-204), such critics contend that the theory holds true only in specific social and institutional environments, which makes its broader use problematic. They argue that culture and institutions play an important role in determining the dynamics of the principal-agent relationship, which implies that such factors must be considered when examining agency issues. However, given the cultural and institutional perspective of the present study, these concerns are unlikely to pose a challenge. Moreover, our approach of utilizing

multiple theories in examining the subject will provide a broader theoretical foundation, thereby avoiding an excessively narrow view of the relationship between board gender diversity and firm performance.

2.4 Resource Dependency Theory

The resource dependency theory (RDT) is widely used in studies that examine the performance of companies (Hillman & Dalziel, 2003; Hosny & Elgharbawy, 2022; Roffia et al., 2022). The theory, originally from Pfeffer and Salancik (1978), sees organizations as interdependent actors in an open system, which posits that organizations must exchange information and resources with their environment to enhance their competitiveness and ensure survival. They argue that by having connections to other entities, organizations gain four primary advantages from these interdependencies (Pfeffer & Salancik, 1978: 145). Firstly, they get invaluable information about the practices and strategies employed by other organizations by recruiting co-opting board members, that is, individuals who serve on multiple company boards. Secondly, they have a higher probability of gaining access to the resources they need and to achieve the support of other actors that are most important for the business. Third, board members with roles in multiple firms can act as bridges between organizations, aligning their interests and creating mutual benefits. Lastly, they can gain legitimacy by recruiting well-known persons with proven merits to their board. This is well summarized by Lynall et al. (2003: 418) who stated that “The primary role of boards from a resource dependence perspective, therefore, is to serve as resource providers”.

The resources that boards have access to are therefore critical in optimizing firm performance. Considering that these resources constitute above all a human resource, the size and composition of the board become particularly important. Larger and more heterogeneous boards offer a wider variety in knowledge and networks compared to their smaller and more homogeneous counterparts (Akram & Abrar Ul Haq, 2022: 5). That is, such boards are more capable of making informed decisions and devising appropriate strategies. Consequently, the theory posits that performance will be determined by

the fulfillment of the board's strategy, which in turn is enabled by the social capital that is accumulated by the directors and the resources it provides access to (Lu & Herremans, 2019: 1450). Boards should therefore focus on recruiting individual board members with adequate resources in accordance with the needs of the firm (Boyd, 1990: 428).

The resource dependency theory has been one of the most influential theories in studying corporate boards and the empirical evidence has provided strong support for its use (Hillman et al., 2009: 1408). However, in their review, Hillman et al. (2009: 1016) pointed out that the theory may not be sufficient on its own to fully understand the practices and dynamics of a board of directors. Instead, they argue that the theory can benefit from integration with other theoretical frameworks. Consistent with this line of reasoning, we combine RDT with the well-established agency theory in order to broaden our theoretical foundation, thereby enabling an even better understanding of board gender diversity. In other words, neither theory captures the full extent of the mechanisms that may explain the BGD-FP relationship and we therefore rely on multiple theories to better examine the phenomenon.

2.5 Critical Mass Theory

Unlike agency and resource dependency theory, the critical mass theory has long been used in the context of gender-focused studies and particularly in relation to corporate boards. In her early work, Kanter (1977: 967) described different categories of minorities based on the extent that they are present in a group. She distinguished between uniform, skewed, tilted, and balanced groups, where the first-mentioned group had no gender diversity, skewed had up to 20%, tilted had up to 40%, and balanced groups would have a female representation between 40% and 60%. The core assumption of the theory is that an under-represented party, such as women, needs to represent a sufficiently large portion of a group to be able to drive meaningful change (Wiley & Monllor-Tormos, 2018: 294). Therefore, a single individual or *skewed* minority will not be able to affect the direction of a group. When women constitute a small minority, e.g., on a board of directors, they are less likely to be perceived as individuals and rather as tokens (Joecks et al., 2013: 62). Such environments prevent women from truly exerting their

influence on the group (Dobija et al., 2021: 32) and it is only when the minority becomes large enough not to be ignored that real change can occur. A threshold of 30% female representation has been presented as large enough to allow the minority to alter the behavior of the group, according to Lefley and Janeček (2023: 143). The authors further explain that this shift in dynamics is a result of the minority gaining confidence to ensure their voices are heard. Hence, the theory suggests that reaching a critical mass is a prerequisite to unlocking the positive effects of gender diversity on boards of directors (Lefley & Janeček, 2025: 68). That is, only when 30% or more of the directors are members of the under-represented group, will they be able to effectively assert themselves and alter the decision-making of the firm.

The influence of women or any other under-represented group, however, is likely to differ from one context to another. The dynamics of a board of directors is undoubtedly dependent on both social and cultural factors, which may alter the position and power women hold in such groups (Studlar & McAllister, 2003: 235-236). Accordingly, the critical mass required to drive change within an organization may vary widely between different firms and geographical regions. Thus, it can be nearly impossible to establish a universal threshold for critical mass. The theory consequently provides a rather simplified framework for group dynamics that may not be applicable to all situations or environments. Studlar and McAllister (2003:236) posit that the threshold for critical mass is not the main reason to increase female presence or impact in the organization, but rather because of their eagerness to drive change. This is not only to improve their own positions but also to advance the underrepresented group they represent. However, considering the wider perspective of the present study, critical mass theory offers a solid point of departure to examining group composition and its effects on firm performance. As we are looking to examine company boards more generally, gaining a broader understanding of the overall significance of a critical mass is more important, although it may not perfectly reflect the realities of all companies. Therefore, the theory aligns well with the research objective of the study and is believed to offer valuable insight to the analysis.

2.6 Hofstede's Cultural Dimensions

In cross-country studies, it is essential to incorporate a cultural perspective to explain differences that may arise between countries. It has been argued that to draw generalizable conclusions on the effects of cultural dimensions within the International Business (IB) literature, scholars need to have at least seven to ten countries in their sample if they are to examine cultural dimensions as an explanatory factor (Tung & Verbeke, 2010: 1259-1260). While companies and institutions around the world may face similar challenges, the solutions to these challenges often vary (Hofstede, 2001: 373-374). To integrate a cultural aspect into this study, Hofstede's cultural dimensions theory will be applied. Since the 1960s, Geert Hofstede has examined cultural differences by analyzing data from subsidiaries of a large multinational corporation across multiple countries. His findings demonstrate that culture significantly influences human decisions and actions, which can be explained through Hofstede's cultural dimensions (Hofstede, 2001: 373). These dimensions include power distance, uncertainty avoidance, individualism, masculinity, and long-term orientation.

Power distance refers to the extent to which individuals with less power in a society accept unequal power distribution (Hofstede, 2001: 98). The uncertainty avoidance dimension assesses how comfortable individuals are with uncertainty and the unpredictability of the future (Hofstede, 2001: 146-147). Individualism, in contrast to collectivism, describes whether people prioritize personal independence or rely on close family and community ties (Hofstede, 2001: 209). Similarly, the masculinity dimension, contrasted with femininity, indicates whether a culture values competition, achievement, and material success (masculine) or prioritizes social relationships and quality of life (feminine) (Hofstede, 2001: 279). Lastly, long-term versus short-term orientation reflects a society's adaptability, where long-term-oriented cultures are more flexible and willing to delay rewards to achieve future goals, whereas short-term-oriented cultures focus on tradition and immediate outcomes (Hofstede, 2001: 360). By examining these dimensions and the way that they differ between countries, we can provide an overview of the general mentality and values of a given culture, thereby enabling comparisons and analyses into the effects of cultural factors.

Hofstede's cultural dimensions framework has also received some criticism. For example, McSweeney (2002: 94) demonstrated that even if Hofstede collected more than 117,000 responses in his survey from 66 countries, that number is a total for two separate questionnaires. He explains that for many countries the number of survey responses was under 200, whereas for others it was more than 1000 for both survey rounds, thus challenging the representativeness of the sample because of its homogeneity (McSweeney, 2002: 94). Another issue that McSweeney points out is that the sample consisted only of individuals from one company. Although the responses were gathered from all employees, the data-analysis was mostly done with responses from marketing and sales, which prompted him to argue that the sample was too limited (McSweeney, 2002: 94). Furthermore, he challenges Hofstede's view that national culture is shared with all members of that institution and that there are no territorial differences within the countries, e.g. in the case of Great Britain that is treated as one nation, even if it is a combination of three different countries (McSweeney, 2002: 92). This was later acknowledged by Hofstede himself as McSweeney (2002: 96) points out, where he recognized that cultural variety is evident even between individuals that are working in the same unit.

While Hofstede has received some criticism for his framework, Tung and Verbeke (2010: 1261) note that IB studies have largely been influenced by his theory, which becomes evident when considering the total number of citations (more than 54000). Thus, his theory is well-established in the IB literature, and it has influenced cross-country studies worldwide. Although there are alternatives to Hofstede's cultural dimensions, such as the World Values Survey or GLOBE project which have slightly different operationalizations, Tung and Verbeke (2010: 1260) point out that for some dimensions they simply "represent different aspects of the same construct". Further, they suggest that no scholar should just include all cultural dimensions as a one composite-index, because all dimensions do not have a similar effect in every situational context and that every dimension may not have any effect on their own, but only when combined with other dimensions (Tung & Verbeke, 2010: 1271). Therefore, cultural dimensions should be treated as separate factors that are independent of other dimensions when examining their direct or moderating influence on certain outcomes. Given that Hofstede's theory has

been widely used in earlier research and that the dimensions are employed here individually, we believe that it provides a sound basis for the study and that it enables better comparisons to previous findings on the effects of cultural factors.

3. Literature Review and Hypothesis Formulation

3.1 Agency Theory

3.1.1 Board independence

The board of directors has generally been understood to play a critical role in leading the firm and therefore to have a direct impact on its performance (Merendino & Melville, 2019: 508). It does so by assuming an advisory as well as a monitoring role, which enhances the performance of the firm by improving organizational efficiency, reducing agency costs and by utilizing the knowledge and resources that the directors provide (Alodat et al., 2022: 867, 869). The ability of corporate boards to work effectively and consequently maximize firm performance, however, depends on their willingness and capacity to manage corporate executives. According to Shan (2019: 207), the literature suggests that board independence is a key facilitator of effective management monitoring. Directors that lack a direct insider position at the firm are assumed to better supervise the actions of managers and represent the interests of the shareholders. They are believed to remain objective in their decision-making as they are less likely to be swayed by those in managerial positions (Jermias & Gani, 2014: 137). This in turn, would have a positive effect on firm performance.

Empirical evidence has in fact shown that independent boards generally perform better in their monitoring duties (Shaukat & Trojanowski, 2017: 185). In this regard, some have suggested that a more diverse board composition would lead to greater independence (Fernández-Temprano & Tejerina-Gaite, 2020: 326). The underlying rationale is that by bringing together directors from different backgrounds, the board would be able to pursue activist policies more effortlessly. For instance, Dwaikat et al. (2021: 3-4) highlight the importance of gender diversity in enhancing board independence and in reducing agency costs. They argue that the diversity of knowledge and experience offered by gender diverse boards are effective mechanisms to achieve a higher degree of independence. Their empirical findings supported the notion that gender diverse boards had a better ability to control corporate executives, which would in turn enhance firm performance. Interestingly, Terjesen et al. (2016: 447, 466) found

that gender diversity is a prerequisite for a positive relationship between board independence and firm performance, i.e., board independence only affects firm performance if the board is sufficiently gender diverse. In fact, they find that independent directors may have a negative effect on firms' financial performance in the absence of female representation. They argue that shareholders are likely to interpret the absence of female directors as an indication of lower levels of board independence, which would in turn be reflected in its financial valuation.

3.2 Resource Dependency Theory

3.2.1 Board networks and resource access

Apart from monitoring company managers and making strategic decisions on behalf of the company, the board of directors plays a crucial role in connecting the firm to their personal networks and in providing it access to strategic resources (Kumar & Zattoni, 2013: 311-312). In fact, according to Horton et al. (2012: 400, 422), prior studies have suggested that directors can, e.g., utilize their connections to tap into relevant knowledge sources. In their study, the authors find that accessing such resources had a positive effect on firm performance. Barroso-Castro et al. (2016: 22) elaborated on this effect by explaining that the benefits of resource access stem from improved productivity in the board's work. However, they also point out that a sufficient level of social cohesion inside the group is a prerequisite to unlocking the benefits.

The importance of having wide networks also varies between different company characteristics and are expected to be more important to publicly listed MNCs. For instance, Pfeffer (1972: 224) demonstrated that the bigger the company is and the more external funding it needs, the larger the number of board members it tends to have. Furthermore, when the organization needs external funding, the likelihood of having lawyers and people from financial institutions increases (Pfeffer, 1972: 224). Sanders and Carpenter (1998: 172) found that companies with higher levels of internationalization do have larger numbers of board members but also a higher proportion of outsiders as board members. They theorize that when the business becomes more complex, as it may when internationalizing, the companies need more competence in these specific areas. Hence, when the company requires specific critical resources,

it is expected to have more board members to access important networks. Given the importance of director networks, some studies have investigated the social capital that gender diverse boards produce and how female directors may positively affect the firm's access to relevant resources. In this regard, women have generally been found to have more diverse networks compared to men, which gives them access to a broader information base (Miller & Del Carmen Triana, 2009: 761). Greater access to relevant information would, in turn, be expected to support the firm's decision-making. Considering the pivotal role of relevant networks and resources in driving board productivity and firm performance, diversifying those networks through appointment of female directors should have an overall positive effect on the company.

3.2.2 Corporate reputation

Given that public corporations are constantly interacting with the outside world, maintaining a positive image among external stakeholders becomes particularly important. Should they fail to do so, the firm may become a less attractive investment opportunity, which would in turn hurt its financial performance. The board of directors plays a crucial role in this regard, as they set the general strategic direction of the company and interact with both shareholders and other market actors. According to Bravo et al. (2015: 360-361), the board interacts with stakeholders by communicating what the firm does, how it has performed, and what value it expects to deliver in the future. When it does so effectively, it creates a positive perception of the firm and hence builds on its reputation. Empirical evidence has shown that improving corporate reputation positively affects the firm's financial performance, which would suggest that actively managing reputation should be one of the board's focal activities (Sánchez & Sotorrío, 2007: 343).

