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“Navigating Crisis: Exploring the Impact of Gender Diversity on Firm Performance Across Contrasting Cultures in the Context of the COVID-19 Pandemic: A Comparative Study of India and Germany”

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Abstract

This thesis investigates the relationship between gender diversity on corporate boards and firm performance, focusing on listed companies in India and Germany from 2018 to 2023. The study explores the cultural context of these countries and the circumstantial impact of the COVID-19 pandemic on this relationship. By employing human capital theory, resource dependency theory, and agency theory, the research hypothesizes that higher female representation on boards positively correlates with firm performance, particularly in more inclusive environments like Germany. Additionally, the study examines the influence of gender diversity during crisis periods, using Tobin's Q and Return on Assets (ROA) as proxies for firm performance. The study employs a fixed effects regression model and a difference-in-differences (DiD) approach to analyse these relationships, providing robust insights into the complexities of gender diversity's impact on firm performance. Contrary to much of the existing literature and the initial hypotheses, the findings suggest that higher female representation on boards is associated with a decrease in ROA for both Indian and German firms, challenging the business case for increasing board diversity. Furthermore, achieving a critical mass of female board members in German companies appears to negatively impact both Tobin's Q and ROA.

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1. Introduction

Despite progress in female representation throughout society and substantial scientific evidence indicating that women leaders contribute positively to companies—such as increased innovation, profitability, consumer outreach, and performance in sustainability—women remain underrepresented in corporate board positions. (Glass & Cook, 2015). A report by European Women on Boards highlighted that out of 668 companies studied in Europe, only 35% had women on their boards, and only 50 companies had a female CEO (European Women On Boards, 2021).

According to Eurostat, in 2022, women in the EU held more tertiary degrees than men, with 48% of women aged 25-34 completing third-level education compared to 37% of men. This demonstrates that within the EU, women are becoming increasingly educated and skilled compared to their male counterparts (Eurostat, 2023). A McKinsey report claimed that the increased flexibility brought by remote working has made women more eager for career progression than ever before. (Field, Krivkovich, Kugele, Robinson, & Yee, 2023). Women now place similar value on job attributes such as leadership, challenge, freedom, power and prestige as men. (Konrad, Ritchie Jr, Lieb, & Corrigan, 2000). This raises the question: why does a discrepancy between men and women at the board level persist?

As global focus shifts toward achieving social objectives and considering factors beyond the bottom line, this study aims to further investigate the relationship between gender diversity on corporate boards and firm performance, along with the potential impact of increasing female representation. The study addresses two main objectives. The primary objective is to explore how cultural contexts influence this relationship by analysing listed firms in India and Germany from 2018-2023. This study uses the Women, Peace, and Security Index (WPS) and the Economic Participation and Opportunity (EPO) Index as proxies for the contrasting cultural environments for women in these countries. The WPS Index ranks countries based on women's inclusion, justice, and security, illustrating clear cultural discrepancies, with Western nations occupying all ten of the top-ranked positions (Georgetown Institute, 2024). The EPO Index evaluates countries based on women's overall economic involvement.

The second objective is to identify the impact of gender diversity on firm performance during a crisis period, represented by the COVID-19 pandemic, which disrupted global supply chains and

economies through trade and mobility restrictions. In an era of heightened geopolitical instability, understanding corporate governance dynamics during crisis periods is critically important. This research aims to provide insights that can guide effective corporate governance practices during such turbulent times.

Building upon established theories such as human capital theory, resource dependency theory, and agency theory, this study theorises that higher levels of gender diversity in corporate boards are positively correlated with firm performance. It hypothesizes that this positive correlation will manifest in both cultural settings of Germany and India, but will be more pronounced in the more inclusive societal context of Germany. One of the significant challenges women encounter is the prevalent stereotyping and prejudice embedded within organizational structures due to patriarchal norms that traditionally associate leadership with males. (Eagly & Carli, 2003) Consequently, in environments where female leaders are not subjected to these biases, their advantageous leadership attributes are expected to have a more substantial positive impact on firm performance.

Furthermore, the second objective of this study recognizes the additional human capital that women contribute, hypothesizing that greater gender diversity at the board level enhances a firm's capacity to navigate crises. This hypothesis is grounded in the belief that diverse perspectives and skills are particularly valuable in complex and unpredictable situations. (Francoeur, Labelle, & Bernard, 2008)

To empirically test these hypotheses, this study employs a fixed effects regression model and a difference-in-differences (DiD) approach. By using Tobin's Q and Return on Assets (ROA) as proxies for firm performance, the analysis examines the impact of board gender diversity on these metrics, alongside several other explanatory variables. This methodological approach aims to isolate the effect of gender diversity from other factors, providing a clearer understanding of its influence on firm performance in both normal and crisis periods.

This research aims to significantly contribute to the field of corporate governance by addressing the relationship between gender diversity at the corporate board level and firm performance across distinct cultural and socio-economic contexts. By analysing these two diverse countries, this research provides a cross-cultural perspective that has been largely unexplored in previous studies. Understanding how gender diversity impacts firm performance in these different settings

has substantial implications for various stakeholders, including upper management and investors, in an increasingly socially conscious global environment.

Furthermore, this study introduces another novel perspective by investigating how the relationship between gender diversity at the corporate board level and firm performance is influenced by the occurrence of a crisis, specifically the COVID-19 pandemic. This aspect of the study addresses a gap in the literature, providing valuable knowledge on how crises affect the gender diversity-firm performance relationship.

The findings of this study are expected to inform both academic discourse and have practical applications. Policymakers can use these insights to make informed decisions about implementing gender mandates at board levels, a legislative approach adopted by several countries, including Germany and India, in recent years. This thesis aims to contribute to the development of more effective and inclusive corporate structures that optimize firm performance.

The structure of this thesis is as follows: Section 2 reviews the existing literature, exploring previous studies and relevant theories related to gender diversity and firm performance. This section also examines phenomena that may influence this relationship, such as gender stereotypes, cultural influences, and crisis dynamics. Section 3 outlines the main hypothesis which will be tested in this thesis and summarises their justification based on the existing literature. Section 4 presents the data and methodology used in this study. Section 5 discusses the study's findings, and Section 6 provides a comprehensive discussion and conclusion, linking the results to existing literature and explaining the implications of the findings.

By addressing these dimensions, this thesis not only advances the academic understanding of gender diversity's impact on firm performance but also provides practical insights for constructing more inclusive and effective corporate governance frameworks.

2. Literature Review

2.1. Gender Differences & Impact on Firm Performance

Throughout the literature, researchers have tried to identify and explain the implications of male and female leadership traits on firm performance, however, the findings have remained largely inconsistent over the years. Due to the diverse nature of the global economy, this inconsistency in findings may be explained by the fact that the effectiveness of different leadership styles and strategies is largely circumstantial. Therefore, this section goes through these leadership differences which have been outlined in previous literature before analysing the existing body of research on the studied relationship.

One study found that there were only small differences in leadership styles between men and women indicating that gender was not an indicator of an individual's leadership style. (Eagly, Johannesen-Schmidt, & Van Engen, Transformational, Transactional, and Laissez-Faire Leadership Styles: A Meta-Analysis Comparing Women and Men, 2003) Furthermore, another study found that Gender did not appear to have any influence on the performance of leadership but what mattered was leadership style used by an individual, which was rated the same regardless of gender. (Butterfield & Powell, 1981) One possible explanation for the lack of difference between men and women in leadership positions in the past is due to the existence of prejudice and gender bias which has forced women leaders to adopt male leadership attributes and forego feminine qualities in order to overcome these social obstacles during their ascension. On the other hand, an abundance of research indicates that there are some distinct differences between leadership styles finding that men often have more transactional, agentic and outcome-oriented approaches whereas women often have more transformational, inclusive and relationship-oriented. (Oakley, 2000) (Jonsen, Schneider, & Maznevski, 2010)

The transactional and agentic style of leadership associated with male leaders involves the more conventional sense of clarifying subordinate responsibilities, rewarding them for meeting objectives, and disciplining them for failing to meet objectives. (Helgensen, 1990) This style is more militant in the sense that the leader is more dominant and assertive with clearer chains of commands and tighter control held by the leader. A transactional leader often issues the standards for compliance and decides the repercussions in the case of non-compliance. (Bass, 2003) Conversely, the transformational style of management which has been associated with

women throughout literature fosters harmony and relationships to achieve results.

Transformational leaders excel in rapidly changing environments by clarifying the challenges faced by both them and their subordinates, and then responding appropriately. They collaborate with followers to create innovative solutions to complex problems and help them develop the skills needed to take on a wider range of leadership roles. (Bennis, 2001) Although a very effective form of leadership for middle management, this communal style which often solicits many stakeholders' opinions may not be optimal for leaders who are looking to climb the corporate ladder where often more assertive, cut-throat and dominant characters can be preferred for positions.