Given the growing focus on DEI issues, the reputational impact of gender diverse boards has also engendered several studies. For example, findings from Kaur and Singh (2017: 121-122) confirmed that appointing women to the board of directors had a positive relationship with firm reputation. Firstly, the authors argue that appointing female directors is a way for firms to meet the expectations of external stakeholders regarding socially sustainable practices. Secondly, they contend that diversity would signal

a higher level of board independence, which would positively influence the reputation of the firm. Similarly, the findings of Navarro-García et al. (2022: 363) support the premise that gender diverse boards have a positive reputational effect on corporations. The personal attributes and experience of the female directors, such as educational background or previous directorships, had no effect on corporate reputation. Instead, the authors suggest that merely appointing a female director may be enough to reap the social rewards from the public. Maintaining a good reputation is in the best interest of all firms, but it is particularly relevant for publicly listed corporations as they manage their relationships with key stakeholders and especially their shareholders. In other words, reputational factors can directly influence a firm's appeal as an investment, thereby improving its ability to attract valuable resources and, in turn, enhancing financial performance. Considering the discussion in sections 3.1 and 3.2, we hypothesize that:

H1a: There is a positive relationship between board gender diversity and firm performance.

3.3 Critical Mass Theory

3.3.1 Board decision-making and effectiveness

As discussed earlier, decision-making is one of the key activities boards are entrusted with. The board's capacity to make sound decisions depends on the directors' knowledge and experience, but perhaps even on the board's gender distribution. Nielsen and Huse (2010: 144-145) examined how female directors affect decision-making in firms and found that greater female representation was positively associated with strategic control of the board. The authors argue that female directors may on the one hand improve board oversight due to their stronger ability to acknowledge the viewpoints of others and hence adopt a broader view of firm strategy. On the other hand, the presence of women on the board is also critical in preventing conflicts, which in turn would indirectly enhance board effectiveness. Similarly, Torchia et al. (2011: 312) suggested that gender diverse boards saw improved levels of organizational innovation, compared to male-dominated boards. Much like Nielsen and Huse (2010), Torchia et al. (2011: 311-312) emphasize the importance of female directors in strategic decision-making. They argue that organizational innovation improves by way of sounder strategic decisions,

which female directors enhance with their distinct perspectives. Their presence also counteracts the emergence of groupthink and instead facilitates innovation by promoting novel approaches and ideas. However, they argue that to effectively influence organizational innovation and strategic tasks, the number of female directors needs to surpass the threshold for a critical mass, which according to their results is at least 3 female directors. Nonetheless, support for the notion that women play a central role in improving board decision-making can be found in many studies. In their literature review, Rao and Tilt (2016: 340) confirm that the positive effect stems not from being a woman per se, but because women broaden the board's perspective and have different social and professional experiences. These factors will in turn affect the processes the board engages in during its decision-making, which can alter the strategy the board adopts. Thus, we hypothesize that:

H1b: The effect of board gender diversity on financial performance is positively moderated by a critical mass of 30%.

3.4 The BGD-FP relationship

As the above review suggests, there is a host of factors which explain how and why the board of directors influence firm performance. The literature would also suggest that female directors play a crucial role in improving the work of the board and thereby the performance of the firm. They do so by increasing board independence, improving corporate reputation, facilitating decision-making and board effectiveness as well as by providing access to relevant networks and resources. Consistent with critical mass theory, we expect that these benefits will be amplified when female directors constitute a critical mass, i.e., when 30% or more of the directors are women. Further, as the proportion of women rises, the diversity of the board would eventually start to decrease. This is why we expect the positive relationship between board gender diversity and firm performance not to be linear but instead assume an inverted U-shape where the effect would eventually turn negative when the board becomes increasingly female-dominated. Accordingly, we hypothesize that:

H1c: Board gender diversity has an inverted U-shaped effect on financial performance.

3.5 Board Gender Diversity and National Culture

3.5.1 Board of directors and national culture

Both firms and their leaderships are embedded in the local cultural contexts they operate in, and MNCs in particular, will by their very definition have exposure to multiple national cultures. The situation has generated a growing stream of research within the literature that studies the evolution of corporate governance mechanisms in differing national contexts (Amin et al., 2025: 1). However, a stronger focus on cultural factors in cross-country research has been called upon, since cultural norms significantly affect organizational structures (Li & Harrison, 2008a: 382). This interest among academics to link culture and the board of directors is hardly surprising, given the constant interaction between the two. As Huang and Lu (2024: 775) point out, individuals embody a unique set of values and beliefs that influence their actions and interactions with the social world. In other words, the work and social dynamics of a board of directors is largely altered by the individual cultural traits and beliefs of its members. They argue that boards will therefore work differently across nations, as the cultural backgrounds of its directors directly influence the dynamics of the group. The cultural and institutional environment not only affects the behavior and actions of directors, but also who will and who will not serve on a board. Humphries and Whelan (2017: 152-153) explain that board composition is strongly connected to the institutional realities of the local scene and that the political, economic, and legal environment will shape the structure of the board. Therefore, the prevailing cultural norms and values of a nation would, e.g., determine the position women have in the corporate world.

3.5.2 Cultural dimensions and board gender diversity

As discussed earlier, studies that have examined the effect of culture in the context of board gender diversity have been extremely scarce. Only one such study was identified, namely Naghavi et al. (2021: 644), which investigated how national culture may affect the relationship between firm performance and board gender diversity. Their findings suggest that cultural factors do in fact have an important role in shaping the performance effects of board gender diversity. Drawing on their work as well as on Hofstede's cultural framework, the three dimensions most relevant to our study are discussed below.

Power distance was one of the dimensions that Naghavi et al. (2021: 635, 643) focused on in their study. The authors describe cultures characterized by high power distance as environments where concentration of power in the top is prevalent and where a clear separation exists between those in managerial and those in subordinate positions. They argue that female representation on boards contradict the societal norms in high power distance cultures, as it signals a willingness to allow broader participation from subordinate groups. It would also indicate a dilution of power at the very top due to the tendency of female directors to challenge the status quo. The results of the study support this notion, as they indicate that power distance has a dampening effect on the relationship between financial performance and greater gender diversity. They suggest that the exclusion of women from the highest managerial positions is generally accepted in high power distance cultures, and that an all-male board would convey a higher degree of legitimacy to the environment. They expect that board gender diversity could lead to conflicts on such boards, as female directors would more likely speak out against centralized governance structures and therefore cause tension. Related literature would appear to support this line of reasoning, as lower levels of power distance are generally associated with a drive to dismantle hierarchical power structures (Huang & Lu, 2024: 781), which may offer a more fertile ground for female directors to actively participate in board decision-making. However, when power distance is high, marginalized groups are less likely to challenge the authority of those in power (Van der Vegt et al., 2005: 1174). The contribution of women through their unique skills and experiences would in such cases be suppressed, which could explain why the positive performance effects of their presence might diminish. Given the discussion above, we conclude with the following hypothesis:

H2a: A higher level of power distance weakens the positive relationship between board gender diversity and firm performance.

Naghavi et al. (2021: 636, 644) also considered the dimension of uncertainty avoidance in their study. The authors argued that a higher degree of uncertainty avoidance in a culture would enhance the performance effects of board gender diversity, as the presence of female directors would increase its perceived legitimacy in such cultures. On the one hand, they argue that gender diverse boards would

be perceived as more capable of managing risk and uncertainty. This perception would stem from the wider skill base that a diverse board maintains and its ability to adopt a forward-looking approach in its work. On the other hand, they also suggest that female directors are better at taking the interests of others into consideration as well as in their ability to perform their monitoring duties, thereby effectively managing multiple stakeholders. The results of the study supported their hypothesis and suggested that board gender diversity could indeed enhance the performance of the firm in those cultures that were inherently more risk averse.

Prior literature has shown that women are generally less inclined to take risks (Baixauli-Soler et al., 2015: 453), although the effects of board gender diversity on corporate risk vary between different types of risk as well as the country and firm context (Teodósio et al., 2021: 1064). Accordingly, they are likely to better conform to the expectations of the local environment, such as those of investors, in cultures where uncertainty avoidance is high. There is also support for the notion that female directors are more effective monitors (Brahma et al., 2021: 5707), which could lead to reduced agency costs and thereby improved firm performance. Although excessive monitoring may be perceived as disrupting other activities of the board (Li & Wahid, 2018: 1365), directors in risk averse cultures may receive more support for their monitoring activities due to the general interest in reducing the risk of opportunistic behavior. Similarly, women have been found to make a valuable contribution towards the stakeholder management efforts of a board through their skills and knowledge (Whitney & Thams, 2019: 163). Taking into account a wider set of perspectives may positively contribute towards risk-management activities, which would enhance the legitimacy of the board among local stakeholders. Considering the above-mentioned findings, we formulate the following hypothesis:

H2b: A higher level of uncertainty avoidance strengthens the relationship between board gender diversity and firm performance.

Masculinity is the third and final cultural dimension that will be considered. Much like with power distance, Naghavi et al. (2021: 635, 643) proposed that a masculine culture would dampen the positive performance effects of board gender diversity. Masculine cultures are characterized by a strong drive

to perform and by a high degree of goal-orientation and achievement. Conversely, feminine cultures value work-life balance to a much greater extent, which conflicts with the social norms in masculine countries. They argue that board gender diversity would result in a deviation from the social norms that are set in a masculine society because female directors are more likely to engage in non-performance related activities, such as social and environmental sustainability initiatives. By doing so, the authors expect the perceived legitimacy of the board to be lower as it fails to satisfy the cultural expectations of its environment. Although not conclusive, their results provided some evidence that suggested a negative relationship between masculinity and the performance implications of board gender diversity.

Prior literature does indicate that boards with female directors are more likely to engage in activities that are not directly related to its financial performance, such as philanthropic and sustainability projects (Bazel-Shoham et al., 2024: 297). In highly performance-oriented, i.e., masculine cultures, such activities may give rise to conflicts on the board which could reduce the effectiveness of decision-making activities. Similarly, masculine cultures are much more likely to adhere to traditional gender roles (Lewellyn & Muller-Kahle, 2020: 330). Given the long history of female exclusion in corporate environments, female directors may end up ignored or in a token role in those cultures characterized by high levels of masculinity. This would directly restrain female directors from meaningfully contributing to the work and decisions of the board, thereby weakening the positive effect of their presence on firm performance. Consistent with the discussion above, we hypothesize that:

H2c: A higher level of masculinity weakens the positive relationship between board gender diversity and firm performance.

3.6 BGD Regulations

3.6.1 Soft and hard laws

Men have long dominated the corporate world, leaving little opportunity for female directors to emerge in the international arena. A strong interest to shift the trend in the past decades, however, has generated an increasing number of public policies aimed at creating a level playing field for women. Although

policymakers across the world have embraced greater gender representation on corporate boards, the means to achieve this have varied widely. Martínez-García et al. (2022: 753-754) distinguish between three frequently adopted approaches by national governments. At one end, nations such as France and Norway have introduced strict, so-called “hard” laws or quotas, where corporations that fail to meet gender quotas can face penalties. Such disciplinary actions may include both fines as well as direct intervention by authorities to modify the composition of the board. At the other end, some governments have adopted “soft” mechanisms that can either take the form of quotas without any penalties for non-compliant firms, or so-called “comply or explain” policies. Both forms of soft laws are frequently featured in Europe as well as outside of it, according to the authors.

Other scholars have also identified some differences in adaptation of quotas and governance codes between countries. For instance, in countries where the level of power distance is higher, i.e., countries where an unequal power distribution is generally accepted, the proportion of female board members is significantly lower (Carrasco et al., 2015: 439). Similarly, prior literature has found an association between masculinity and a lower proportion of female directors on corporate boards (Carrasco et al., 2015: 439). Consequently, Martínez-García et al. (2024: 12) found that countries with higher levels of masculinity and power distance are more likely to adopt mandatory board gender diversity quotas. While recent BGD directives may play a role, many countries appear to be proactively promoting more gender-diverse boards.

3.6.2 Performance implications of different regulatory approaches

Prior literature has critically examined the efficacy of gender quotas as a potential mechanism for addressing the gender equality issue among boards of directors. In their literature review, Hamplová, et al. (2022: 746) found many arguments both for and against mandated quotas for recruiting women on corporate boards. They argue that mandatory quotas have more positive than negative effects on the number of women in board positions. However, they highlight that board appointments should be done in accordance with the directors’ competencies, because otherwise there is a risk that additional

directors are seen only as tokens and as a solution to achieve greater board gender diversity (Hamplová et al., 2022: 751-752). They also point out that in situations where quotas are fulfilled with persons who lack professional experience in that position, the board might start to ignore their opinions (Hamplová et al., 2022: 751), thus making the board inefficient. Nonetheless, more research on the effects of different national system has been called upon (Hosny & Elgharbawy, 2022: 578).

One of the central issues that policymakers are faced with in their efforts to promote gender diversity concerns which approach to adopt. Both soft and hard policies have their advocates, and the views will likely differ between those that focus solely on increasing gender diversity for the sake of equality, and those that are concerned with the practicalities of such initiatives. Given the nature of the issue, however, it is argued here that hard quotas may be problematic from a performance perspective. Initiating social change requires broad support from the affected community, and the process itself is inherently complex. The specific circumstances of a setting, such as the culture of a board or society in general, have a direct effect on the viability of reforms (Mensi-Klarback & Seierstad, 2020: 616). That is, if the board was to oppose such change, it is likely that forcefully implementing gender diversity measures would have a negative impact on the social cohesion of the group. It is argued that this could, in turn, hinder the board from realizing the potential benefits of greater diversity.

A hard law approach may also deprive firms the flexibility they need to address the issue of gender diversity in an appropriate manner. If a company must suddenly appoint new female board members by a hard deadline, it raises the question of whether they will have the time to identify qualified and knowledgeable directors, especially in those industries that have typically been male dominated. There is evidence in the literature that would appear to support this notion. For instance, Bannò et al. (2024: 253) found mandated quotas to negatively affect the performance of firms. The authors argue that highly skilled male directors may be replaced by unqualified women as a result of quotas, which would have a negative impact on firm performance. On the other hand, they also suggest that such cases would most likely put the women in a token position, where they would have very little influence on the work of the board. This reasoning aligns well with resource dependency theory, as discussed in section 3.2.1,

which suggest that organizations appoint board members with specific attributes to better align with the firm's strategic needs. Interestingly, while Mazzotta and Ferraro (2020: 1151) generally found a positive relationship between board gender diversity and firm performance as measured by return on equity, they found the opposite effect to be true when measuring firm valuation. The authors concluded that while diversity would otherwise have a positive effect on firm performance, the market perceives mandated gender quotas as a nuisance and an external disturbance, thereby negatively affecting its valuation.

A soft approach, i.e., a voluntary target, would on the other hand provide boards with the flexibility to incrementally appoint new female directors. Without the presence of a hard deadline, boards would have the time required to find a suitable and qualified female director. Similarly, they would not be forced to let go of qualified male directors only to fulfil diversity criteria. Given the above, the following hypotheses are presented:

H3a: Soft gender diversity mechanisms will strengthen the positive relationship between board gender diversity and firm performance.

H3b: Hard gender diversity mechanisms will weaken the positive relationship between board gender diversity and firm performance.

4. Methodology

4.1 Research Strategy and Design

Considering the objective of the study, a quantitative research strategy was deemed the most fitting. As our primary interest lies in establishing a causal relationship between board gender diversity and firm performance, a quantitative approach is more appropriate for testing hypotheses and making generalizable conclusions. While qualitative studies have an advantage in constructing rich descriptions of specific cases and situations, it was deemed ill-suited and impractical for a broad cross-country analysis. Moreover, previous studies on the subject have overwhelmingly relied on quantitative methods. By following the same approach and utilizing quantitative data and tests, we are able to make meaningful and reliable comparisons against previous studies (Bell et al., 2022: 170).

In view of the quantitative nature of the present study, we rely on existing theory and earlier findings to develop and justify our hypotheses. This approach is most closely associated with deductive reasoning, where theory that has been established by prior academic publications is used as a cornerstone for the research, i.e., the hypotheses that are being tested are derived from what we already know (Saunders et al., 2019: 153). However, we aim not to restrict the scope of the present study and construct a purely deductive research strategy. The literature has yet to thoroughly examine the cultural and regulatory factors and how they moderate the relationship between board gender diversity and firm performance. That is, the current body of literature remains limited and is therefore in need of more theory development. Consequently, some inductive features will be clearly present in the analysis of the study as we aim to better understand and discuss the phenomenon. For this reason, we use a dual approach where both deductive and inductive reasoning are incorporated into the research.

The present study relies solely on secondary data, i.e., all data were originally collected by others. Utilizing such data was considered fundamental to both the research question and the overall quality of the study. The reasoning was that secondary data and its analysis offer far superior efficiency, quality,

and analytical opportunities compared to the collection of primary data (Bell et al., 2022: 293-294). Firstly, this approach enabled the collection of a large sample from 36 different countries and more than 2000 individual firms. Obtaining a comparable sample through primary data collection would not only have been time-consuming, but most likely outright impossible. By taking advantage of already available data sources, we were able to obtain a sample that is sufficiently large and diverse for a cross-country analysis. As mentioned earlier, such studies have been surprisingly scarce and the implications of culture and institutions on BGD and firm performance have consequently been neglected. Similarly, without a multi-year panel dataset, the findings would likely be more susceptible to bias, as external economic disturbances could lead to misleading results. This data collection method therefore gives us the possibility to study the topic with a more longitudinal approach and ensures more time for the analysis (Bell et al., 2022: 297). Further, we utilize well-established databases that have been frequently used in previous studies in order to ensure the quality of the retrieved data. The above considerations were crucial in determining the appropriate approach to the study, as the research design directly affects how we can answer the research questions, and whether we can do so reliably.

4.2 Data and Estimations

4.2.1 Sample

The sample of the study consists solely of secondary data, which were retrieved from the LSEG Workspace (also known as Refinitiv Eikon or Thomson Reuters) database. This database is widely used in academic research to obtain both financial and non-financial data and it has featured in many BGD studies. For instance, a simple search using the University of Gothenburg library Supersearch tool for peer-reviewed articles published in the past two years together with the keywords "firm performance" and "Eikon" or "Thomson Reuters," yields 336 results. Based on this, we consider the database to be a valid and reliable source.

Our dataset covers both financial and governance data from 2225 individual firms between years 2014 and 2024. The data was collected from 36 countries across three geographical regions i.e. Asia, the

Americas, and Europe, creating a diverse enough sample to meaningfully account for cultural differences between countries. An overview of the geographical spread is found in Table 1 below. As the primary focus of the study remains on publicly listed firms, the sample was drawn from the main stock markets of the respective countries across 74 industries. Secondary or other alternative stock markets (such as those for smaller growth firms) were excluded from the sample. Similarly, only the domestic stock exchange was considered for those companies with dual listings in order to avoid duplicating data. Following the approach of previous studies (see e.g., Marquez-Cardenas et al., 2022: 795), those firms that lacked data on board gender diversity were excluded from the sample. For the purposes of the data analysis, a 1-year lag was incorporated into the performance variables of the dataset to account for an expected delay in the performance effects of board gender diversity. Such lags are widely used in similar studies (see e.g., Arvanitis et al., 2022: 10; Joecks et al., 2013: 65; Hosny & Elgharbawy, 2022: 575). Given this adjustment, the panel covers firm data from a total of nine years, bringing the total number of observations to 20,025.

Table 1. Observations by Country.

Country	Frequency	Percent	Country	Frequency	Percent
Austria	108	0.54	Luxembourg	36	0.18
Belgium	126	0.63	Malaysia	351	1.75
Brazil	468	2.34	Mexico	216	1.08
Canada	1,197	5.98	Netherlands	207	1.03
Chile	171	0.85	Norway	144	0.72
China	720	3.60	Philippines	99	0.49
Denmark	162	0.81	Poland	189	0.94
Finland	207	1.03	Saudi Arabia	36	0.18
France	567	2.83	Singapore	207	1.03
Germany	486	2.43	Spain	252	1.26
Greece	81	0.40	Sweden	369	1.84
HongKong	549	2.74	Switzerland	504	2.52
India	630	3.15	Taiwan	459	2.29
Indonesia	252	1.26	Thailand	234	1.17
Ireland	198	0.99	Turkey	135	0.67
Israel	54	0.27	UAE	27	0.13
Japan	3,051	15.24	UK	1,593	7.96
Kuwait	27	0.13	USA	5,913	29.53
Total				20,025	100.00

4.2.2 Dependent and independent variables

The full variable list is reported in Table 2 below. As this study examines how board gender diversity affects firm performance, two different measures for FP were selected, namely return on assets (ROA) and Tobin's Q. ROA is used as an accounting based and short-term FP estimate, whereas Tobin's Q takes market-based valuation into account and is more of a long-term performance index (Hosny & Elgharbawy, 2022: 566; Marquez-Cardenas et al., 2022: 796). The ROA variable was calculated by dividing the net income with average total assets, while Tobin's Q was calculated by dividing company market capitalization with the company's total assets. Furthermore, BGD as the independent variable is the percentage of female directors on the board. Since this study takes cultural aspects into account, Hofstede's cultural country indices were chosen to obtain well-established, and widely used parameters to capture differences between cultures. Given that Hofstede's cultural index has been updated over time, this study uses the most recent version provided by The Cultural Factor Group (n.d.). These indices are based on Hofstede's original 1984 framework but have since been updated and validated by Hofstede himself and two additional studies, extending their coverage to more countries than the original work (The Cultural Factor Group, n.d.).

To examine the moderating effect of different legal mechanisms on the relationship between board gender diversity and firm performance, data on local regulations was collected. Since the dataset of this study spans over ten years of time, there have been some regulatory developments in the countries that are of interest in our research. Consequently, data for the full ten-year period was collected manually in order to account for potential policy changes in each country and to enable the creation of a relevant variable. The variable is labeled as "Quota", and it assumes value 0 when there are no BGD recommendations or quotas in the country (i.e., neither soft nor hard mechanisms have been adopted), value 1 when there are only recommendations (such as comply or explain policies), and value 2 when there are hard quotas mandating a certain gender distribution on the board. We make no distinction between the underlying requirements of different hard quotas (i.e. the number of female directors required under the regulation) but rather treat all mandatory quotas as identical. This data was retrieved

from various sources to obtain the most accurate data of the legal environment (see Appendix A for complete list).

Table 2. List of Variable Names and Definitions.

Variable	Definition
Dependent variables	
Tobin's Q	Company Market Capitalization over Total Assets.
ROA	Net Income over Average Total Assets.
LnTOQ	Natural logarithm of Tobin's Q.
ROA_wins	Winsorized ROA at 1st and 99th percentile.
Independent variables	
BGD	Percentage of females in companys board of directors.
BGDx2	Quadratic term of BGD.
FEMDIR_Dummy1	Dummy variable for number of female board members, equals 1 when 1 female board member; otherwise 0.
FEMDIR_Dummy2	Dummy variable for number of female board members, equals 1 when 2 female board members; otherwise 0.
FEMDIR_Dummy3	Dummy variable for number of female board members, equals 1 when 3 female board members; otherwise 0.
FEMDIR_Dummy4	Dummy variable for number of female board members, equals 1 when 4 female board members; otherwise 0.
Interaction variables	
PDI	Hofstede's Masculinity Index.
MAS	Hofstede's Uncertainty Avoidance Index.
UAI	Hofstede's Power Distance Index.
BGD x PDI	BGD multiplied by PDI.
BGD x MAS	BGD multiplied by MAS.
BGD x UAI	BGD multiplied by UAI.
SoftMech	Dummy variable of Quota, equals 1 if suggestions, and 0 if hard quotas.
BGD x SoftMech	BGD multiplied by SoftMech.
NoMech	Dummy variable of Quota, equals 1 if no quotas or suggestions, and 0 otherwise.
BGD x NoMech	BGD multiplied by NoMech.
Control variables	
IBM	Percentage of Independent Board Members.
ABT	Average Board Tenure of Board Members.
LnRevenue	Natural logarithm of Company's Revenue.
LnNoEMPL	Natural logarithm of Company's Number of Employees.
Quota	Categorical variable of gender quotas of the country of company's HQ. Equals 0 if no mechanisms, 1 if soft mechanisms, 2 if hard mechanisms.
Bsize	The Number of Board Members.

4.2.3 Control variables

In order to ensure that all controls are both relevant and valid, we adopted control variables that have been frequently used in the literature (see e.g., Arora, 2022; Chen et al., 2021; Dwaikat et al. 2021; Li & Chen, 2018). Three control variables were constructed to capture specific board characteristics that are of relevance in our model. These are average board tenure (ABT), independent board members (IBM) and board size (Bsize). Moreover, two additional variables control for firm size, i.e., number of employees (NoEMPL) and revenue (Revenue). ABT is measured in years the board members have on average stayed on company boards and IBM is independent board members over total board members, whereas Bsize is the actual number of board members. NoEMPL and Revenue are the actual numbers of both measures, but both are used as natural logarithms, because these variables were highly and

positively skewed and had extremely high kurtosis. All data for the control variables were directly retrieved from the LSEG database.

4.2.4 Regression models

This study relies on one primary regression method to test the hypotheses in chapter 3, namely OLS regression. Initially, a panel data regression model was considered as it has been frequently adopted as the main method in board gender diversity studies (Laskar, 2024: 620) and is well-suited for a multi-year dataset. In order to decide between a fixed effects (FE) and random effects (RE) model, we performed a Hausman test to control whether individual effects are shown to be random (Cameron & Trivedi, 2022: 607), and the results confirmed that an FE model was appropriate. However, given that a fixed effects panel data regression does not allow for the inclusion of time-invariant variables, it was deemed unfit for the study. Instead, an OLS regression model is utilized. Adopting an alternative method to the panel data regression also helps us reduce the risk of type II errors, as FE models may sometimes fail to capture all relevant variance due to their more conservative estimations (Collischon & Eberl, 2020: 295-296).

The OLS regression enables the testing of a moderating effect of our time-invariant cultural variables, while keeping industry and year effects fixed. Industry fixed effects are accounted for in the model by so-called absorption, in which the fixed effects are absorbed from both the dependent and independent variables (Pinna, 2022: 435). Keeping year effects fixed was considered imperative to addressing any potential macro effects which may otherwise skew the results. Moreover, as board gender diversity may vary significantly from one industry to another, controlling for such effects was also considered vital. This conclusion was supported by the results of an ANOVA test (see Appendices B-E), which confirmed that significant differences in board gender diversity were found across the 74 industries in our sample. We also performed a Breusch-Pagan test that indicated the presence of heteroskedasticity in the data. Consequently, we clustered the data at the firm level to address this issue as well as to account for potential serial correlation (Cameron & Trivedi, 2022: 161). Moreover, we use the natural logarithm of dependent variable Tobin's Q and control variables number of employees and revenue to

address the issue of non-normality. Dependent variable ROA was also treated, but through winsorization at the 1st and 99th percentile as it contained negative values which did not permit the use of natural logarithms. Winsorization replaces values below the 1st and above the 99th percentile with the values of those thresholds to treat the issue of non-normality (Wilcox, 2017: 32, 62). The complete models are presented below, while the abbreviations of the variables are presented in Table 2 above.

$$\begin{aligned} \gamma_{i,t} = & \beta_0 + \beta_1 BGD_{i,t} + \beta_2 BGDx_{i,t}^2 + \beta_3 ABT_{i,t} + \beta_4 IBM_{i,t} + \beta_5 LnNoEMPL_{i,t} + \\ & \beta_6 Bsize_{i,t} + \beta_7 LnRevenue_{i,t} + Year + Industry + \epsilon_{i,t} \end{aligned} \quad (1)$$

$$\begin{aligned} \gamma_{i,t} = & \beta_0 + \beta_1 BGD_{i,t} + \beta_2 FEMDIR_Dummy1_{i,t} + \beta_3 FEMDIR_Dummy2_{i,t} + \\ & \beta_4 FEMDIR_Dummy3_{i,t} + \beta_5 FEMDIR_Dummy4_{i,t} + \beta_6 ABT_{i,t} + \beta_7 IBM_{i,t} + \\ & \beta_8 LnNoEMPL_{i,t} + \beta_9 Bsize_{i,t} + \beta_{10} LnRevenue_{i,t} + Year + Industry + \epsilon_{i,t} \end{aligned} \quad (2)$$

$$\begin{aligned} \gamma_{i,t} = & \beta_0 + \beta_1 BGD_{i,t} + \beta_2 pdi_{i,t} + \beta_3 mas_{i,t} + \beta_4 uai_{i,t} + \beta_5 BGD_{i,t} pdi_{i,t} + \\ & \beta_6 BGD_{i,t} mas_{i,t} + \beta_7 BGD_{i,t} uai_{i,t} + \beta_8 ABT_{i,t} + \beta_9 IBM_{i,t} + \beta_{10} LnNoEMPL_{i,t} + \\ & \beta_{11} Bsize_{i,t} + \beta_{12} LnRevenue_{i,t} + Year + Industry + \epsilon_{i,t} \end{aligned} \quad (3)$$

$$\begin{aligned} \gamma_{i,t} = & \beta_0 + \beta_1 BGD_{i,t} + \beta_2 BGD_{i,t} SoftMech_{i,t} + \beta_3 ABT_{i,t} + \beta_4 IBM_{i,t} + \\ & \beta_5 LnNoEMPL_{i,t} + \beta_6 Bsize_{i,t} + \beta_7 LnRevenue_{i,t} + Year + Industry + \epsilon_{i,t} \end{aligned} \quad (4)$$

$$\begin{aligned} \gamma_{i,t} = & \beta_0 + \beta_1 BGD_{i,t} + \beta_2 BGD_{i,t} NoMech_{i,t} + \beta_3 ABT_{i,t} + \beta_4 IBM_{i,t} + \\ & \beta_5 LnNoEMPL_{i,t} + \beta_6 Bsize_{i,t} + \beta_7 LnRevenue_{i,t} + Year + Industry + \epsilon_{i,t} \end{aligned} \quad (5)$$

As seen in equation 1 above, we included a quadratic term in the regression to account for a potential inverted U-shaped relationship between BGD and FP. Given the inclusion of the quadratic term, interpretation of the relationship must be done with some caution, as the marginal effect of the predictor

is different depending on the initial value of BGD, meaning that BGD has a diminishing marginal effect on firm performance (Wooldridge, 2016: 635). This relationship is more appropriately interpreted through a post-estimation test, i.e., predictive margins. The test estimates the average predicted ROA and Tobin's Q for every level of BGD, of which there are 111 in our sample. However, as Tobin's Q is in logarithmic form, we need to transform the variable back to its original scale. We do so by taking the exponential of the predicted margins for Tobin's Q (Wooldridge, 2016: 640). Furthermore, we use predictive margins also to interpret and estimate the interaction effect of the cultural dimensions and the regulatory mechanisms. Additionally, the Wald test is used to test the joint significance of BGD and the quadratic term of BGD, as well as the joint significance of BGD and the interaction terms of culture and regulatory mechanisms (Long & Freese, 2014:116).