Although the success of leadership styles is largely circumstantial, studies have found the inclusion of women on boards and into leadership positions does come with many benefits which can positively influence firm performance. For example, one study found that the alternative viewpoints that women leaders bring to the table on complex issues can improve companies' problem-solving capabilities. This study placed particular importance on an individual's prior experience in order to overcome biases which may suppress their influence on a group which is discussed later in this report. (Westphal & Milton, 2000) Another study found that gender diversity at leadership level is imperative for global companies to succeed and underpins this issue as a key contributor to a company's ability to compete in global markets. This is largely due to ethical leadership which enhances collaboration across different cultures and groups within organisations. (Tavanti & Werhane, 2013) Miller & Carmen Triana(2019) found a positive relationship between board gender diversity and levels of innovation within an organization which has been identified as one of the key strategies for gaining competitive advantage. (Miller & Carmen Triana, 2009)

Furthermore, Female directors have been shown to exhibit heightened sensitivity to social and environmental issues. The appointment of women to board positions is thus expected to enhance a firm's performance in these areas, subsequently improving a firm's brand reputation and increasing its shareholder value. (Williams R. , 2003)

The existent literature on the relationship between gender diversity & firm performance is extensive and covers many regions across the globe. This section will break down these findings between different regions:

Europe

Campbell & Mínguez-Vera(2007) found that in an analysis of Spanish firms, the authors found that higher levels of board's gender diversity have positive implications on firm value. The study goes on to suggest that investors in Spain do not penalise firms who increase the number of female board members, instead higher representation is positively correlated to an increase in Tobin's Q. (Campbell & Mínguez-Vera, 2007) Brahma, Nwafor & Boateng (2020) found a positive and significant relationship between gender diversity at board level of FTSE 100 firms in the UK and firm's financial performance. This report further cited that age, level of education and also where individuals hold other director positions were all contributors to firm's financial performance (Brahma, Nwafor, & Boateng, 2020) Contrastingly in a study of German-listed firms, Joecks, Pull & Vetter (2013) found a negative relationship between gender diversity & firm performance when firms obtain low level of female representation. However, once female representation of 30% is reached, gender diversity then positively influences firm performance. These findings help validate the critical mass theory which will be discussed further below. (Joecks, Pull, & Vetter, 2013) In 2007, a study of 186 Dutch & Danish listed companies found there to be no impact on firm performance from higher levels of gender diversity. The authors claimed that their findings supported the notion that gender diversity was not a value driver among companies – however, it is interesting to note that this study sample had an average female representation of 5.4%. (Marinova, Plantenga, & Remery, 2015)

North America

Carter et al (2010) looked at the business case for the inclusion of women board directors in US-listed companies. They find no significant relationship between gender diversity and firm performance citing that it is likely dependent on the circumstances at the time whether a female board member's influence is positive, negative or indifferent. For example, group dynamics can prevent the increased innovation and creativity that some female leaders bring. (Carter, D'Souza, Simkins, & Simpson, 2010) A study on the relationship between board gender diversity and firm performance from S&P 500 companies belonging to the IT sector found a positive relationship between higher gender diversity and firm performance using both market and accounting-based performance measures. This study cited that this relationship was likely due to the enhanced productivity, creativity and innovation that come with higher diversity levels. (Simionescu,

Gherghina, Tawil, & Sheikha, 2021) Francoeur, Labelle & Sinclair-Desgagne (2007) explored the relationship on the 500 largest Canadian firms utilising firms' betas, market-to-book ratio and analysts' standard deviation as proxies for firm risk in which is used in a function of a firm's expected return in the Fama-French model. They found that having more women on boards did not exhibit excess returns within companies however firms operating in complex environments do exhibit significant abnormal monthly returns. (Francoeur, Labelle, & Bernard, 2008) Another study which investigated this relationship in over 3000 US firms from 2007 to 2014 using both Tobin's Q and ROA as the independent variables, found a positive correlation between gender diversity and firm performance. Interestingly, this study found that this relationship was stronger in higher-performing companies in comparison to lower-performing companies citing this phenomenon was likely due to lower-performing companies having more hostile board dynamics enabling a smaller contribution from female board members. (Conyon & He, 2017)

Asia

Liu, Wei, & Xie (2014) analysed Chinese listed companies from 1999 to 2011 documenting a positive and significant relationship between board gender diversity & firm performance. The study also found that firms with three or more representatives at board level had a stronger relationship than firms with two or fewer which is consistent with critical mass theory. (Liu, Wei, & Xie, 2014) Another study from Hong Kong, South Korea, Malaysia & Singapore found a significant positive relationship however as female economic participation & empowerment increased, the impact of higher gender diversity diminished citing token theory as the explanation for this phenomenon. (Low, Roberts, & Whiting, Board gender diversity and firm performance: Empirical evidence from Hong Kong, South Korea, Malaysia and Singapore, 2015) Maji & Saha (2021) studied the relationship between gender diversity & firm performance at both operational and leadership levels from the largest 100 Indian corporate firms finding a positive and significant influence at both levels also indicating that higher representation of women results in a stronger positive impact on firm performance. (Maji & Saha, 2021)

2.2. Relevant Theories

Throughout the course of the study of gender diversity and firm performance, extant literature has provided many theories which are considered to help conceptualise the studied relationship.

This report looks at six theories which are applicable to this research topic including the resource dependency theory, human capital theory, agency theory, social psychological theory, Tokenism and subsequently critical mass theory. (Brahma, Nwafor, & Boateng, 2020)

The resource dependency theory (RDT) was first developed by Pfeffer & Salancik (1978) in what is considered to be a seminal paper on this topic and has developed into one of the most influential theories of organisational theory & strategic management. In short, the core idea of RDT is that firms rely on often limited resources such as capital, materials, labour and information to effectively operate within a competitive environment. These resources are often controlled by external parties which creates a network of interdependencies resulting in a power dynamic throughout the network. (Hillman, Wither, & Collins, 2009) Therefore, to successfully navigate this competitive environment, firms must be capable of developing strategies which limit the power and control of external parties to maintain a competitive position. This theory also adds to the concept that increased board capital can help improve firm performance. Board capital consists of both human capital, in terms of expertise, reputation and experience, and relational capital, in terms of networks and industry contacts. (Hillman & Dalziel, 2003) Thus, increased levels of board diversity help grant a company increased power through accessing greater resources thanks to introducing new networks, ideologies and demographics consequently improving firm performance.

Human Capital Theory is the ideology which views an individual's skills, knowledge and abilities as forms of capital which can help add value to a company. This also highlights the importance of training and education to increase the productivity and value of human capital. (Becker, 1992) The expansive existing literature suggests that there is a strong positive relationship between human capital and firm performance as it enables increased levels of efficiency, productivity and capacity to innovate. Furthermore, as the world becomes increasingly knowledge-based, human capital's role in firm performance is likely to grow exponentially in the future. (Crook, Todd, Combs, & Woehr, 2011) It has also been empirically proven that the existing technology involved with higher-order skills such as problem-solving and teamwork are less understood than other hard skills. These skills are fundamental to labour productivity which creates increased levels of importance on individuals' natural problem-solving and teamwork skills when optimising firm performance. (Deming, 2022) As previously mentioned, it is widely perceived throughout literature that in terms of leadership styles; typical

female leadership styles help create open communication flows which enhances their natural teamwork capabilities. (Helgenson, 1990) Higher board diversity due to alternative perspectives can also have positive implications on problem-solving within a firm which greatly enhances firm performance. These are both examples of how females contribute to human capital.