4.3 Validity and Reliability

The potential for validity and reliability issues in the study is addressed by employing well-established methods and a series of robustness tests. Firstly, we address measurement validity and reliability concerns by utilizing frequently adopted measures for firm performance, board gender diversity, and culture. Return on assets and Tobin's Q are widely used to measure firm performance both within the BGD literature and outside of it. The number or proportion of women on the board has quite naturally also come to represent gender diversity among directors, providing a stable and accurate measure. Similarly, Hofstede's cultural dimensions are frequently used in studies across multiple disciplines. We also retrieve our data from reliable databases as demonstrated in section 4.2.2, and utilize well-known regression models, ensuring ample opportunity for replication of our tests. Therefore, we see no issue in terms of measurement validity or reliability.

We further address the potential for internal validity issues by testing for the presence of endogeneity in our sample. When the relationship between a dependent and independent variable is affected by unknown factors which lead to biased results, it is said to suffer from endogeneity (Cooper et al., 2020: 3). Omitted variable bias, simultaneity, and selection bias are some of the most common sources for this phenomenon (Cooper et al., 2020: 3; Esping-Andersen & Przeworski, 2001: 12650). Identifying

the presence of such issues is vital for the correct interpretation of our results, and a failure to do so in previous studies may partly explain the inconclusive results that the board gender diversity literature has suffered from (Kılıç & Kuzeyp, 2016: 438).

As mentioned, when relevant variables are inadvertently excluded from a model, the output of the regression may be distorted (Sessions & Stevans, 2006: 2836). If the dependent and independent variables are influenced by another variable that is not accounted for in the model, the results would likely be biased due to the omission of a relevant explanatory variable (Wilms et al., 2021: 1). Previous BGD studies have often attempted to alleviate this issue by using fixed effects models, much like in the present study (see e.g., Adams & Ferreira, 2009: 295). However, to further substantiate our results, an instrumental variable regression approach was adopted. We use an IV two-stage least squares regression analysis to test for endogeneity, as proposed by Ullah et al. (2021: 3).

We also address the potential for self-selection bias, i.e., a situation where the sample is not sufficiently random. Yang et al. (2019: 2) distinguish between two types of selection bias most prominent in examining board gender diversity, namely those related to firm characteristics and those concerned with the individual attributes of directors. When firm characteristics, such as size, systematically alter the performance of the firm as well as its tendency to appoint female directors, the risk of selection bias increases unless firm size is explicitly considered by the model in question. Similarly, the authors elaborate that the personality and values of female directors may not necessarily reflect those of the average woman outside of the boardroom. Women that are appointed to boards may in fact have similar traits as their male colleagues, otherwise they may not have managed to get appointed in the first place. Without due consideration for such scenarios, the interpretation of any results may become misleading. Accordingly, we use propensity score matching to further substantiate a causal relationship between BGD and firm performance. Utilizing these two approaches substantially enhance the internal validity of our results, allowing us to draw causal inferences from the data. We also enhance the external validity of our results by utilizing a large cross-country sample from 36 countries and 74 industries. By doing so, our results are likely applicable to multiple national and industry contexts, thereby improving the

generalizability of the results. Nonetheless, we acknowledge that true external validity is extremely difficult to achieve.

4.4 Limitations

Despite considerable efforts to ensure that the study employs a sound research strategy and appropriate methods, some limitations are worth noting. Firstly, while the size and geographical scope of the sample are considered sufficient, the lack of relevant data resulted in the exclusion of several firms and countries. For instance, Italian firms were excluded because the necessary firm data was not available through LSEG Workspace, while South Korean firms were omitted altogether because they lacked data on board gender diversity. The same limitation was apparent for individual firms from across the world, where they lacked complete datasets on key metrics. However, such data availability issues were expected as the dataset spanned 10 years and countless countries, and with previous studies citing similar limitations. The effects of these sample limitations were nonetheless deemed marginal due to the overall diversity of the sample.

Secondly, collecting up-to-date information about different gender diversity regulations required manual data collection from multiple sources. This may give rise to human error and an increased risk of retrieving inconsistent information across different sources. In order to minimize such risks, both authors conducted the data collection independently. The datasets were then examined to identify any potential anomalies and appropriate corrections were made. Although these measures are believed to greatly alleviate any problems related to inaccurate data, such risks are difficult to eliminate completely.

4.5 Ethical Considerations

We see no real risk of violations or causing harm to third parties either during the research process or after publication. As our research has relied solely on publicly available firm- and country-level data, there has been no need of collecting, storing, or sharing personal data of any kind. Anonymity, consent, data privacy, and security issues have therefore been of minimal significance. Consequently, the research is not believed to pose any ethical challenges that should be disclosed.

5. Results

5.1. Descriptive Statistics & Correlations

An overview of the descriptive statistics is found in Table 3 below. Tobin's Q ranged between a minimum of 0 up to a maximum value of 92.36, while the mean remained at 1.38. Similarly, ROA ranged between -0.59 and 2.39 with a mean value of 0.057. The quite significant variation in the values indicate a presence of outliers, which was addressed through log transformation and winsorization. The transformed variables show a much more even distribution with natural logarithm of Tobin's Q varying between -5.91 and 4.53, whereas winsorized ROA ranged from -0.09 to 0.27. Further, the median firm in the sample was founded 37 years ago and had a revenue of \$5 billion and total assets of \$10 billion during the sample period. In total, the median number of employees was 13.562, while boards typically had 10 directors. Of the total board members, approximately 62.5% were independent members and the average board tenure was approximately 7 years. Further, we use natural logarithm of revenue and number of employees to alleviate the inherent skewness in the data (not reported in the table).

Table 3. Overview of Descriptive Statistics.

Variable	Obs.	Missing	Mean	Std. Dev	Min	Median	Max
Tobin's Q	20025	0	1.38	2.54	0	0.73	92.36
LnTOQ	20025	0	-0.37	1.23	-5.91	-0.32	4.53
ROA	20025	0	0.06	0.08	-0.59	0.04	2.39
ROA_wins	20025	0	0.06	0.06	-0.09	0.04	0.27
CompanyAge	20025	0	48.44	33.41	0	37	217
PDI	20025	0	49.91	16.85	11	40	100
MAS	20025	0	61.47	19.29	5	62	95
UAI	20025	0	56.25	22.01	8	46	100
IBM	19970	55	0.60	0.26	0	0.63	1
ABT	19755	270	7.69	3.62	0	7.03	30.88
AvgAssets	20025	0	63707054729.68	267247244582.57	68211206.72	10267950312.37	5974746789522.96
Revenue	20021	4	14558875470.27	33417441897.60	-246000000.00	5027200000	680985000000.00
NetIncome	20025	0	1418651697.10	4041367106.47	-24334683744.59	443700000	103982000000.00
NoEMPL	19116	909	36872.89	81706.63	0	13562.50	2300000
Quota	20025	0	0.39	0.70	0	0	2
Bsize	19969	56	10.81	3.11	1	10	31
BGD	20025	0	0.20	0.14	0	0.20	0.75
Female board members	20025	0	2.16	1.67	0	2	13
FEMDIR_Dummy1	20025	0	0.24	0.43	0	0	1
FEMDIR_Dummy2	20025	0	0.23	0.42	0	0	1
FEMDIR_Dummy3	20025	0	0.18	0.39	0	0	1
FEMDIR_Dummy4	20025	0	0.10	0.30	0	0	1

In an effort to ensure that the independent variables in our regression models do not suffer from multicollinearity issues, a Pearson correlation matrix was constructed. The results of the test are presented in Table 4 below. The highest observed correlation coefficient is 0.851 for ROA and winsorized ROA. A generally agreed upon threshold for the presence of multicollinearity is either 0.7 or 0.8 (Kalnins, 2018: 2365). However, as only winsorized ROA will be used in the regression models, no multicollinearity issue will arise. Moreover, all independent variables have correlation coefficients that do not exceed 0.5, hence multicollinearity issues are unlikely to pose a challenge. The same conclusion was reached by utilizing the variance inflation factor (VIF), which showed that all variables apart from BGD remained below the threshold of 10 (Kalnins, 2018: 2364). The somewhat higher value of BGD (11.53) is explained by the presence of the FEMDIR dummy variables, which measure the number of female directors at specific levels. In essence, both variables therefore measure board gender diversity, and a higher level of correlation is expected. When one or all of the dummy variables are removed from the model, the VIF of BGD falls well below 10.

Finally, a descriptive summary of the performance implications of different board diversity levels is provided in table 5. The observations have been organized into a total of nine groups based on the percentage of female directors on the board, where each value is rounded to the closest decile. The table presents the mean values of ROA, winsorized ROA, Tobin's Q, and the natural logarithm of Tobin's Q as well as the total number of observations for the first six deciles. The results suggest that all performance indicators are at their lowest levels when the percentage of female directors is 0, with the exception of Tobin's Q. All four indicators rise continuously as the number of women on the board increases up to 30%, after which the mean values decline somewhat at the 40% level. Both ROA and Tobin's Q peak at the 50% level, whereas winsorized ROA and log transformed Tobin's Q continue to decline. Overall, heterogeneous boards would appear to perform better than their homogenous counterparts. The data also gives some indication that as boards reach higher gender diversity levels, the positive performance effect begins to diminish.

Table 5. Mean values of Return on Assets and Tobin's Q at Select Levels of Board Gender Diversity.

Variable	ROA	ROA_wins	Tobin's Q	LnTOQ
BGD 0%				
Mean	0.4849	0.0483	1.1781	-0.4887
N	3206	3206	3206	3206
BGD 10%				
Mean	0.0502	0.0506	1.2695	-0.0448
N	4938	4938	4938	4938
BGD 20%				
Mean	0.0601	0.0599	1.4918	-0.2926
N	4154	4154	4154	4154
BGD 30%				
Mean	0.0637	0.0627	1.4937	-0.2493
N	4726	4726	4726	4726
BGD 40%				
Mean	0.0594	0.0583	1.4202	-0.3661
N	2181	2181	2181	2181
BGD 50%				
Mean	0.0638	0.0545	1.6316	-0.5350
N	694	694	694	694

5.2 Main results

To confirm if industry fixed effects were relevant for the model, we performed a series of OLS regression tests. First, ROA was regressed with control variables average board tenure, independent board members, board size, number of employees, and year fixed effects while standard errors were clustered at the firm level. This model returned an R^2 value of 0.0626. We then introduced dummy variables for every industry as regressors, which brought the R^2 value up to 0.2751, indicating that the industry dummies were able to explain 21.25% points of the total variance in ROA. Similar tests were conducted for Tobin's Q, where the first stage returned an R^2 value of 0.1163, whereas the same went up to 0.5315 when industry dummies were added to the model. Therefore, the inclusion of industries dummies through absorption was deemed necessary to control for unobserved industry-level fixed effects in the data.

Table 6. Regression Output for Models 1 – 4.

Variable	Model 1 (LnTOQ)	Model 2 (ROA_wins)	Model 3 (LnTOQ)	Model 4 (ROA_wins)
BGD	1.098*** (3.50)	0.054*** (3.38)	0.323** (2.31)	0.017*** (2.52)
BGDx2	-1.369* (-2.30)	-0.068* (-2.33)		
FEMDIR_Dummy1			0.016 (0.44)	0.000 (0.14)
FEMDIR_Dummy2			0.049 (1.29)	0.004** (2.08)
FEMDIR_Dummy3			0.113*** (2.87)	0.005*** (2.71)
FEMDIR_Dummy4			0.094** (2.18)	0.003 (1.39)
IBM	0.458*** (6.58)	0.015*** (3.92)	0.464*** (6.86)	0.015*** (4.05)
ABT	0.042*** (9.10)	0.001*** (5.61)	0.042*** (9.13)	0.001*** (5.59)
Ln_Revenue	0.001 (0.04)	0.009*** (6.82)	-0.000 (-0.01)	0.009*** (6.78)
Ln_NoEMPL	-0.095*** (-4.25)	-0.002*** (-6.61)	-0.094*** (-4.20)	-0.009*** (-7.38)
Bsize	-0.028*** (-5.23)	-0.009*** (-7.43)	-0.028*** (-5.09)	-0.002*** (-6.35)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	18,911	18,911	18,911	18,911
R-Squared	0.5338	0.2776	0.5341	0.2779

Note: * p < 0.05, ** p < 0.01, *** p < 0.001. t-statistics are reported in parantheses.