Agency theory is the concept that tries to understand the relationship between shareholders and agents (Managers) by viewing it as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. The theory holds the point of view that if both parties attempt to maximise their utility – then there is a likelihood that the agent will not act in the best interest of shareholders. Shareholders then must incur monitoring costs to minimise the possibility of deviance from the Agent. (Jensen & Meckling, 1976) Although monitoring committees and boards have exerted increased levels of independence in recent years, the board of directors at a company is often tasked with monitoring. Studies have found to have positive implications on firm performance when independent directors also have monitoring responsibilities. (Faleye, Hoitash, & Hoitash, 2011) This means that it is within the interest of the firm to appoint members who are capable of carrying out monitoring duties as well as advising duties. A higher proportion of women can contribute to a wide range of factors which result in improved monitoring efforts such as greater monitoring of the CEO, enhanced legitimacy of corporate practices and also improved decision-making quality. (Poletti-Hughes & Briano-Turrent, 2019)

Social Psychology theory looks at how individual thoughts, feelings, and behaviours are influenced by the presence of others and social contexts within the workplace. As mentioned previously, it can be noted that men and women often have quite different attributes when it comes to leadership styles, communication methods and operational approaches. However, due to gender biases, in order to scale the corporate ladder – many women are forced to suppress many feminine attributes and qualities to progress in male-dominated environments due to their feminine attributes being associated with incompetence. (Jamieson, 1995) Studies suggest that there have been many cases in which females have been denied promotion due to their femininity. This is also known as the feminine-competency bind which results in women believing they must act a certain way to succeed. (Branson, 2007) The feminine-competency

bind can then create somewhat of a feedback loop in which there are forces which drive these female leaders to suppress their femineity. (Oakley, 2000)

One study proposed that gender differences are not as present among the females who are on board of directors and in corporate leadership positions as they are in the general population as these females would have had to have been hyper-competitive in order to climb the ladder in the face of gender bias. They used asset trading to test for overconfidence among finance & economics students and found no difference in presence of the cognitive bias between genders. (Deaves, Luders, & Luo, 2009) Another study also found that female directors can be slightly more risk-taking than men and are significantly different from the rest of the general population. (Adams & Funk, 2012)

Token theory developed by Kanter (1977) is the belief that underrepresented demographics in certain contexts will face negative experiences such as increased visibility, social isolation and being subject to increased stereotyping which consequently limits their impact within these group settings. (Kanter, 1977) This results in women's contribution to groups often becoming symbolic more than having an intrinsic impact on a group resulting in women feeling socially entrapped and unmotivated. (King, Hebl, George, & Matusik, 2010) For example, one study found when interviewing female board of directors that for some appointments, gender was considered a 'bonus' and another found that, in some cases, women were appointed due to increased pressure from institutional investors. The same study found there to be a qualitative difference in having more than one woman present in the boardroom to mitigate the difficulties of being a minority group. (Guldiken, Mallon, Fainshmidt, & Judge, 2019)

Token theory then gives rise to the critical mass theory which constitutes that there is a minimum number of individuals required from an underrepresented group to achieve significant and sustainable changes in governance and organizational culture. This number has been heavily discussed throughout the literature and several different amounts have been found to constitute a critical mass. Kanter (1977) found that 2 or more women can help strengthen women's ability to make an impact whereas others have found that three or more women are more beneficial albeit that two women are still significantly better than one. (Konrad, Kramer, & Erkut, 2008) (Kanter, 1977) Torchia, Calabro & Huse (2011) also found that boards contribution to firm innovation was higher when there was at least three women on the board indicating three was the critical mass. (Torchia, Calabro, & Morten, 2011) Interestingly, another study found that the critical

mass equates to 30% of board members being female in order for the gender group to make a significant positive impact on firm performance. Currently, Spain & Norway have gender quotas at board levels of 40% whereas Germany has put in place legislation which requires gender quotas of 30% at board level.

2.3. Stereotyping & Biases

The pursuit of upward mobility within corporate hierarchies presents unique and multifaceted challenges for women, shaped by a complex interplay of societal norms, organizational practices, and implicit biases. Concepts like the glass ceiling which is the invisible barrier created by gender biases and stereotypes both consciously and unconsciously prevent women from reaching top leadership positions. This report takes a deeper look at some of the actions and phenomena which led to this concept's existence while also taking a look at other concepts such as the 'glass elevator' and 'glass cliff' which have also been identified throughout the literature as concepts that have a resounding impact on women's ability to influence firm performance.

These contributors to the glass ceiling can be divided into two categories: corporate practices and cultural/behavioural biases. The first category encompasses structural issues that impede women's capacity for growth and development. One such issue is the allocation of leadership positions predominantly to individuals with experience in areas like marketing or operations. In contrast, many women are often situated in support roles such as human resources or public relations, where the lack of line experience can hinder their prospects for promotion to higher leadership positions. Additionally, it has been observed that women frequently receive less performance feedback compared to their male counterparts (Oakley, 2000). This deficiency in feedback can significantly impede an individual's professional development and skill enhancement. Furthermore, historical gender inequality has resulted in women having fewer strong professional networks or elite connections than men, further obstructing their advancement to leadership roles. In many large organizations, the presence of an "old boy network," which relies on social rather than professional ties, exacerbates these challenges, making it increasingly difficult for women to penetrate these exclusive circles. (McGuire, 2002)

The second category, cultural biases, encompasses factors such as stereotyping, tokenism, differing leadership styles, and the dynamics of relationships between men and women within various cultures. Stereotyping involves the formation of preconceived perceptions about the

qualities that distinguish groups or categories of people, often manifesting as over-generalizations with negative connotations. (Jonsen, Schneider, & Maznevski, 2010) As previously discussed, men and women often exhibit different behavioural traits, which gives rise to numerous stereotypes that women in leadership positions must confront. Women are typically perceived as not aggressive enough, overly dependent on others, overly emotional, unassertive, and non-competitive. These stereotypes can be detrimental to women's professional life, as they must expend energy on countering or disproving these stereotypes rather than focusing on their primary roles.

Moreover, women confront various double binds, representing conundrums where success seems elusive regardless of their actions. For instance, the previously mentioned feminine/competency bind illustrates that if women leaders embrace traditionally feminine qualities, they risk being perceived as lacking in competence. Conversely, should they adopt more masculine traits, they may face criticism for deviating from societal expectations of femininity. Similarly, the womb/brain double bind imposes a burden of guilt and societal pressure on women who struggle to balance their maternal and feminine responsibilities with intellectual pursuits. This dilemma often compels women to prioritize one aspect of their lives over another. Furthermore, the sameness/difference bind underscores a complex dilemma where women aspire for both equal treatment and recognition of their unique attributes. They seek acknowledgement of their individuality while advocating for inclusivity. These double binds underscore the challenges women encounter in navigating societal expectations, prompting some to eschew feminine traits in favour of adopting more traditionally masculine behaviours. (Jamieson, 1995)

In addition, the phenomenon of stereotype threat presents another layer of complexity, where individuals internalize negative stereotypes associated with their social group, thereby undermining their confidence and perceived suitability for leadership roles. This phenomenon, as elucidated by Steele (1997), manifests as a reluctance among females to pursue challenging opportunities for fear of confirming negative stereotypes. (Steele C. , 1997) This apprehension perpetuates the notion of a 'glass ceiling'—an invisible barrier that impedes women's capacity to excel and fully express themselves professionally. (Ely & Rhode, 2010)

Another notable phenomenon is the "glass escalator," which describes the tendency for men to ascend more swiftly into leadership roles within organizations. (Williams C. , 1992) This trend may stem from various factors inherent in the dynamics between men and women within

cultures. Notably, the prevailing historical archetype of leadership often aligns with masculine traits, perpetuating scepticism and stereotyping of women's leadership capabilities. Additionally, within power dynamics, men may grapple with reconciling traditional gender norms when confronted with female leadership, experiencing discomfort at the prospect of women holding higher positions. This discomfort can manifest as resistance to female leadership. In environments where such resistance is prominent, particularly within established "old-boy networks," existing leadership structures may take measures to hinder the advancement of women, preserving the prevailing masculine ethos within the organization. (Oakley, 2000) Throughout the scholarly discourse in this field, numerous researchers have deliberated on the phenomenon known as the "glass cliff," whereby women are more frequently appointed to leadership roles during periods of organizational crisis rather than during periods of stability or success. The forthcoming section of this report will delve into the extent of this phenomenon. However, it is crucial to note the adverse implications it poses for women leaders. Placing them in these high-risk positions diminishes their prospects for success, potentially leading to abbreviated tenures and tarnished reputations. (Jonsen, Schneider, & Maznevski, 2010) Such outcomes may subsequently impede women's ability to attain leadership positions in the future.

2.4. Women's Leadership During Crisis

As previously discussed, the literature indicates that women are frequently appointed to leadership positions during periods of crisis, which are associated with a higher risk of failure. Ryan and Haslam (2005) posit that women are often placed in more precarious roles compared to men, suggesting that it is not the appointment of women that precedes a decline in firm performance, but rather that negative company performance can precipitate the appointment of female leaders. An analysis of the top 100 companies on the London Stock Exchange revealed a tendency for female appointments to coincide with subsequent negative performance over several months. (Ryan & Haslam, 2005) Additionally, another study found a significant disparity in the turnover rates within the first two years of appointment, with 26% of women leaving their positions compared to 14% of men, a difference not attributable to family influences. (Stroth, Brett, & Reilly, 1996)

One plausible explanation for this phenomenon is that companies performing well seek to maintain the status quo, which, due to longstanding structural inequalities in the professional

sphere, typically comprises male leaders. Conversely, during crises, firms may seek to disrupt the status quo to improve performance. However, empirical testing revealed that companies with female leaders did not preferentially appoint male leaders during crises, which challenges this argument. (Bruckmuller & Branscombe, 2009)

Another explanation proposed by Bruckmuller and Branscombe (2009) relates to the persistence of stereotyping. Historically, the archetypal leader is perceived as male, with successful leadership associated with stereotypically male traits, a bias encapsulated in Schein & Davidson's (1993) concept of 'think-manager, think-male.' (Schein & Davidson, 1993) However, a study identifying desirable leadership traits for 'unsuccessful' companies found a stronger association with stereotypically female traits, suggesting a bias towards 'think-crisis, think-female'. (Haslam & Ryan, 2008) This indicates a tendency to perceive female leaders as more suitable in times of organizational distress which strengthens the glass cliff concept.