Table 6 summarizes the results of the first four models. First, we tested hypotheses H1a and H1c by testing for a relationship between BGD and FP, and by including a quadratic term of BGD to account for a potential inverted U-shaped relationship between the variables. In Model 1, a positive ($\beta=1.098$) and significant relationship between BGD and Tobin’s Q is found at the $p < 0.01$ significance level. Similarly, Model 2 also indicates a positive and statistically significant relationship between BGD and ROA. In both models, the quadratic term of BGD is negative and significant at the $p < 0.05$ significance level. Joint significance of BGD and the quadratic term of BGD was tested for with a Wald test, which

returned $p < 0.001$ for both Tobin's Q and ROA. Thus, both models support the notion of a non-linear relationship between BGD and FP, since BGD has a positive slope, and its quadratic term is negative. To better understand the relationship, we calculate the inflection point (i.e., the peak) of BGD by using the following equation (Wooldridge, 2016: 174):

$$\text{Inflection point} = \frac{\beta_1}{2 \times \beta_2}, \quad (6)$$

where β_1 is the coefficient for BGD and β_2 is the coefficient for the quadratic term of BGD. When entering the values from Table 6 into the equation, the following output is returned:

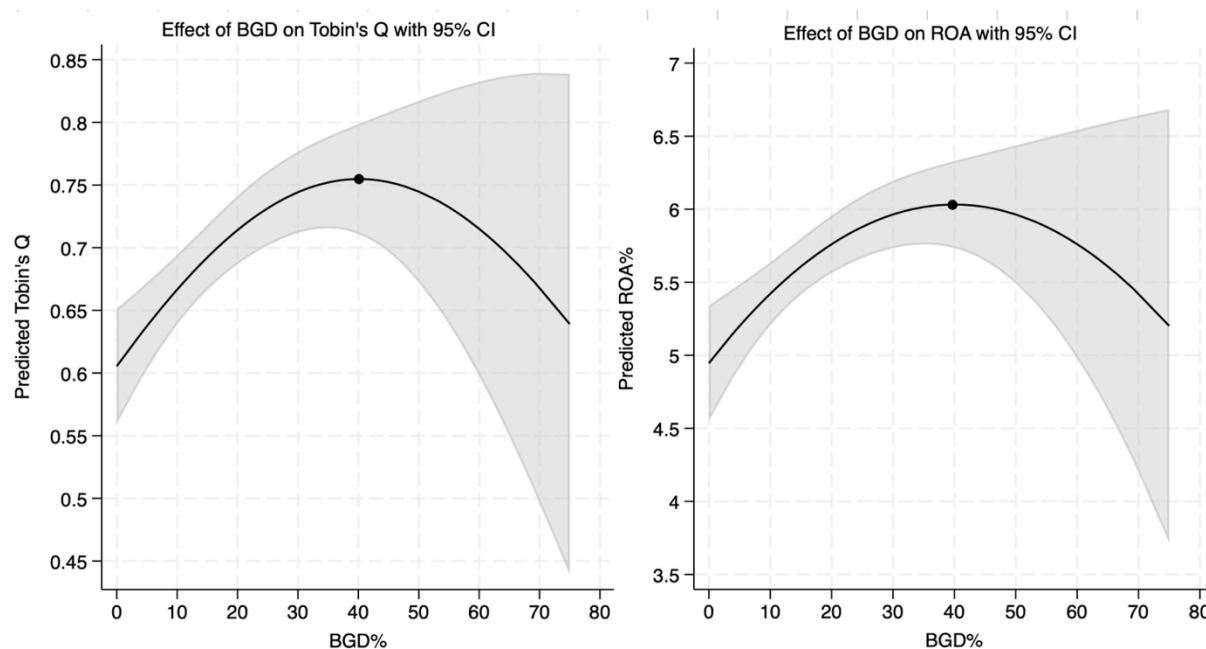
$$\text{Inflection point (Tobin's Q)} = \frac{1.098}{2 \times (-1.369)} = \frac{1.098}{2.738} = 0.401 \approx 40.1\% \quad (7)$$

$$\text{Inflection point (ROA)} = \frac{0.054}{2 \times (-0.068)} = \frac{0.054}{0.136} = 0.397 \approx 39.7\% \quad (8)$$

The results suggest that the inflection point is reached when BGD is 40.1% in model 1, and 39.7% in Model 2. In other words, the positive performance effect of BGD peaks when the proportion of female directors is approximately 40% both with respect to ROA and Tobin's Q.

To further illustrate the relationship between BGD and FP, the results of predictive margins with 95% confidence intervals are shown in Figure 3 below. For Tobin's Q, we see that a complete absence of female directors on the board is associated with a mean Tobin's Q value of approximately 0.6. Tobin's Q then rises significantly until BGD reaches 40%, peaking at around 0.75, after which it begins to decline. Similar results apply to ROA, which rises from its initial level of just below 5% to a high of 6% when the inflection point is reached. Accordingly, firm performance improves significantly when boards become more gender diverse, although this only applies until the number of women on the board reaches around 40%. Thus, the results of Model 1 and 2 support hypotheses H1a and H1c.

Figure 3. Predicted Margins of Relationship between Board Gender Diversity and Firm Performance (Tobin's Q/ROA).



The fact that BGD has a diminishing marginal effect on FP suggests that there is no support for H1b, which stated that: *the effect of board gender diversity on financial performance is positively moderated by a critical mass of 30%*. However, we also test H1b by adding dummy variables in regression Models 3 and 4 to represent the number of female board directors (FEMDIR_Dummy). Interestingly, the results of Model 3 indicate that at least three female board directors are required to achieve a statistically significant positive impact on Tobin's Q, as the impact of one or two female board member is not significant. The same test for ROA (Model 4), indicates that a significant and positive impact is reached when there are at least two women on the board, while one female director has no statistically significant effect on ROA. The overall effect of BGD remains significant even when the dummy variables are introduced to the model, albeit as somewhat weaker.

In conclusion, the results from models 1 and 2 show that the relationship between BGD and both FP variables is positive and significant. Further, our results also suggest that the relationship is curvilinear and that the inflection points are reached as BGD hits approximately 40%, after which the inclusion of

additional female directors would negatively affect firm performance. Thus, the results support both H1a and H1c. However, since the marginal effect decreases after the point where BGD is 30%, the results do not fully support H1b. Nonetheless, Models 3 and 4 provide some evidence for H1b, as they indicate that the positive performance effects start only after two or more women are present on the board.

5.3 Results of Moderation Effects

5.3.1 Culture as a moderating variable

The next section presents the results of the moderating effect of culture as hypothesized in H2a, H2b, and H2c. For the sake of clarity, we will initially use Model 6 as an example. That is, we interpret the moderating effect of masculinity on the relationship between BGD and ROA, after which the remaining models are interpreted.

To test the moderating effect of our cultural dimensions on the relationship between BGD and FP, we created separate interaction terms consisting of BGD and the three cultural variables: *pdi* (*power distance*), *mas* (*masculinity*), and *uai* (*uncertainty avoidance*). The results of the tests are shown in Table 7, and the model specification is as follows:

$$\begin{aligned}
 ROA_wins_{i,t} = & \beta_0 + \beta_1 BGD_{i,t} + \beta_2 pdi_{i,t} + \beta_3 mas_{i,t} + \beta_4 uai_{i,t} + \beta_5 BGD_{i,t} pdi_{i,t} + \\
 & \beta_6 BGD_{i,t} mas_{i,t} + \beta_7 BGD_{i,t} uai_{i,t} + \beta_8 ABT_{i,t} + \beta_9 IBM_{i,t} + \beta_{10} LnNoEMPL_{i,t} + \\
 & \beta_{11} Bsize_{i,t} + \beta_{12} LnRevenue_{i,t} + Year + Industry + \epsilon_{i,t}
 \end{aligned} \tag{9}$$

Table 7. Regression Output for Models 5 – 10.

Variable	Model 5 (LnTOQ)	Model 6 (ROA_wins)	Model 7 (LnTOQ)	Model 8 (ROA_wins)	Model 9 (LnTOQ)	Model 10 (ROA_wins)
BGD	0.037 (0.08)	-0.034 (-1.27)	-0.821** (-2.57)	-0.033* (-2.13)	0.109 (0.61)	0.004 (0.47)
IBM	0.364*** (4.29)	0.005 (1.05)	0.224* (2.02)	-0.004 (-0.53)	0.427*** (6.25)	0.014*** (3.73)
ABT	0.039*** (8.53)	0.001*** (4.84)	0.032*** (3.79)	0.000 (0.96)	0.041*** (8.78)	0.001*** (5.47)
Ln_Revenue	0.031 (1.28)	0.011*** (7.89)	0.032 (0.89)	0.012*** (5.94)	-0.002 (-0.06)	0.009*** (6.77)
Ln_NoEMPL	-0.119*** (-5.03)	-0.011*** (-8.15)	-0.115*** (-3.40)	-0.010*** (-5.53)	-0.094*** (-4.21)	-0.009*** (-7.41)
Bsize	-0.023*** (-4.32)	-0.001*** (-5.54)	-0.045*** (-4.95)	-0.002*** (-5.34)	-0.028*** (-5.13)	-0.002*** (-6.47)
PDI	0.001 (0.61)	0.000 (0.88)				
MAS	-0.006*** (-3.31)	-0.0004*** (-5.33)				
UAI	0.0001 (0.01)	-0.000 (-0.69)				
BGD x PDI	0.017* (2.32)	0.000 (0.77)				
BGD x MAS	0.016** (2.86)	0.002*** (5.29)				
BGD x UAI	-0.024*** (-4.40)	-0.001*** (-3.45)				
SoftMech			-0.549*** (-4.43)	-0.015* (-2.38)		
BGD x SoftMech			1.311*** (3.50)	0.053** (2.82)		
NoMech					-0.150* (-2.31)	-0.008* (-2.35)
BGD x NoMech					0.810*** (3.45)	0.033** (2.70)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
N	18,911	18,911	7,365	7,635	18,911	18,911
R-Squared	0.5433	0.2913	0.5628	0.3215	0.5348	0.2782

Note: * p < 0.05, ** p < 0.01, *** p < 0.001. t-statistics are reported in parantheses.

In order to interpret the moderation effect correctly, we can calculate the estimated ROA or Tobin's Q by using only the coefficient of BGD together with the interaction term (Wooldridge, 2016: 177-179). However, the above-mentioned simplified calculation is only true when all other regressors are held at zero (Wooldridge, 2016: 177-179), which would be an unrealistic scenario. Additionally, since BGD is measured in percentage (0-1), a one-unit increase would entail that the proportion of women go from

0% to 100%. Such scenarios are naturally highly unlikely, which is why we make use of predictive margins for a more accurate and realistic interpretation of the moderation effect. We estimate the average marginal effect of a 10% increase in BGD on FP, while our cultural dimensions shift between three different levels, namely one SD below the mean, at means, and one SD above the mean, while keeping all other regressors at their mean values.

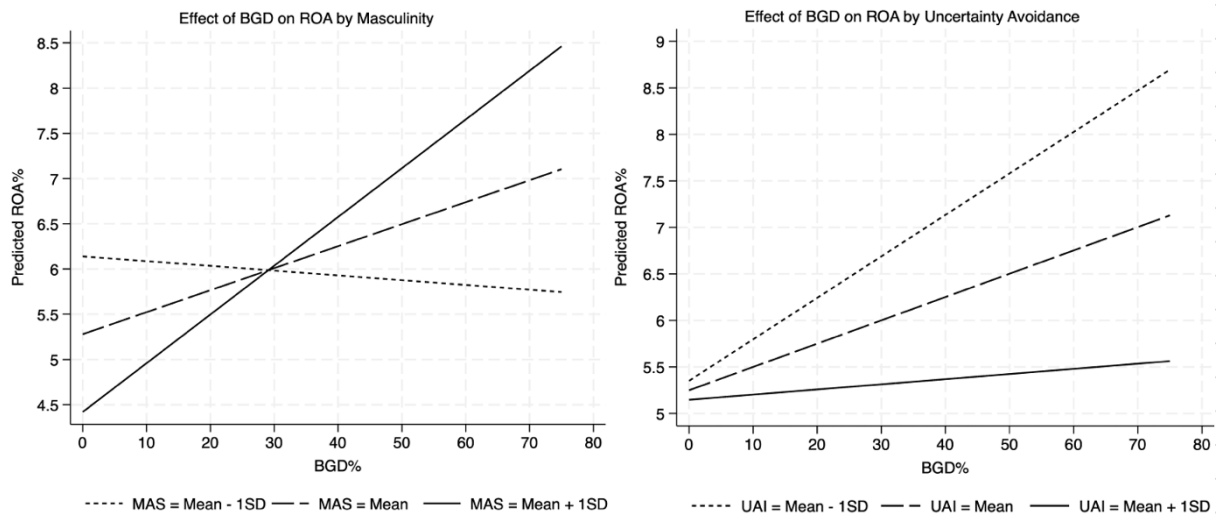
Predictive Margins - Return on Assets (ROA)

Figure 4 below illustrates the results of Model 6, which shows the relationship between BGD and ROA at the aforementioned levels of masculinity, while the remaining regressor variables are kept at their mean values. We find that the overall slope is negative when masculinity is at its lowest level, i.e., one standard deviation below its mean value. This is also clearly seen in Figure 4, as the regression line is relatively flat. However, this effect turns positive when the level of masculinity increases. By performing a Wald test for joint significance, we find that the linear relationship is highly significant ($p < 0.001$). Accordingly, BGD has a significant positive effect on ROA, and the effect is further strengthened when a country is associated with high levels of masculinity. Hence, we conclude that masculinity significantly moderates the relationship between BGD and ROA but in the opposite direction as hypothesized, thus not supporting H2c.

As we move on to the second cultural dimension – uncertainty avoidance – we find the opposite moderating effect. Both BGD and the interaction term are negative, indicating that cultures with high uncertainty avoidance experience a weaker effect on ROA when board gender diversity increases. As seen in Figure 4, by estimating the mean adjusted marginal effect we see that uncertainty avoidance negatively moderates the relationship between BGD and ROA. We further perform a Wald test for joint significance for the main and interaction effects, which returns a p-value of < 0.001 , thereby confirming that the interaction of BGD and uncertainty avoidance is significant. Although the overall effect of BGD remains positive in all three scenarios, we find that this effect significantly weakens in cultures with high levels of uncertainty avoidance. Much like with masculinity, we find a significant moderation

effect but in the opposite direction as originally hypothesized, hence not supporting hypothesis H2b. Further, the moderating effect of power distance was not statistically significant, and it is therefore not presented in the graphs.

Figure 4. Predicted Margins of Relationship between Board Gender Diversity and ROA at Select Levels of Masculinity and Uncertainty Avoidance.