Although there is extensive literature on the propensity for women to ascend to leadership positions during times of crisis, there remains a paucity of research examining how women actually perform under such circumstances. This paper aims to address this gap. Existing empirical evidence suggests that female executives tend to be more cautious than their male counterparts in making critical corporate decisions, a trait that can enhance their performance in leadership roles, particularly during crises. (Huang & Kigsen, 2013) Female board directors are noted for their diligence in monitoring and their demand for more rigorous audit efforts compared to male directors. Additionally, female directors contribute diverse perspectives and experiences to the boardroom, which can improve the quality of board decisions and enhance the legitimacy of firm practices. (Liu, Wei, & Xie, 2014) Furthermore, gender-diverse boards have been shown to partially mitigate weak corporate governance. (Gul, Srinidhi, & Ng, 2011) One study focusing on the COVID-19 pandemic found that states with female governors experienced fewer deaths than those led by male governors, suggesting that female leaders may have a heightened capacity for decision-making in times of uncertainty. (Sergent & Stajkovic, 2020)

In light of these findings, several European countries, including Spain, Norway, and Germany, have implemented gender mandates to increase female representation at the board level. Japan has also recently instituted a gender quota mandate of 30% in 2023, highlighting the global importance of enhancing women's representation in the business sector. However, given the

diversity of cultures worldwide, it is reasonable to question whether the economic impact of female representation will be uniform across different regions. This thesis aims to explore the influence of cultural factors on the relationship between female leadership and firm performance.

2.5. Cultural & Political Influence

As previously mentioned, many companies in the Western world are now expanding globally and imposing gender quota mandates at the board level of listed companies. This initiative aims to increase female representation in boardrooms and dismantle social barriers that hinder women's access to these positions. Numerous studies have evaluated the effectiveness of the gender quota introduced in Norway in 2003. From a social perspective, Bertrand et al. (2014) found that although wage gaps significantly decreased, there was little to no evidence that the quota mandate had a positive impact on women beyond the direct benefit for those in boardrooms. (Bertrand, Black, Jensen, & Lleras-Muney, 2019) Conversely, Wang and Kelan (2013) found that the gender quota fostered a more supportive social environment, enabling more women to progress and achieve leadership positions within companies. Their research indicated that companies with higher female representation were more likely to promote women to leadership positions, thus creating a fairer and more equitable system that surpassed previously discussed gender biases, such as the "old boy network" and other social barriers. (Wang & Kelan, 2013)

From an economic performance standpoint, the findings are also mixed. Yang et al. (2019) identified a negative relationship between these gender mandates and both firm performance and firm risk when analysing Norwegian firms. (Yang, Riepe, Moser, Pull, & Terjesen, 2019) A study by Yu and Madison (2021) of Italian and French firms found that quotas for women primarily decreased company performance. (Yu & Madison, 2021) The study suggested that this relationship might be due to the immaturity of the quota and would likely diminish over time as the quota led to the replacement of older, experienced males with younger, less experienced females, and the promotion of board structures that were inefficient merely to comply with legislation. (Bohren & Staubo, 2014) Additionally, Dittmar and Ahern (2012) found that these gender quotas negatively impacted firm performance when measuring share price and Tobin's Q, alongside increases in leverage and acquisitions and declines in operating performance, citing inexperience as a potential causal factor. (Dittmar & Ahern, 2012)

Given the diverse attitudes towards women across different countries, it is reasonable to assume that gender quotas will yield varying outcomes. In 2015, India implemented a mandate requiring every listed company to have at least one female board member. The Women, Peace, and Security Index, along with findings by Low, Roberts, and Whiting (2015), indicate that Asian cultures tend to be more patriarchal. Their study identified a positive relationship between firm performance and gender diversity, but this effect diminished in countries with higher scores on the Economic Participation and Opportunity Index. This phenomenon was attributed to tokenism rather than genuine openness to female participation. (Low, Roberts, & Whiting, 2015) The authors noted that women in these regions often face a "double burden," balancing domestic responsibilities with professional roles, which hinders their professional advancement. Stereotyping and gender biases are also more pronounced compared to Western contexts. (Nam & Nam, 2004)

3. Hypothesis Development

Based on the theories discussed in the literature review, this thesis posits that higher board diversity enhances firm performance in both Germany and India, attributable to the unique value women contribute. This hypothesis is supported by human capital theory, agency theory and resource dependency theory, which suggest that the inclusion of female board members provides access to a broader range of resources and skillsets, thereby positively influencing firm performance.

H1: Higher gender diversity on corporate boards positively impacts overall firm performance.

Furthermore, this thesis hypothesizes that increased female representation at the board level will positively impact a firm's capacity to manage crises in both regions. This is supported by Ryan and Haslam's (2008) study, which claims that feminine-specific qualities are more desirable for struggling firms. These attributes can foster cohesion, enhance problem-solving, and improve decision-making during times of uncertainty (Sergent & Stajkovic, 2020). Agency theory also suggests that the attributes associated with female leaders make for better agents, which is particularly important during crises.

H2: Higher gender diversity on corporate boards improves firm performance during a crisis period (Covid-19 Pandemic).

Lastly, this thesis hypothesizes that gender diversity in Germany will have a more positive impact on overall firm performance during crises compared to India. This theory is supported by social psychology theory, token theory, and critical mass theory. India ranks 129th and 127th in the Women's Peace & Security Index and the Economic Participation and Opportunity Index, respectively, compared to Germany's 21st and 6th ranks, highlighting a stark contrast in cultural attitudes toward women. Higher levels of prejudice against women in Indian culture, as indicated by these rankings, suggest that women face greater barriers in advancing to corporate leadership positions.

India's gender mandate requires only one female board member, whereas Germany's mandate requires 30% female representation. Critical mass theory suggests that having only one female

board member does not constitute a critical mass, thereby limiting women's ability to significantly influence board actions and decision-making. Moreover, this lower mandate, combined with a cultural environment less conducive to gender equality, opens the door for tokenism in the corporate world, further restricting women's capacity to impact board decisions and firm performance.

H3: The positive impacts of higher gender diversity on corporate boards (as outlined in H1 and H2) will be more pronounced in Germany than in India.

4. Methodology

4.1. Data Collection

The data for this research has been gathered from Refinitiv Eikon. Refinitiv Eikon is a global financial services company that provides news, information, and analytics about financial markets. Therefore, Refinitiv Eikon is an often-used platform for retrieving data in economic/financial academic research. The data analysis was done using Python programming language.

The dataset comprises data from 927 publicly listed firms in Germany and India that reported gender diversity metrics in 2023. This sample is divided into 237 German firms and 690 Indian firms. The data spans the period from 2018 to 2023. The onset of COVID-19 regulations occurred in early 2020 in both countries, with restrictions being lifted in the spring of 2022. For the purposes of this thesis, the years 2020-2022 are designated as crisis periods due to the significant economic and social disruptions caused by the pandemic and 2020 is marked as the beginning of the crisis for the DiD approach. The dataset is structured as panel data, capturing multiple measurements over time across various variables. To ensure the integrity of the panel data, firms with incomplete data and those established after 2018 were excluded. Following this exclusion process, 171 firms remained, consisting of 85 German firms and 86 Indian firms, resulting in a total of 855 observations due to the inclusion of differencing for Tobin's Q in model (1).

4.2. Dependent Variables

To measure firm performance, various indicators can serve as proxies. Among the most frequently utilized in the literature are stock price movement, return on assets (ROA), market multiples, return on equity (ROE), and Tobin's Q (Joecks, Pull, & Vetter, 2013). Consistent with the methodologies of Bhagat and Bolton (2008) and Brahma et al. (2018), this study employs ROA and Tobin's Q as measures of firm performance to capture both internal and external perspectives. (Bhagat & Bolton, 2008) Tobin's Q, a market-based measure, is calculated as the book value of total assets minus the book value of common equity plus the market value of common equity, divided by the book value of total assets. A Tobin's Q value greater than one

signifies investors' confidence in the firm and its growth prospects, whereas a value less than one indicates the opposite. (Brahma, Nwafor, & Boateng, 2020) ROA, an accounting measure, is defined as the ratio of a firm's annual net income to the average total assets during a financial year and acts as a measure of operating performance. ROA is beneficial as it's easy to compare it with firms of all sizes. (Barber & Lyon, 1996)

4.3. Independent Variables

The primary independent variable utilized in both the literature and this thesis is the percentage of female board members within a company. In an effort to contribute to the critical mass theory literature, this thesis also employs dummy variables. Specifically, two dummy variables are created that assume a value of 1 when the number of female board members is equal to or exceeds 2 or 3, respectively. (Kilic & Kuzey, 2016) Furthermore, to explore the impact of female board members on firm performance during a crisis period, an interaction term is employed. This interaction term combines the dummy variable for the crisis period with the levels of gender diversity.