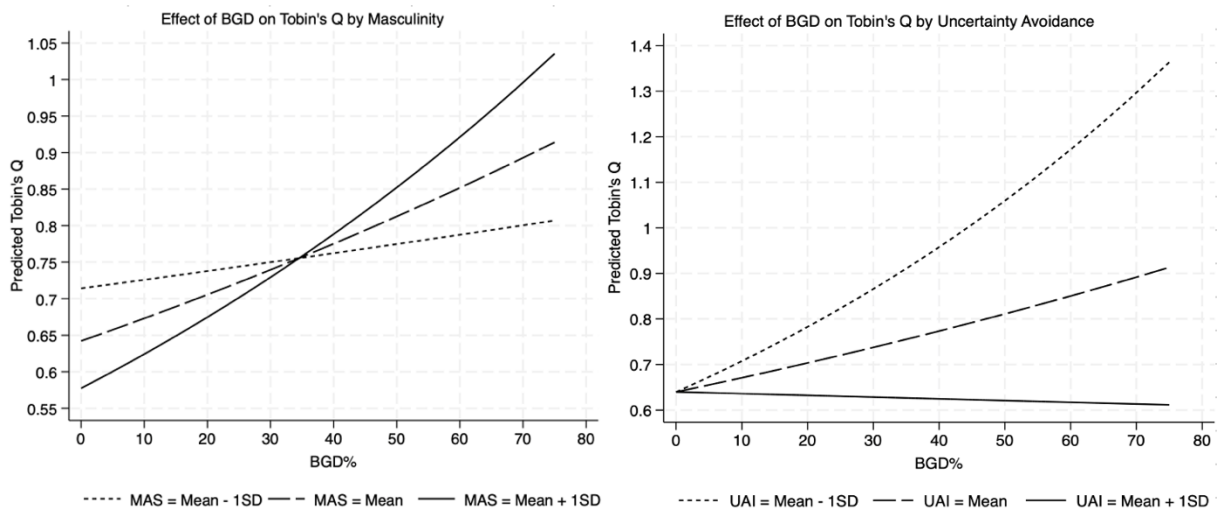


Predictive Margins - Tobin's Q

Proceeding to our second dependent variable, similar tests were conducted to identify whether our cultural variables moderate the relationship between BGD and Tobin's Q, which are tested with Model 5 presented in Table 7. As we use the natural logarithm of Tobin's Q, the predictive margins are computed with an exponentiate expression to transform the variable to its original value. In contrast to ROA where every 10% increase resulted in an equal difference in the dependent variable, i.e., the slope is constant, the increase in Tobin's Q is exponential. That is, the graphs depict non-linear slopes because of the aforementioned variable transformation. Hence, every 10-percentage point increase in BGD increases the dependent variable proportionally. This effect becomes evident in Figure 5 below, which illustrates the moderating effect of masculinity on the relationship between BGD and Tobin's Q. Much like in the case of ROA, we find that masculinity has a positive moderation effect on the relationship between BGD and Tobin's Q. The Wald test for joint significance confirms that the interaction effect

is highly significant ($p < 0.006$). In other words, board gender diversity has a stronger positive effect on Tobin's Q in cultures characterized by higher levels of masculinity. However, as the coefficient of the interaction term was positive and significant, the results do not support H2c, which predicted a negative moderation effect.

Figure 5. Predicted Margins of Relationship between Board Gender Diversity and Tobin's Q at Select Levels of Masculinity and Uncertainty Avoidance.

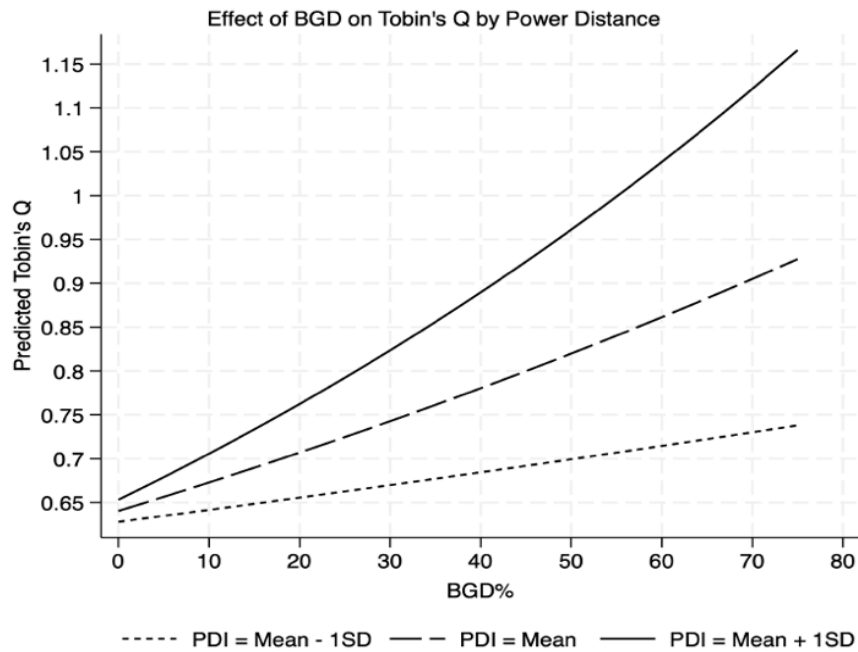


Consistent with our results in Model 6, uncertainty avoidance negatively moderates the relationship between BGD and Tobin's Q, as seen in Figure 5. The results imply that the positive effect of gender diversity is severely weakened when uncertainty avoidance becomes more prevalent. Again, the interaction was significant (joint significance $p < 0.001$), suggesting that the cultural variable does alter the performance implications of BGD, but in the opposite direction as predicted, thus the results do not support the hypothesis H2b.

Finally, the moderating effect of power distance is illustrated in Figure 6. We find that power distance positively moderates the relationship between BGD and Tobin's Q, and that the effect is statistically significant (joint significance $p < 0.014$). That is, board gender diversity has a stronger positive effect on Tobin's Q when a culture is characterized by high levels of power distance. For instance, when 50% of the board members are women, Tobin's Q is predicted to be approximately 0.96 in a high pdi

environment. Conversely, the same assumes a value of only 0.70 when pdi is low. Once again, this suggests that culture significantly alters the relationship between BGD and Tobin's Q. However, the direction of the effect was the opposite as hypothesized, giving no support for H2a.

Figure 6. Predicted Margins of Relationship between Board Gender Diversity and Tobin's Q at Select Levels of Power Distance.

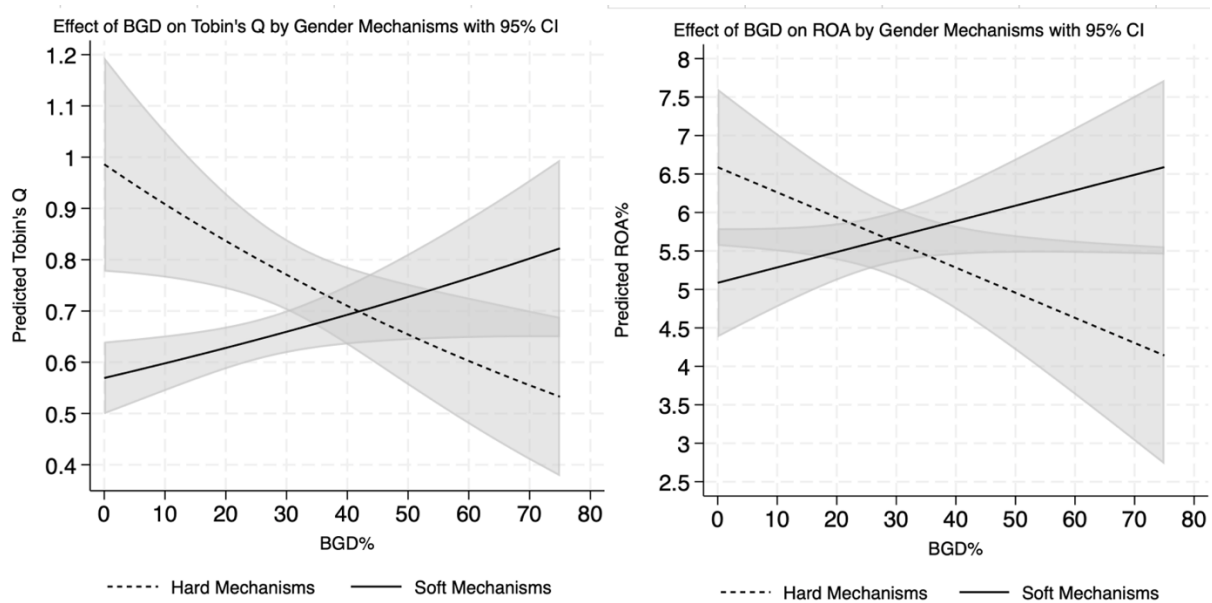


5.3.2 Institutional environment as a moderating variable

Next, the moderating effects of different gender diversity regulations are presented. Models 7 and 8 were constructed to test whether the effect of BGD differs between countries that have adopted hard gender diversity mechanisms (i.e., mandatory gender quotas) and those that employ so-called soft mechanisms (i.e., recommendations or quotas without penalties). The interaction term is only reported for soft mechanisms, since the dummy variable can only assume value 0 or 1. The estimates for hard mechanisms therefore yield identical results, but with a negative coefficient. Both models yielded fairly similar results, suggesting that the moderation effect is similar regardless of if we measure performance through ROA or Tobin's Q. The Wald test for joint significance of BGD and interaction term of BGD

and soft mechanisms confirmed that the interaction effects were significant ($p < 0.002$ in Model 7, and $p < 0.019$ in Model 8). For ease of interpretation, the results are again visualized with the help of predictive margins in Figure 7 below. We find that soft mechanisms have a significant and positive moderation effect on both FP measures, whereas hard mechanisms have a significant and negative moderation effect. More specifically, those countries that rely on mandatory quotas experience negative performance effects when BGD increases. Conversely, when soft mechanisms are employed, the effect of greater gender diversity becomes associated with significantly improved firm performance. Therefore, the results support hypotheses H3a and H3b.

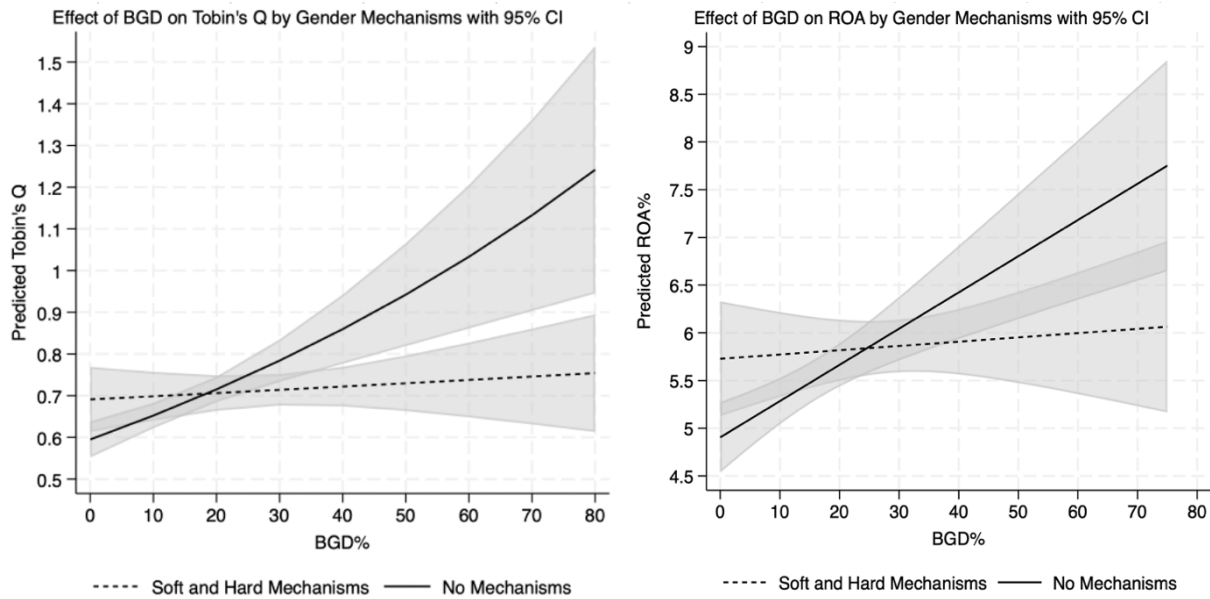
Figure 7. Predicted Margins of Relationship between Board Gender Diversity and Firm Performance with Soft and Hard Laws in Place.



In Models 9 and 10, we swapped the *soft mechanism* dummy variable with the *no mechanism* variable, which assumes value 1 for countries with no board gender diversity mechanisms at all, and value 0 for those that have implemented either soft or hard mechanisms. The results of the regression models with predictive margins are illustrated in Figure 8 below. The marginal effects are both positive and significant (joint significance $p < 0.001$ for both Model 8 and 9), suggesting that when no gender diversity regulations are enforced, the positive impact of BGD on both FP measures is significantly strengthened. In other words, when no gender diversity regulations are in place, BGD has a stronger

positive effect on FP. In contrast, this effect is substantially weaker when either soft or hard laws are introduced. Thus, the results from Model 9 and 10 offers additional support for hypotheses H3a and H3b.

Figure 8. Predicted Margins of Relationship between Board Gender Diversity and Firm Performance (Tobin's Q/ROA) with Soft/Hard Laws or No Laws in Place.



5.3.3 Summary of moderating effects

The results of the moderation tests are summarized in Table 8 below. In conclusion, we find strong evidence that culture moderates the relationship between board gender diversity and firm performance. Higher levels of masculinity strengthen the positive effects of BGD on both ROA and Tobin's Q. The same effect is found in countries with higher levels of power distance, although the results indicate this to apply only for Tobin's Q. In contrast, higher levels of uncertainty avoidance appear to weaken the positive effect of board gender diversity with both financial measures. This implies that the hypothesized effects formulated in H2a, H2b and H2c are not supported, since the direction of the relationships were the opposite. Furthermore, we conclude that implementing mandatory BGD quotas weaken the positive effects of gender diversity as compared to voluntary BGD approaches. Similarly, having no BGD regulation whatsoever appears to strengthen the positive effects of gender diversity,

when contrasted with both soft and hard mechanisms. These findings align well with hypotheses H3a and H3b, which suggested that soft gender mechanisms would strengthen the BGD-FP relationship, whereas hard mechanisms would weaken it.

Table 8. Summary of Moderation Effects results.

Variable	BGD - ROA	BGD - TOQ
Masculinity	Positive moderation effect	Positive moderation effect
Uncertainty Avoidance	Negative moderation effect	Negative moderation effect
Power Distance	No significant moderation effect	Positive moderation effect
Soft BGD Mechanisms	Positive moderation effect	Positive moderation effect
Hard BGD Mechanisms	Negative moderation effect	Negative moderation effect
No BGD Mechanisms	Positive moderation effect	Positive moderation effect

5.4 Endogeneity Tests

5.4.1 Omitted variable bias

To address potential omitted variable bias, we conduct an IV two-stage least squares regression analysis, as proposed by Ullah et al. (2021: 3). We construct an instrumental variable by taking the two-year lag of the BGD variable (L2.BGD) and verify that it is both relevant and exogenous by performing the Stock-Yogo test for instrument strength and both the Sargan's χ^2 test and Bassman's χ^2 for variable endogeneity (Ullah et al., 2021: 4). Firstly, the instrument is shown to be highly relevant as its F-statistic is well above the threshold of 10 (Stata, n.d.). Secondly, the variable is not endogenous as the p-values in both Sargan's and Bassmann's tests are above 0.05 (Ullah et al., 2021: 5) with respect to the ROA and Tobin's Q models. The instrument is therefore deemed appropriate for use and the model is constructed. The first stage regression specification below is used to create the new variable \widehat{BGD} through the instrumental variable L2.BGD. In the second stage, the new variable takes the place of the endogenous variable BGD in the model and the regressions are performed.

$$\begin{aligned} \widehat{BGD}_{i,t} &= \beta_0 + \beta_1 L2.BGD_{i,t} + \beta_2 ABT_{i,t} + \beta_3 IBM_{i,t} + \beta_4 LnNoEMPL_{i,t} + \beta_5 Bsize_{i,t} \\ &\quad + \beta_6 LnRevenue_{i,t} + Year + Industry + \epsilon_{i,t} \end{aligned} \tag{13}$$

1st stage regression

$$\begin{aligned} ROA_wins_{i,t+1} &= \beta_0 + \beta_1 \widehat{BGD}_{i,t} + \beta_2 ABT_{i,t} + \beta_3 IBM_{i,t} + \beta_4 LnNoEMPL_{i,t} + \beta_5 Bsize_{i,t} \\ &\quad + \beta_6 LnRevenue_{i,t} + Year + Industry + \epsilon_{i,t} \end{aligned} \tag{14}$$

2nd stage regression

$$\begin{aligned} LnTOQ_{i,t+1} &= \beta_0 + \beta_1 \widehat{BGD}_{i,t} + \beta_2 ABT_{i,t} + \beta_3 IBM_{i,t} + \beta_4 LnNoEMPL_{i,t} + \beta_5 Bsize_{i,t} \\ &\quad + \beta_6 LnRevenue_{i,t} + Year + Industry + \epsilon_{i,t} \end{aligned} \tag{15}$$

2nd stage regression

The results of the IV regression are presented in Table 9 below. Board gender diversity is shown to have a positive effect on both ROA and Tobin's Q. Both results are highly significant and align with our main findings, suggesting that greater board gender diversity does in fact improve firm performance. In other words, the effect remains the same even when potential omitted variable bias is accounted for. We also perform the Wu-Hausman test, which is statistically insignificant. This suggests that endogeneity is not present in our model (Ullah et al., 2021: 4), hence improving the robustness of our results.

Table 9. *Regression Output for IV Approach.*

	Instrumental Variable	ROA_wins	LnTOQ
BGD [^]		0.024*** (2.82)	0.57*** (3.36)
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
N	14.802	14.802	14.802
R-Squared	0.7397	0.2812	0.5266
F-statistic	10105.8		
Bassman chi2	0.8679 / 0.6948		
Sargan chi2	0.7914 / 0.8679		
Wu-Hausman		0.3187	0.0744*

Note: * p < 0.05, ** p < 0.01, *** p < 0.001. The p-values for Bassman's and Sargan's χ^2 tests show the results from the ROA and Tobin's Q models respectively. t-statistics are reported in parentheses.

5.4.2 Simultaneity

Simultaneity, or reverse causality, is yet another source of endogeneity that must be considered. Simultaneity appears when one or more dependent variable is endogenous (Wiley & Monllor-Tormos, 2018: 297), which entails a two-way relationship between the independent and dependent variables (Wilms et al., 2021: 8). Although this may often pose a real challenge in quantitative studies, we argue that it is likely not relevant in our case as we employ lagged variables. While prior levels of increased board gender diversity may indeed improve future firm performance, the opposite seems less plausible. It is quite unlikely that the expected future performance of firms would attract an unproportional number of female directors to the board. If directors were actively seeking out board seats in those firms that are expected to do exceptionally well in the future, it would be reasonable to assume that those directors may equally be male. That is, if such firms do in fact attract more competent directors and consequently improve their performance, there is no reasonable basis for the assumption that this would alter the gender composition of the board. Therefore, the issue of reverse causality seems improbable. Nonetheless, the previously adopted IV regression approach has been used frequently in the BGD literature to address the issue of simultaneity, consequently reducing the risk of endogeneity in the present study (see e.g., Adams & Ferreira, 2009: 295; Solakoglu & Demir, 2016: 1413; Wiley & Monllor-Tormos, 2018: 297).

5.4.3 Self-Selection bias

In an effort to address potential self-selection bias issues in our sample, we follow the likes of Kyaw et al. (2017: 798) and Lu and Herremans (2019: 1450) in using propensity score matching (PSM) to substantiate a causal relationship between BGD and firm performance. In accordance with Li (2013: 198), we first create a treatment group, i.e., a dummy variable to be able to estimate the relevant propensity score. Variable Prop20 assumes value 1 when at least 20% of directors are female. When the number of women fall short of this threshold, the variable assumes value 0, which represents the control group. A 20% threshold ensures both the treatment and control groups are similar in size. We then perform the following logistic regression:

$$\text{Prop20}_{i,t} = \beta_0 + \beta_1 \text{ABT}_{i,t} + \beta_2 \text{IBM}_{i,t} + \beta_3 \text{LnNoEMPL}_{i,t} + \beta_4 \text{Bsize}_{i,t} + \beta_5 \text{LnRevenue}_{i,t} + \text{Year} + \text{Industry} + \epsilon_{i,t}, \quad (16)$$

where Prop20 represents the dependent variable, and our control variables represent the explanatory variables. A propensity score is predicted for the treatment group immediately after the regression has been run and the balance between the variables is evaluated through standardized mean differences t-tests, as presented in Table 10 below.

Table 10. Mean Values of Treatment and Control Groups.

Variable	Mean Treated	Mean Control	Bias	t-statistics
ABT	7.604	7.603	0.0	0.04
IBM	71.638	71.863	-1.0	-0.72
LnNoEMPL	9.495	9.458	2.3	1.59
Bsize	10.878	10.859	0.6	0.46
LnRevenue	22.528***	22.455***	5.1	3.52

Note: * p < 0.05, ** p < 0.01, *** p < 0.001.

We utilize nearest neighbor matching with a 0.01 caliper to pair firms from the treatment group with similar firms from the control group (Chen et al., 2017: 93). Variables average board tenure, independent board members, number of employees, and board size are statistically insignificant with biases ranging between -1.0% and 2.3%, while revenue indicates a bias of 5.1%. The total mean bias of the model is 1.8%. A bias of 5% or lower is often viewed as appropriate (Melkam et al., 2024: 4),

indicating that the matching was generally of acceptable quality. Finally, we obtain the average treatment effect (ATET) for both ROA and Tobin's Q, the results of which are presented in Table 11. We find that the coefficient is positive and statistically significant in both cases, which supports our main findings in that board gender diversity positively affects both ROA and Tobin's Q, even when the potential of selection bias is accounted for.

Table 11. Average Treatment Effect for ROA and Tobin's Q.

	Treatment Effect	std. err.	z	[95% conf. Interval]	
ROA_wins	0.00863***	0.00172	5.00	0.0052502	0.0120174
LnTOQ	0.15511***	0.03343	4.64	0.0895781	0.2206595

Note: *p < 0.05, ** p < 0.01, *** p < 0.001.

6. Analysis & Discussion

6.1 Board Gender Diversity and Firm Performance

The empirical findings of the present study show that firms have a lot to gain from embracing gender diversity on corporate boards. The advantages of greater diversity appear to go well beyond social considerations and instead show a clear performance gain when boards become more heterogeneous. Our main results from Models 1 and 2 show that firms where women make up around 40% of the board report on average approximately 25% higher Tobin's Q and roughly 20% higher ROA values compared to firms with zero female board members. These results are consistent with several earlier studies on the subject (see e.g. Hazaea et al., 2023), as they demonstrate that BGD positively affects both profitability and market performance. Consistent with our theoretical foundation, we argue that the positive effects emanate from the superior monitoring, resource access, and decision-making capacities of gender diverse boards.

Earlier studies have shown that corporate boards play a significant role in monitoring and preventing opportunistic behavior among firm leadership (Brahma et al., 2021: 5707). In doing so, they reduce the agency costs the firm would incur if opportunistic behavior was allowed to take root. When firms successfully alleviate agency issues, their resources are utilized in accordance with the best interest of the shareholders, thereby maximizing firm performance. Hence, the ability of the board to effectively perform these duties becomes paramount. Introducing greater gender diversity to the board has been

shown to constitute an effective tool to achieve this objective (Pandey et al., 2023: 1290). For instance, gender diverse boards are more likely intervene when top executives demonstrate poor financial performance (Adams & Ferreira, 2009: 292). This is likely because female directors are more adept at assuming the role of an independent board member, which would in turn enhance the monitoring capabilities of the board (Brahma et al., 2021: 5707). Board independence has in fact been shown to significantly affect firm operating performance (Liu et al., 2015: 242), which would be mirrored in its return on assets. Our findings provide strong evidence in support of this rationale, as firms with gender diverse boards are shown to achieve up to 20% higher ROA ratios compared to those with no female directors on the board.

The positive effect of board gender diversity is also reflected in the stock market performance of firms. The appointment of female directors conveys that the firm employs sound corporate governance practices and enjoys higher levels of board independence, which enhances the reputation of the firm (Kaur & Singh, 2017: 121-122). Investors are likely to view such firms more favorably, given that governance practices directly affect the performance of the firm, and ultimately, their capital investments. In other words, the board is likely perceived as more legitimate, thereby instilling a sense of confidence into its key stakeholders. An increasing awareness and pressure from both regulators and the public could also drive institutional investors to favor firms that recognize gender diversity as a priority. When such firms are viewed as more attractive investment opportunities, they will attract more capital and improve their stock performance. This line of reasoning aligns well with the empirical evidence of the present study, which demonstrates that gender diverse boards consistently outperform their more homogenous counterparts when examining market-based performance.

However, a reduction in agency costs is unlikely to fully explain the performance effects of board gender diversity. It is far more plausible that the performance improvements are a result of multiple factors, which directly or indirectly affect the board's ability to make informed and effective decisions. The key to superior governance outcomes likely stems from the diversity in networks, experiences, and competencies that boards gain when they move towards greater diversity (Akram & Abrar Ul Haq,

2022: 6). Given that the board is in charge of setting the general direction of the firm, directors must have access to relevant information and resources and then be able to make accurate and swift decisions. This implies that the networks individual directors bring with them constitute a fundamental asset to the board (Brahma et al., 2021: 5706). Not only have female directors been shown to maintain more diverse networks (Miller & Del Carmen Triana, 2009: 761), but they are also likely to differ from those of a homogenous male-dominated board. This is because women accumulate their social capital from their distinct experiences and social environments. Accessing a wider base of information and resources at a lower cost would consequently provide gender diverse boards with a competitive advantage in contrast to those with homogenous boards. Firms with higher levels of gender diversity would therefore outperform their competitors. This conclusion is consistent with previous findings showing that broader networks positively affect firm performance (Horton et al., 2012: 419). Gains in operational performance and profitability would in turn be reflected in the firm's stock market valuation, explaining the higher values in Tobin's Q that were evident in the results of this study.

As mentioned above, the board need not only gain access to relevant information and resources but also leverage them in their decision-making processes. If directors identify new approaches and business opportunities based on unique information available to them yet fail to bring them forward to the board, the opportunities are lost, and innovation suffers. Research on teamwork has established that such scenarios are far more likely when corporate boards are homogenous. When directors share similar attributes and backgrounds, teamwork itself may become easier but at the cost of groupthink (Brennan, 2022: 12). Considering this, the superior performance of gender diverse boards seen in our study is likely partially explained by better decision-making capabilities. The inclusion of female directors on a male-dominated board would bring new insights and perspectives to the board, supporting its strategic decision-making processes and innovation efforts. The risk of excessive social cohesion among board members would hence become smaller and the likelihood of questioning the status quo would be higher. Earlier studies do provide evidence in this regard, as greater board gender diversity has been shown to improve organizational innovation (Torchia et al., 2011: 312) and board effectiveness (Nielsen & Huse,

2010: 144-145). Such improvements would be evident in the firm's operating and stock market performance, as seen in the empirical results.

Although gender diverse boards clearly outperform their male-dominated counterparts, our results show that this effect gradually diminishes until eventually becoming negative. The positive effects of gender diversity on both operating and market performance peak when the proportion of women reach approximately 40%. This suggests that the optimal group composition lies somewhere between the so-called tilted group and balanced group, as defined by Kanter (1977: 967). It also implies that the strength of gender diverse boards depends not only on the attributes of female directors, but on diversity itself. Accordingly, we see that firm performance starts to decrease after the proportion of women exceeds the inflection point. In such scenarios, the composition of the board would start to become more homogenous again (Kılıç & Kuzeyp, 2016: 440), and instead potentially suppress the unique skills and knowledge that male directors bring to the board. While the number of firms with female-dominated boards in our sample was almost negligible, the results do demonstrate that as the threshold is passed, performance is negatively affected. The results indicate that firms should instead put emphasis on diversity and find a position between both extremes to maximize their performance.

We also find evidence that demonstrate that firms must ensure female directors constitute a sufficiently large minority on the board if the positive performance effects are to be realized. In accordance with critical mass theory and earlier research, we expected a 30% minority to satisfy this criterion. Return on assets showed a positive effect when at least 2 women were on the board, while 3 women were required for the same effect on Tobin's Q. Given that the median board had around 10 directors, our findings suggest that even a smaller minority could help achieve greater performance. However, these results are consistent with prior literature arguing that minorities in so-called skewed groups (less than 20% diversity) are unlikely to successfully exert their influence on the majority. Instead, they indicate that minorities in tilted groups may be influential enough to drive change. In such cases, members of the minority can form alliances to strengthen their position in the group (Joecks et al., 2013: 62). The results of this study provide support for this argument, as no positive effect was found when only 1

female director was part of the board, while the opposite was true for 2 or 3 directors. Even the presence of one additional female director may therefore empower the minority to effectively voice their views and drive change. That is, it aids them in moving away from a token role and instead gaining traction for their agendas.

The above discussion has shown that the issue of board gender diversity is undeniably a balancing act. Firms that appoint more women see improved performance, but the effect is dependent on the execution. Appoint either too few or too many female directors and the benefits of diversity slip away. Nonetheless, when firms carefully balance between the two and form truly diverse boards, they are considerably closer to unlocking the full potential and skills of their corporate boards. Thus, we make an important theoretical contribution in showing that board gender diversity increases both types of firm performance, namely accounting-based short-term performance (ROA) and market-based long-term performance (Tobin's Q).

6.2 The Moderating Effect of Culture

The discussion above has demonstrated that board gender diversity does indeed have a significant effect on firm performance. More interestingly, we also see that culture plays a key role in determining the nature of that relationship. We find that culture affects the composition of the board, as countries with higher levels of masculinity, power distance, and uncertainty avoidance were associated with significantly smaller proportions of female board members (see Appendices B-E). These findings align well with earlier studies suggesting a similar trend (Carrasco et al., 2015: 439; Griffin, Li & Xu, 2021: 123). Culture therefore either facilitates or hinders the participation of women on corporate boards. Consistent with Huang and Lu (2024: 775), the observed interplay of cultural dimensions also indicates a strong support for our hypotheses that cultural dimensions play a moderating role in the relationship between board gender diversity and firm performance. We expected power distance and masculinity to have a dampening effect on the positive relationship between BGD and FP, while expecting uncertainty avoidance to strengthen it. However, the results contradicted our hypotheses and demonstrated instead the opposite moderating effect for each cultural dimension. We will demonstrate below that the stronger

positive effect found in cultures with high power distance, masculinity, and low uncertainty avoidance may depend on the unrealized benefits of gender diversity in these countries.