4.4. Control Variables

To enhance the robustness of this statistical analysis and mitigate the impact of confounding variables, this thesis incorporates several control variables into the model. As detailed in [Table 2](#), the control variables include firm size, firm market value and firm leverage. Additionally, the model accounts for board size, board compensation, and board tenure length. A dummy variable representing the crisis period is also included. Given the skewed distributions of firm size, firm market value, and board compensation, these variables are log-transformed in the model to normalize their distributions. Firm age was also included in the dataset but was omitted due to multicollinearity.

Throughout the literature, authors include many other variables as control variables to increase the robustness of the analysis such as multiple directorships, group ownership percentage, board age, and board education among many others. However, this thesis does not include these variables due to the data limitations on Refinitiv Eikon.

4.5. Models

Fixed Effects Model

This thesis employs multiple regression analysis to examine the relationship between firm performance and gender diversity. An Ordinary Least Squares (OLS) estimator is utilized to estimate the models (1) through (4). The first and second hypotheses are evaluated using these models with data from both Indian and German firms. The third hypothesis is subsequently tested by estimating these models using data from each country separately, allowing for individual analysis. Similarly to Liu et al (2014), analysed the potential lag effect of board variables on firm performance variables. Models (2) and (4) include the lagged variables for gender diversity, board compensation, board size and board tenure.

To enhance the robustness of the models, various diagnostic tests were conducted to assess exogeneity, heteroskedasticity, autocorrelation, and stationarity.

Firstly, a Hausman test was performed to test for exogeneity and to determine the appropriate model—random effects or fixed effects—for this analysis. The test yielded a low p-value for both models, leading to the rejection of the null hypothesis. This result indicates that the fixed effects model is preferable.

Secondly, the presence of heteroskedasticity was assessed using a Breusch-Pagan test. The test produced low p-values for both models, rejecting the null hypothesis of homoskedasticity and indicating the presence of heteroskedasticity. Consequently, the standard errors in the models were corrected for heteroskedasticity using robust standard errors.

Thirdly, the models were tested for autocorrelation using the Breusch-Godfrey test. The results showed high p-values, leading to a failure to reject the null hypothesis of no autocorrelation.

Thus, there is no evidence of autocorrelation in either model.

Lastly, stationarity was examined using the Dickey-Fuller test. For Model (2), the test returned a high p-value, indicating a failure to reject the null hypothesis of a unit root, thereby confirming that the model was stationary. However, for Model (1), the test yielded a low p-value, leading to the rejection of the null hypothesis and indicating the presence of a unit root. To address this issue, the first difference of Tobin's Q was used in Model (1) to correct for non-stationarity. A subsequent Dickey-Fuller test on the differenced model returned a high p-value, confirming that the model was now stationary.

The final models can be seen below:

$$RA_{it} = \beta_0 + \beta_1 Dum_CR_{it} + \beta_2 GD_{it} + \beta_3 GC_{it} + \beta_4 Dum_F2_{it} + \beta_5 Dum_F3_{it} + \beta_6 AS_{it} + \beta_7 MC_{it} + \beta_8 BC_{it} + \beta_9 BS_{it} + \beta_9 BT_{it} + \beta_9 LV_{it} + \alpha_i + \epsilon_{it} \quad (1)$$

$$RA_{it} = \beta_0 + \beta_1 Dum_CR_{it} + \beta_2 Lag_GD_{it} + \beta_3 GC_{it} + \beta_4 Dum_F2_{it} + \beta_5 Dum_F3_{it} + \beta_6 AS_{it} + \beta_7 MC_{it} + \beta_8 Lag_BC_{it} + \beta_9 Lag_BS_{it} + \beta_9 Lag_BT_{it} + \beta_9 LV_{it} + \alpha_i + \epsilon_{it} \quad (2)$$

$$TQ_Diff_{it} = \beta_0 + \beta_1 Dum_CR_{it} + \beta_2 GD_{it} + \beta_3 GC_{it} + \beta_4 Dum_F2_{it} + \beta_5 Dum_F3_{it} + \beta_6 AS_{it} + \beta_7 MC_{it} + \beta_8 BC_{it} + \beta_9 BS_{it} + \beta_9 BT_{it} + \beta_9 LV_{it} + \alpha_i + \epsilon_{it} \quad (3)$$

$$TQ_Diff_{it} = \beta_0 + \beta_1 Dum_CR_{it} + \beta_2 Lag_GD_{it} + \beta_3 GC_{it} + \beta_4 Dum_F2_{it} + \beta_5 Dum_F3_{it} + \beta_6 AS_{it} + \beta_7 MC_{it} + \beta_8 Lag_BC_{it} + \beta_9 Lag_BS_{it} + \beta_9 Lag_BT_{it} + \beta_9 LV_{it} + \alpha_i + \epsilon_{it} \quad (4)$$

Difference-In-Difference Approach

To enhance the robustness of our analysis, we employed a Difference-in-Differences (DiD) approach, which enables us to ascertain the causal impact of gender composition on firm performance and mitigate potential bias arising from unobserved characteristics. This method allows us to rigorously evaluate the effects of having a specific number of female board members on firm performance by comparing firms with varying levels of female board representation. (Soare, Detilleux, & Deschacht, 2021)

In this analysis, we designated firms with two or more female board members as the treatment group, while firms with fewer than two female board members constituted the comparison group. Similarly, for the second analysis, we identified firms with three or more female board members as the treatment group and those with fewer than three as the comparison group. The treatment period under consideration is post-2020, marking the onset of the Covid-19 crisis.

By focusing on this period, we aim to discern whether the presence of a critical mass of female board members had a significant impact on firm performance following the Covid-19 crisis. This

investigation contributes to the critical mass theory by examining whether a threshold number of female board members is necessary to effectuate meaningful changes in firm performance in the wake of a significant global event.

The models for this approach can be seen below:

$$RA_{it} = \beta_0 + \beta_1 \text{Treatment} + \beta_2 DiD_{2it} + \beta_3 AS_{it} + \beta_4 MC_{it} + \beta_5 BC_{it} + \beta_6 BS_{it} + \beta_7 BT_{it} + \beta_8 LV_{it} + \alpha_i + \epsilon_{it} \quad (5)$$

$$RA_{it} = \beta_0 + \beta_1 \text{Treatment} + \beta_2 DiD_{3it} + \beta_3 AS_{it} + \beta_4 MC_{it} + \beta_5 BC_{it} + \beta_6 BS_{it} + \beta_7 BT_{it} + \beta_8 LV_{it} + \alpha_i + \epsilon_{it} \quad (6)$$

$$TQ_{it} = \beta_0 + \beta_1 \text{Treatment} + \beta_2 DiD_{2it} + \beta_3 AS_{it} + \beta_4 MC_{it} + \beta_5 BC_{it} + \beta_6 BS_{it} + \beta_7 BT_{it} + \beta_8 LV_{it} + \alpha_i + \epsilon_{it} \quad (7)$$

$$TQ_{it} = \beta_0 + \beta_1 \text{Treatment} + \beta_2 DiD_{3it} + \beta_3 AS_{it} + \beta_4 MC_{it} + \beta_5 BC_{it} + \beta_6 BS_{it} + \beta_7 BT_{it} + \beta_8 LV_{it} + \alpha_i + \epsilon_{it} \quad (8)$$

5. Results

5.1. Summary Statistics

[Table 3](#) presents the summary statistics for the overall data sample, while [Table 4](#) and [Table 5](#) separately provide summary statistics for German and Indian firms, respectively, to highlight the distinctions between these two countries.

The International Monetary Fund classifies Germany as a developed economy and India as an emerging economy, which is evident in the summary statistics. Starting with the dependent variables, the mean values for Tobin's Q and ROA across the sample are 1.85 and 5.2%, respectively. Notably, Indian firms exhibit superior performance during this period, with a mean ROA and Tobin's Q of 7% and 2.85 compared to 3.3% and 0.84 for German firms respectively. This disparity may be attributed to increased levels of foreign direct investment in India, as firms sought to diversify their supply chains away from China in recent years. (Wunderlin, 2023)

Regarding the independent variable of interest, gender diversity, German firms demonstrate significantly higher levels of gender diversity at the board level, with a mean value of 31.87%, compared to 16.2% for Indian firms, resulting in an overall average of 23%. This stark contrast reflects the differing social climates and cultural attitudes towards female roles in society between the two regions. As seen in Figure 1, the average gender diversity in both regions has been increasing in recent years with German firms moving from a mean value of 28% in 2018 to 35% in 2023 whereas Indian firms have increased to 19% in 2023 from the 2018 figure of 14% signalling a positive shift in attitudes towards female leaders.