High levels of masculinity imply more focus on competition, material success, and assertiveness, while collaboration and quality of life are more closely associated with femininity (Li & Harrison, 2008b: 614). Individuals in masculine cultures are more likely to exhibit tendencies of maximizing personal gains compared to those in feminine cultures (Chan & Cheung, 2012: 54-55). When individuals are primarily seeking to enhance their own status and position in the firm, conflicts of interest are much more likely to arise. Directors and managers would hence be more inclined towards giving their own agendas priority, as opposed to the best of interest of the firm. As a result, the firm would incur agency costs to a much greater extent, which would in turn negatively affect its performance. Enhancing the monitoring capabilities of the board through the inclusion of women would consequently have a much more pronounced effect in masculine cultures. That is, gender diverse boards would lead to greater performance improvements in such countries.

As mentioned earlier, moving away from a male-dominated board would also entail a more collaborative approach to board work. Enhanced collaboration will facilitate knowledge-sharing and the exchange of different views, which enables the board to make better strategic decisions and improve its ability to solve problems (Carmeli et al., 2009: 700). In fact, Chan and Cheung (2012: 45-46, 54) found that corporate governance is significantly better in feminine cultures compared to their masculine counterparts, and that better corporate governance significantly improves firm performance. Additionally, female managers are generally more concerned about employee well-being (Kaluza et al., 2021: 411), which is known to directly affect individual performance (Haddon, 2018: 72). Hence, when boards in masculine cultures see greater gender diversity, they are likely to adopt a more collaborative mode of work as well as put more emphasis on health-promoting activities. Both aspects would, in turn, improve firm performance. This effect is much greater in masculine environments, because feminine cultures already value collaboration and nurturing to a higher degree. In other words, a higher level of gender diversity would not introduce the same performance-enhancing effects in cultures characterized

by femininity. Accordingly, board appointments should be done with great emphasis on gender diversity to fully leverage its potential impact on firm performance, especially in masculine cultures.

Countries with high levels of power distance are characterized by strict hierarchical structures, an acceptance of an unequal distribution of power, and the exclusion of women from corporate leadership (Carrasco et al., 2015: 439; Hofstede, 2001: 98). Decision-making consequently becomes centralized, and a clear chain of command is created. Much like with masculinity, the positive effect of board gender diversity is stronger in high power distance countries, because the inclusion of women leads to more co-operation on the board. By breaking the societal norms and appointing more women to the board of directors, the firm signals a willingness to break down existing chains of command and the concentration of power and instead embrace collaboration. Rather than concentrating power in the hands of one or very few directors, the board can take advantage of its broader knowledge base and the experiences of a diverse group. Sounder decision-making and innovative approaches would in turn improve firm performance. Moreover, by reducing the concentration of power and introducing more diversity to the board, the risk of opportunistic behavior among board members would be minimized, which would reduce agency costs. Earlier research has in fact shown that less concentration of power and more collaborative work among members of top management lead to less performance variability and improved firm performance (Carmeli et al., 2009: 710; Tran & Turkiela, 2020: 19). The democratization of the board would therefore be more noticeable in high power distance cultures. Conversely, firms in low power distance countries would already have more democratic board structures, where differing views are shared and acknowledged. As a consequence, gender diversity would not have as strong of an effect in such environments.

Lastly, countries with high levels of uncertainty avoidance generally seek to reduce ambiguity. Novel ideas and perspectives face resistance, and organizations rely on clear rules to exercise control over firm activities and to minimize risks (Li & Harrison, 2008b: 613). It was also evident that boards comprise far fewer female directors in cultures with higher uncertainty avoidance. The weaker positive effect of board gender diversity in these countries would likely stem from a wariness among firms to appoint

female directors to their boards. In contrast, boards in low uncertainty avoidance environments would be more open to the inclusion of new members and their contributions. That is, they are more likely to harness the knowledge and skills that greater diversity brings to the firm. This would again improve decision-making and innovation in the group, as diverse boards have broader access to information and are better equipped to solve problems (Carmeli et al., 2009: 700). On the other hand, organizations in cultures characterized by high uncertainty avoidance would instead resist new views and policies, thereby failing to reap the rewards of greater diversity. The failure to do so would also be directly reflected in the financial performance of the firm.

Although the effects of the individual cultural dimensions conflicted with the original hypotheses, this study has established that culture has an important and significant moderating effect on the BGD-FP relationship. This result is consistent with findings of several scholars that have showed cultures to have an impact on organizational structure and the governance of firms (Amin et al., 2025: 1; Li & Harrison; 2008a: 382; Huang & Lu, 2024: 775; Humphries & Whelan, 2017: 152-153). We make a valuable contribution towards the literature by broadening our understanding on the effects of culture and by providing an explanation to the inconclusive results of prior studies, as the BGD-FP varies across cultures. Moreover, our findings are of vital importance to the corporate governance practices of multinational corporations, as they form their leadership teams while being subject to multiple cultural contexts. MNCs must manage their organizations across cultural borders, thereby facing various expectations, norms, and stakeholder pressures from the local environment. Understanding the role of national culture enables MNCs to better tailor their board composition in order to enhance firm performance. We have therefore addressed a substantial gap in the literature that has so far been neglected.

6.3 The Moderating Effect of Institutions

Finally, the moderating effect of institutions will be discussed. We sought to examine how different regulatory mechanisms moderate the relationship between board gender diversity and firm performance. Prior literature has emphasized the importance of exploring how higher levels of board

gender diversity are accomplished, since there may be significant differences in the performance effects of different regulatory approaches (Hamplová et al., 2022: 751-752; Hosny & Elgharbawy, 2022: 578). We find that board gender diversity has a significantly stronger positive effect when diversity is achieved organically. The effect is stronger when so-called soft laws or mechanisms are employed as opposed to hard quotas. A similar effect is found when countries have no BGD legislation in place.

The results demonstrate that when firms are faced with hard quotas and potential penalties for non-compliance, female directors run the risk of becoming tokens on the board. That is, they may be appointed simply to comply with regulations and their contributions are unlikely to be heard. Such cases may also lead to situations where new female board members are selected over more qualified candidates, solely to comply with diversity requirements (Hamplová et al., 2022: 751–752). In fact, prior literature has suggested that hard quotas can have a negative effect on firm performance (Bannò et al., 2024: 253). This also aligns with the resource dependency literature, which emphasizes the need for companies to appoint directors who best complement their resource needs and requirements. Our findings therefore provide evidence that regulators should prioritize soft approaches, which incentivize firms to embrace gender diversity, yet offer sufficient time and flexibility to meet these demands in order to identify the most appropriate candidates. By doing so, firms have a legitimate opportunity to recruit the most qualified individuals, thereby also unlocking the full potential of gender diversity and its performance implications. Much like with culture, our findings on the relevance of institutional factors offer yet another explanation to the inconsistent results that prior BGD studies have yielded. That is, future research on the BGD-FP relationship should account for the regulatory realities in the researched country in order to meaningfully examine the relationship and draw accurate conclusions.

7. Conclusion

7.1 Concluding Findings

This study set out to determine whether board gender diversity affects firm performance, and the extent to which this relationship is altered under different cultural and institutional environments. By employing a series of regression models together with multiple robustness tests, we find that gender diverse boards experience significantly stronger operating and stock market performance. However, the results show that when the proportion of women on the board exceeds approximately 40%, the positive performance effects start to diminish. This demonstrates that the strength of gender diverse boards lies precisely in that – their diversity. Moreover, our findings provide some evidence that a minority of two or three female directors is required to meaningfully affect firm performance, suggesting that firms should strive for a relatively high degree of diversity. We also find that the cultural and institutional environment of a country plays a pivotal role in determining the degree of performance improvements gender diverse boards may expect to achieve. The positive effect of increased diversity is greatest in cultures characterized by high power distance and masculinity, and low uncertainty avoidance. Moreover, we demonstrate that mandatory gender diversity requirements have a deleterious effect on firm performance, and that the performance enhancing effect is best achieved when boards are allowed to become diverse organically.

7.2 Theoretical Implications

Our research has important theoretical and practical implications within the field of international business. We have answered the call made by multiple scholars to address the research gap within the literature by examining the moderating effect of culture and regulations. The inconsistent results of previous studies examining the relationship between board gender diversity and firm performance are almost certainly, at least to an extent, explained by the failure to consider relevant cultural and regulatory variables. This issue has been further exacerbated by the prevalence of single-country studies, which makes it impossible to draw universally applicable conclusions about gender diverse boards. In this study, we have demonstrated that the impact of board gender diversity is highly dependent on cultural and institutional contexts, which suggests that future studies should pay closer attention to the effects of these dimensions when examining the BGD-FP relationship. We also show that agency theory and resource dependency theory still provide relevant frameworks to examining and understanding this relationship. Moreover, our findings are consistent with critical mass theory, which posits that a minority needs to be large enough in order to drive change. However, we find that even a smaller minority than 30% may be sufficient to alter corporate governance practices, thereby improving firm performance. This suggests that the critical mass required to drive change may be context-dependent and that a static 30% threshold may not be applicable in all situations.

However, the theoretical implications of this study are by no means limited to those studying board gender diversity. We believe our results to be particularly relevant to all IB scholars who study the governance and management of multinational firms. By highlighting the significance of cultural and institutional variables, we show that the IB literature must better take such environmental factors into account before drawing causal inferences from data. As demonstrated in the present study, governance outcomes and the consequent performance effects of firms vary widely depending on the social and institutional realities of the local context. Accordingly, a one-size-fits-all approach will rarely suffice to provide an accurate picture of how MNCs should organize to best respond to their external environments. Instead, scholars should not only strive to conduct cross-country studies but also treat cultural and institutional variables with enough caution in order to produce universally relevant results.

7.3 Managerial Implications

Our results also have important practical implications for managers and policymakers. The findings of this study emphasize the need for carefully planned gender diversity policies both among firms and regulators. Firms should strive for a more gender balanced board structure, while actively abstaining from creating too small minorities to minimize the risk of tokenism. However, as we demonstrated that the impact of board gender diversity weakens when firms need to comply with hard gender quotas, female directors should be appointed based on their merits and skills rather than to just comply with regulations. In countries where female representation in corporate settings is still limited, having concrete evidence for the merits of gender diversity may also help convince key stakeholders about the importance of gender diverse boards. This is especially relevant for local and multinational firms that operate in cultural contexts where gender diversity has a particularly strong effect on firm performance. As these firms have the most to gain from diversity, they should ensure that local leadership teams comprise a sufficient number of both men and women in order to maximize performance. Its relevance to MNCs is further highlighted as the political pressure from the Trump administration to end DEI policies has targeted not only domestic firms, but all companies that do business in the American market. Our findings show that MNCs have a lot to lose if they cave in and decide not to embrace gender diversity on their boards. Such firms may consequently be put at a disadvantage compared to their competitors and experience lower financial returns.

In contrast, policymakers have a responsibility in adopting gender diversity legislation not only on social grounds, but rather by also taking the performance implications of such policies into account. Adopting mandatory gender quotas may successfully increase the number of women in corporate leadership positions, but it comes at the cost of performance. Legislators should instead favor soft laws, e.g., comply or explain policies with sufficient incentives for firms to abide by the guidelines. This approach ensures that firms are provided adequate flexibility in finding and appointing qualified female directors to the board, thereby allowing firms to fully leverage the potential and resources they bring.

7.4 Limitations and Future Research

Although this study has provided valuable new insight to the BGD literature, it also opens up avenues for future research. We still know very little about the interaction between culture and BGD regulations as they were treated in isolation in this study. Future studies could examine whether certain regulatory approaches are more appropriate in specific cultures. For instance, whether mandatory quotas may be preferable in some cultural contexts, especially in countries where board gender diversity is difficult to achieve voluntarily. Our study is also limited to Hofstede's Theory and to a specific subset of the cultural dimensions. Future studies could on the one hand explore whether the remaining dimensions of individualism, long-term orientation, and indulgence have a substantial effect on the BGD-FP relationship. On the other hand, there is also ample opportunity to go beyond Hofstede's theory and use alternative frameworks (e.g., the World Value Survey) or methodological approaches. Qualitative studies could provide a more nuanced view of the dynamics and mechanisms that give gender diverse boards their competitive edge. Such aspects may be difficult to capture in quantitative studies. In conclusion, there are a myriad of directions which future studies may take to refine and extend the learnings from the present study.

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Appendices

Appendix A. Board Gender Diversity Regulations by Country.

BGD% by Power Distance	Mean BGD%	N
PDI < 40	0.280	5229
PDI 40-60	0.174	9792
PDI > 60	0.161	5004
Total	0.198	20025

BGD% by Uncertainty Avoidance	Mean BGD%	N
UAI < 40	0.221	4149
UAI 40-60	0.227	9153
UAI > 60	0.145	6723
Total	0.198	20025

BGD% by Masculinity	Mean BGD%	N
MAS < 40	0.280	1494
MAS 40-60	0.195	5454
MAS > 60	0.190	13077
Total	0.198	20025

Appendix C. ONEWAY ANOVA of Board Gender Diversity by Power Distance.

ANOVA Summary for BGD by Power Distance	SS	df	MS	F	p-value
Between Groups	47.745	2	23.872	1427.33	< 0.001***
Within Groups	334.972	20022	0.0167		
Total	382.616	20024	0.0191		

Post Hoc Comparison (Bonferroni)	Mean Difference	Adjusted p-value
Low vs Moderate	-0.11	< 0.001***
Low vs High	-0.12	< 0.001***
Moderate vs High	-0.01	< 0.001***

Appendix D. ONEWAY ANOVA of Board Gender Diversity by Uncertainty Avoidance.

ANOVA Summary for BGD by Uncertainty Avoidance	SS	df	MS	F	p-value
Between Groups	28.911	2	14.455	818.27	< 0.001***
Within Groups	353.705	20022	0.0177		
Total	382.616	20024	0.0191		
Post Hoc Comparison (Bonferroni)	Mean Difference	Adjusted p-value			
Low vs Moderate	0.01	< 0.027*			
Low vs High	-0.08	< 0.001***			
Moderate vs High	-0.08	< 0.001***			

Appendix E. ONEWAY ANOVA of Board Gender Diversity by Masculinity.

ANOVA Summary for BGD by Masculinity	SS	df	MS	F	p-value
Between Groups	10.864	2	5.432	292.58	< 0.001***
Within Groups	371.75	20022	0.0185		
Total	382.616	20024	0.0191		
Post Hoc Comparison (Bonferroni)	Mean Difference	Adjusted p-value			
Low vs Moderate	0.08	< 0.001***			
Low vs High	-0.09	< 0.001***			
Moderate vs High	-0.00	0.081			