In terms of control variables, German firms are substantially larger in size, as indicated by the mean value of assets, which is over three times greater than that of Indian firms. Additionally, German boards are not only compensated at higher levels but are also larger in size, with an average of 13.7 board members compared to 11.17 in India. This larger board size in Germany may contribute to the lower opportunities for including female board members.

5.2. Correlation Matrix

The correlation matrix demonstrated in [Table 6](#) highlights the relationships between all the variables used in this analysis. The highest negative correlation is between leverage and ROA (-0.47), implying that firms with higher leverage tend to have lower returns on assets, which could reflect the financial risk and cost of debt impacting profitability. Additionally, the correlation between gender diversity and ROA is also low (0.02), suggesting a minimal direct relationship between the gender composition of the board and the firm's immediate financial performance. The same logic applies to gender diversity & Tobin's Q which has a slightly larger correlation of (0.04). These findings underscore the complexity of the relationships among these variables and highlight the need for further analysis to understand the underlying dynamics fully.

5.3. Gender Diversity & Firm Performance

Firstly, this thesis examines whether gender diversity at board level significantly impacts firm performance by utilizing regression models (1) through (4). The results of these regressions for the entire dataset are presented in [Table 7](#), while [Table 8](#) and [Table 9](#) display the regression outcomes for Germany and India, respectively.

[Table 7](#), which encompasses the full dataset, reveals a marginally significant negative relationship between gender diversity and ROA. Specifically, the coefficient indicates that a 1% increase in gender diversity correlates with a 0.0698 percentage point decrease in a firm's Return on Assets, holding other variables constant. However, this relationship is only significant at the 10% confidence level. Additionally, all other independent variables across models (1) through (4) proved to be insignificant, suggesting that neither gender diversity nor the presence of a critical mass of women on boards significantly impacts firm performance in this dataset.

When the regression models were applied to the German dataset, as shown in [Table 8](#), a similar pattern emerged. In model (1), gender diversity exhibited a marginally significant negative

relationship with ROA, indicating that a 1% increase in gender diversity would decrease a firm's ROA by 0.0854 percentage points. However, when analysing the lagged board variables in models (2) and (4), the results indicate that the dummy variables representing a 'critical mass' of two and three female board members negatively influenced firm performance. Specifically, Dum_F2 was associated with a negative impact on ROA, with a coefficient of -0.0348, and Dum_F3 negatively influenced Tobin's Q, with a coefficient of -0.3363. Both results were significant at the 5% confidence level.

[Table 9](#), which focuses on Indian firms, indicates a significant negative relationship between board-level gender diversity and ROA in model (1), significant at the 5% confidence level. The coefficient suggests that a 1% increase in gender diversity would result in a 0.1153 percentage point decrease in ROA. Furthermore, in model (2), which includes lagged board variables, the Dum_F3 variable shows a marginally significant negative relationship between having three or more female board members and ROA.

These findings suggest that, contrary to existing literature and the initial hypothesis, higher gender diversity on corporate boards does not positively impact overall firm performance. Instead, the results indicate a marginally significant negative relationship between gender diversity and firm performance, a pattern observed across all datasets analysed. This outcome aligns with the findings of Soare et al. (2021), who also reported a negative association between gender diversity and firm performance metrics.

Moreover, these results challenge the propositions of Kanter's (1977) critical mass theory and the studies of Torchia et al. (2011). According to these theories, achieving a certain threshold of female board members should empower minority groups to exert a positive influence on firm performance. However, our analysis reveals that in German firms, there is a significant negative relationship between having a critical mass of two or three female board members and key performance indicators. Specifically, the presence of a 'critical mass' negatively affected Return on Assets (ROA) and Tobin's Q. Furthermore, these findings also go against the human capital theory outlined by Becker (1992) and Marimuthu et al. (2009) which suggests that increased levels of human capital is closely linked with increased levels of firm performance. (Marimuthu & Arokiasamy, 2009)

5.4. Gender Diversity & Firm Performance During Crisis

The second hypothesis investigated in this thesis asserts that higher gender diversity on corporate boards will improve firm performance during a crisis period. This hypothesis was examined using the interaction term in models (1) through (4) and further analysed through the Difference-in-Differences (DiD) approach in models (5) through (8). The results of the DiD regression models are presented in [Table 10](#) for the full dataset, and in [Table 11](#) and [Table 12](#) for German and Indian firms, respectively.

The interaction term, which multiplies the gender diversity variable by a dummy variable (indicating the crisis period with a value of 1), was employed to assess whether the impact of gender diversity on firm performance varies during a crisis period. In models (1) through (4), our findings indicate that gender diversity at the corporate board level does not significantly affect either of the firm performance metrics, namely Return on Assets (ROA) and Tobin's Q, across any of the specified models.

To further substantiate these findings, models (5) through (8) employed a DiD approach to examine the causal impact of gender diversity on firm performance during a crisis. This methodology is particularly robust as it accounts for time-invariant unobserved heterogeneity and provides a more nuanced understanding of the relationship. Despite this rigorous approach, the results failed to demonstrate a significant relationship between gender diversity and firm performance at both levels of critical mass analysed firms with at least two female board members and those with at least three. Specifically, the interaction terms representing these thresholds of gender diversity were statistically insignificant across all datasets analysed, suggesting that the presence of female board members does not influence firm performance during a crisis period.

These findings collectively necessitate the rejection of our hypothesis, indicating that higher gender board diversity does not positively influence firm performance during a crisis period. Similar to the results of our first hypothesis, these findings challenge the theoretical assertions of critical mass theory and human capital theory. Critical mass theory posits that a certain threshold of female representation on corporate boards empowers minority groups to significantly influence decision-making and enhance firm outcomes. Meanwhile, human capital theory suggests that diverse boards bring a broader range of skills, perspectives, and experiences, thereby improving performance metrics. However, our analysis reveals no significant positive

relationship between gender diversity and firm performance during the crisis period, thereby questioning the applicability of these theoretical frameworks in the context of the studied firms.

5.5. Country Comparison

Hypothesis three claimed that the positive influence of higher gender diversity on corporate boards would be more pronounced in Germany than in India. This expectation was grounded in the assumption that Germany's more accepting and inclusive cultural context promotes female engagement and inclusion within firms more effectively than in India. To test this hypothesis, the overall dataset was divided, enabling separate analyses of German and Indian companies and facilitating a comparative evaluation of the two countries.

Firstly, models (1) through (4) in [Table 8](#) and [Table 9](#) represent fixed effects regression models applied to the German and Indian datasets, respectively. Both datasets exhibited a negative relationship between gender diversity and return on assets (ROA) of a firm, with coefficients of -0.1153 for India and -0.0854 for Germany. These coefficients suggest that the impact of gender diversity on firm performance is less negative in Germany than in India. However, it is crucial to note that the results for India were significant, while Germany's results were only marginally significant. Moreover, the dummy variables Dum_F2 and Dum_F3 in models (2) and (4) for Germany indicated significant negative relationships between these thresholds of female board members and firm performance, suggesting that reaching a critical mass of female board members might adversely affect firm performance in Germany.

Secondly, the Difference-in-Differences (DiD) approach, as shown in [Table 11](#) and [Table 12](#), yielded largely insignificant results, with all interaction terms in models (5) through (8) being statistically insignificant. This lack of significance suggests no meaningful difference in the impact of gender diversity on firm performance between the two countries during the crisis period.

Overall, while the findings may suggest that the impact of gender diversity is less negative in Germany based on the comparison of results from model (1), the results across both countries are largely insignificant. Both Germany and India showed a negative relationship between gender diversity and firm performance, with more pronounced significance in India. Although the evidence indicates that the impact of gender diversity in Germany appears to be less negative than in India, the statistical insignificance across most models prevents drawing a definite conclusion. Therefore, the hypothesis that higher gender diversity on corporate boards positively

impacts firm performance more in Germany than in India does not hold under the scrutiny of our fixed effects and DiD analyses.

6. Conclusion

This study extends the existing literature on board diversity by providing empirical evidence on the effect of gender diversity at board level on firm performance in both Indian and German-listed companies. It takes a unique perspective by examining both cultural and circumstantial influences. The cultural aspect is explored through the comparison of two culturally contrasting nations, while the circumstantial influence is assessed by analysing the impact of the COVID-19 pandemic. The study hypothesizes that, based on human capital theory, resource dependency theory, and agency theory, higher female representation would lead to positive implications for firm performance in both normal and crisis situations. Additionally, it is hypothesized that the more open and equitable environment for women in Germany would enhance their impact on firm performance compared to India.

Contrary to our hypotheses and much of the existing literature, our findings suggest that firm performance is not positively influenced by higher female representation at the board level, both in normal circumstances and during periods of crisis. In fact, the evidence indicates that higher female representation may lead to a decrease in a firm's return on assets (ROA) in both Indian and German firms, challenging the business case for increasing board diversity. Additionally, our evidence suggests that in German-listed companies, achieving a critical mass of women on the board can negatively impact both Tobin's Q and ROA.

These findings, contrary to the majority of the existing literature, can be supported by the study of Bøhren and Staubo (2014). Their research found that firms subject to mandatory gender quotas experienced a decline in firm value when their gender diversity levels deviated from pre-legislation norms. These findings may help validate the results of this thesis. Both in Germany and India, firms face external pressures to alter gender mandates to include higher female representation. In Germany, the existence of gender mandates since 2016, requiring listed firms to have at least 30% female representation, creates such pressure. In India's case, alongside legislation which requires each firm to have at least one female board member, the country has also seen increased participation in international trade and attention from international investors due to shifts in the global supply chain, leading to pressures to comply with Anglo-American business models that emphasize higher board diversity (Low, Roberts, & Whiting, 2015).

The presence of this external pressure to promote females to board positions suggests that firms might be appointing women due to institutional pressures rather than based on optimal candidacy. Additionally, numerous studies have found that gender mandates can negatively impact firm performance due to the appointment of inexperienced individuals in an attempt to comply with legislation (Dittmar & Ahern, 2012).

These results are further supported by token theory, which suggests that in such pressured environments, women may be promoted for symbolic reasons and face more significant obstacles than their counterparts. This limitation, due to the existence of entrenched male-dominated networks, can restrict their capacity to make a meaningful impact on the team. As previously discussed, the existence of gender stereotypes, cultural biases and double binds which women regularly face in professional environments at all levels can stifle female's ability to flourish and make a positive impact within organisations. These phenomena may help explain why higher gender diversity was found to have a negative relationship with firm performance. Regarding cultural influence, the study did not find a significant difference in the impact of gender diversity on firm performance between Germany and India. While the results suggested that the negative impact of gender diversity on firm performance was less pronounced in Germany compared to India, these findings were not statistically significant. This lack of significance could potentially be explained by the stark contrast in female representation between the two countries. In Germany, gender diversity at the board level is approximately twice that of India, which may indicate that German firms are more accustomed to integrating women into high-level positions, potentially mitigating some negative impacts observed elsewhere. This difference in representation reflects a broader societal commitment to gender equality, which might help create a more supportive environment for women in leadership roles. Conversely, in India, while there have been significant strides towards gender equality, societal norms and corporate practices may still present more substantial barriers for women at board level. Another factor to consider is the difference in the maturity and stability of corporate governance structures between the two countries. German firms might have more robust mechanisms to support and integrate female board members effectively, potentially lessening any adverse effects of gender diversity on firm performance. In contrast, Indian firms, facing relatively newer and rapidly changing corporate governance standards, might struggle more with

the integration and effective utilization of female board members, leading to the observed negative impacts on firm performance.

These findings help spark interest in the topic of cultural and circumstantial influence on gender diversity on firm performance. However, several limitations should be acknowledged, which future research should aim to address to enhance the robustness and generalizability of the findings. One significant limitation of this study is the restricted data availability on the Refinitiv database. While Refinitiv is a comprehensive financial database, it lacked detailed information on certain board attributes that could be crucial in understanding the dynamics of board diversity and firm performance. Future studies should incorporate additional control variables such as board duality (where the CEO also serves as the board chair) and the educational levels of board members. These variables can provide deeper insights into how the qualifications and roles of board members influence firm performance. Incorporating such detailed board attributes would allow for a more complete analysis and potentially uncover more specific mechanisms through which gender diversity impacts firm outcomes.

The current study focuses exclusively on firms from Germany and India, which, while providing a stark cultural contrast, limits the generalizability of the findings. The sample size, constrained to two countries, may not fully capture the broader cultural impacts of gender diversity on firm performance. Future research should consider including more countries with similar and contrasting cultural beliefs regarding gender roles. By expanding the sample to include nations with varying degrees of gender inclusivity and corporate governance practices, the study can achieve a more comprehensive understanding of the cultural dimensions influencing the relationship between board diversity and firm performance. This approach would also help in increasing the sample size, thereby enhancing the statistical power and robustness of the results. Another limitation pertains to the temporal scope of the study. This research primarily examines the period surrounding the COVID-19 pandemic, which, although a significant and unique crisis, may not be representative of other types of economic or industry-specific crises. To provide a more generalized understanding of how gender diversity influences firm performance during crisis periods, future studies should analyse a broader time frame and include multiple crisis periods, such as the 2008 financial crisis or industry-specific downturns. This would help in identifying whether the observed relationships hold true across different types of crises and economic conditions, thereby providing more robust and comprehensive insights.

This study contributes to the understanding of the intricate dynamics between firm performance and board diversity, offering valuable insights for top managers, investors, and policymakers. The findings underscore the importance of not just achieving gender diversity but fostering an inclusive environment where female board members can effectively contribute to strategic decisions. These insights can guide stakeholders in constructing more effective corporate governance structures, thereby enhancing decision-making processes. For investors, an improved understanding of how companies integrate and utilize diverse boards can lead to more informed investment strategies that consider both qualitative and quantitative aspects of board diversity. In conclusion, this study offers critical insights into the dynamics between gender diversity on corporate boards and firm performance within the distinct cultural contexts of India and Germany. While our findings challenge the widely held belief that greater female representation universally enhances firm performance, they highlight the complexity of this relationship and the influence of cultural and institutional factors. It further supports the necessity for society to break down the barriers which prevent women from maximising their potential impact within a firm in order to allow for a more effective and inclusive environment which can positively influence firm performance.

Appendix

Table 1 – Review of Earlier Studies

Author	Data	Econometric Techniques	Results
Brahma, Nwafor & Boateng (2020)	FTSE 100 Companies	Fixed-Effects & System GMM	Higher gender diversity at board level positively influences firm performance.
Carter et al (2010)	S&P 500 Companies	OLS & 3SLS	Higher gender diversity on board committees does not significantly influence firm performance.
Joecks, Pull & Vetter (2013)	151 listed German Companies	Random-effects	Female Board representation positively impacts firm performance once 30% threshold is reached.
Campbell & Minguez-Vera (2007)	68 Non-Financial Spanish firms.	2SLS	Higher gender diversity has a positive effect on firm value.
Francouer, Labelle & Sinclair-Desgagne (2007)	500 largest Canadian firms	Catalyst data	Firms operating in complex environments achieve significant and abnormal returns with a higher proportion of female board members.
Marinova, Plantenga & Remery (2015)	102 Dutch & 84 Danish listed firms	2SLS	No effect on board gender diversity on firm performance.
Conyon & He (2017)	3000 US firms	Quantile Regression	There is a positive correlation between gender diversity in boardrooms and firm performance.
Bohren & Staubo (2014)	Norwegian firms exposed to gender mandates	Fixed Effects	Radical gender balance on corporate boards is associated with a decrease in firm performance.
Sarkar & Selarka (2020)	1348 firms listed on NSE	Difference-In-Difference, 2SLS Method	The presence of a woman in corporate boards improves firm performance.
Simionescu, Gherghina, Tawil, Hiba, Sheikha (2021)	S&P 500 IT Sector	Pooled OLS, Fixed-Effects & Random-Effects	Women on corporate boards positively influences firm performance.
Liu, Wei, & Xie (2014)	Chinese listed firms	Fixed-Effects, Arellano-Bond	Higher gender diversity at board level positively effects firm performance.
Maji & Saha (2021)	100 Indian firms	Quantile Regression & System GMM	Higher gender diversity at both operational and board level positively influence firm performance.
Soare, Dettleux, & Deschacht (2021)	4080 Belgian companies	Difference-In-Difference	The addition of one female director negatively impacts 10 out of 23 financial performance indicators.
Low, Roberts & Whiting (2015)	6952 Asian listed firms	OLS & 2SLS	Higher female board members positively impact firm performance yet diminishes as countries general female inclusion increases.
Kilic & Kusey (2016)	149 Turkish firms	IV Regression	The inclusion of female board members positively influences firm performance.
Duppati et al.(2019)	69 New Zealand companies	Quantile Regression & OLS	Women on boards do tend to improve financial performance of a company.
Niikura & Seko (2020)	All Firms on Tokyo Stock Exchange	2SLS Method	Higher inside & outside Female board representation positively influence return on equity.

Table 2 – Variable Definitions

Variable Name	Variable Code	Variable Type	Variable Description
Tobin's Q	TQ	DV	Market value of a company's assets divided by the replacement cost of capital.
Return On Assets	RA	DV	Net income reported by a company divided by total value of company's assets.
Gender_Div	GD	IV	Percentage of female board members occupying board.
Dummy_Fem2	Dum_F2	IV	Dummy variable which takes the value of 1 if there is 2 or more female board members
Difference-In-Difference1	DiD2	IV	Interaction term which multiplies the Dum_F2 by the treatment period dummy. (After the year 2020)
Dummt_Fem3	Dum_F3	IV	Dummy variable which takes the value of 1 if there is 3 or more female board members
Difference-In-Difference2	DiD3	IV	Interaction term which multiplies the Dum_F3 by the treatment period dummy. (After the year 2020)
Gender_Crises	GC	IV	Interaction term which multiplies 'Gender_Div' by 'Dummy_Crisis'
Dummy_Crisis	Dum_CR	CV	Dummy variable which takes the value of 1 if the year is 2020-2022
Log_Assets	AS	CV	Logarithm of total value of assets reported by a company in USD.
Log_Board_Comp	BC	CV	Logarithm of total board compensation in USD.
Log_Mkt_Cap	MC	CV	Logarithm of the company's market capitalisation at the end of a fiscal year in USD.
Board_Size	BS	CV	The total number of board members at the end of the fiscal year.
Board_Tenure	BT	CV	Average number of years each board member has been on the board
Leverage	LV	CV	Total value of debt divided by total value of assets reported at the end of the fiscal year.
Firm_Age	FA	CV	The number of years since the firm was initially founded.

Note:

DV – Dependent Variable

IV – Independent Variable

CV – Control Variable

Table 3 – Summary Statistics on full dataset

	TQ	RA	GD	AS	BC
count	1,026.00	1,026.00	1,026.00	1,026.00	1,026.00
mean	1.85	0.05	0.24	54,760,000,000	1,521,000
std	2.98	0.07	0.12	162,300,000,000	3,025,000
min	0.00	-0.40	0.00	195,200,000	12,850
25%	0.30	0.02	0.13	3,439,000,000	283,800
50%	0.64	0.04	0.25	11,060,000,000	816,800
75%	2.02	0.08	0.33	38,320,000,000	1,834,000
max	21.81	0.44	0.56	1,619,000,000,000	60,690,000

	MC	BS	BT	LV	FA
count	1,026.00	1,026.00	1,026.00	1,026.00	1,026.00
mean	21,060,000,000	12.43	6.76	0.25	36.97
std	30,560,000,000	4.37	3.13	0.20	29.11
min	1,102,000	2.00	0.50	0.00	0.00
25%	4,147,000,000	10.00	4.63	0.09	17.00
50%	9,439,000,000	12.00	6.44	0.24	28.00
75%	24,700,000,000	15.00	8.51	0.37	48.00
max	238,500,000,000	23.00	18.90	1.32	152.00

Table 4 – Summary Statistics on German-specific dataset

	TQ	RA	GD	AS	BC
count	510.00	510.00	510.00	510.00	510.00
mean	0.84	0.03	0.32	84,748,030,000	2,104,078
std	1.06	0.06	0.10	221,430,900,000	2,263,998
min	0.00	-0.40	0.00	427,587,200	153,468
25%	0.25	0.01	0.29	4,957,897,000	864,061
50%	0.46	0.03	0.33	14,613,920,000	1,672,573
75%	0.93	0.06	0.38	50,005,790,000	2,636,575
max	8.15	0.44	0.56	1,618,538,000,000	38,,359,220

	MC	BS	BT	LV	FA
count	510.00	510.00	510.00	510.00	510.00
mean	21,432,570,000	13.70	6.13	0.26	27.03
std	30,135,630,000	5.32	2.10	0.17	29.70
min	1,101.715	2.00	0.50	0.00	0.00
25%	2,864,069,000	10.00	4.77	0.12	12.00
50%	8,699,619,000	12.50	6.02	0.26	18.00
75%	26,884,120,000	19.00	7.44	0.36	26.75
max	189,103,000,000	23.00	14.57	1.10	152.00

Table 5 – Summary Statistics on India-specific dataset

	TQ	RA	GD	AS	BC
count	516.00	516.00	516.00	516.00	516.00
mean	2.85	0.07	0.16	25,125,610,000	945,511
std	3.81	0.07	0.09	46,636,240,000	3,532,386
min	0.02	-0.17	0.00	195,228,400	12,853
25%	0.44	0.02	0.09	2675,095,000	129,201
50%	1.36	0.06	0.14	9,876,645,000	314,969
75%	3.51	0.11	0.20	25,644,960,000	750,618
max	21.81	0.35	0.55	483,526,600,000	60,685,440

	MC	BS	BT	LV	FA
count	516.00	516.00	516.00	516.00	516.00
mean	20,684,620,000	11.17	7.38	0.25	46.79
std	30,993,160,000	2.63	3.78	0.22	24.91
min	1,312,523,000	4.00	1.25	0.00	4.00
25%	5,564,853,000	10.00	4.36	0.06	28.00
50%	10,162,740,000	11.00	7.44	0.20	39.00
75%	21,691,790,000	13.00	9.75	0.39	62.00
max	238,515,000,000	22.00	18.90	1.32	117.00

Table 6 – Correlation Matrix

ROA	1										
Tobins_Q	0.17	1									
Gender_Div	0.02	0.04	1								
Crisis	-0.01	0.01	-0.01	1							
Assets	-0.27	-0.06	0.29	0.02	1						
Board_Comp	0.02	0.02	0.3	0.02	0.23	1					
Mkt_Cap	0.18	0.3	0.22	0.01	0.48	0.23	1				
Board_Size	-0.05	-0.07	0.28	-0.06	0.23	0.33	0.11	1			
Board_Tenure	-0.05	-0.02	0.21	-0.01	0.25	0.11	0.12	0.13	1		
Leverage	-0.47	-0.15	-0.05	-0.03	0.15	-0.05	0.18	0.33	0.23	1	
Firm_Age	-0.08	-0.02	0.12	0	0.31	0.23	0.12	0.1	0.09	0.2	1
	ROA	Tobins_Q	Gender_Div	Crisis	Assets	Board_Comp	Mkt_Cap	Board_Size	Board_Tenure	Leverage	Firm_Age

Table 7 –Fixed Effects Regression Output on Full Data Set

Variable	ROA		Tobin's Q	
	Fixed Effects (FE)	FE With Lagged Board Variables	Fixed Effects (FE)	FE With Lagged Board Variables
	(1)	(2)	(3)	(4)
Dum_CR	-0.0126** (0.0055)	0.0023 (0.0054)	-0.0161 (0.1601)	0.3065 (0.2699)
GD	-0.0698* (0.0364)	-0.0319 (0.0262)	-0.4471 (1.0634)	-2.0152 (1.3035)
GC	0.0308 (0.0199)	-0.0175 (0.0278)	0.4053 (0.5804)	-0.2944 (1.3811)
Dum_F2	-0.0028 (0.0058)	-0.0027 (0.0040)	-0.0980 (0.1689)	-0.1704 (0.2005)
Dum_F3	0.0093 (0.0066)	0.0008 (0.0052)	0.2898 (0.1926)	0.2503 (0.2610)
AS	-0.0047 (0.0088)	-0.0686*** (0.0110)	-1.1864*** (0.2575)	-2.7864*** (0.5451)
MC	0.0227*** (0.0037)	0.0273*** (0.0044)	1.1156*** (0.1087)	1.4654*** (0.2205)
BC	0.0042** (0.0019)	0.0013 (0.0017)	0.1107* (0.0565)	-0.0555 (0.0856)
BS	0.0010 (0.0011)	-0.0008 (0.0010)	-0.0152 (0.0332)	0.0299 (0.0502)
BT	-0.0014 (0.0011)	0.0004 (0.0011)	0.0247 (0.0309)	0.0051 (0.0547)
LV	-0.2108*** (0.0199)	-0.0840 (0.0205)	-0.2063 (0.5830)	0.1893 (1.0205)
Obs	855	430	855	430
R2	0.2172	0.2467	0.1539	0.1627

Robust Standard errors in parenthesis ()

Note:

- - Significant at 10%
- ** - Significant at 5%
- *** - Significant at 1%

Table 8 –Fixed Effects Regression Output on German-Specific Data Set

Variable	ROA		Tobin's Q	
	Fixed Effects (FE)	FE With Lagged Board Variables	Fixed Effects (FE)	FE With Lagged Board Variables
	(1)	(2)	(3)	(4)
Dum_CR	-0.0060 (0.0124)	-0.0110 (0.0140)	-0.0235 (0.1797)	0.1844 (0.1977)
GD	-0.0854* (0.0472)	-0.0708 (0.0457)	-0.6671 (0.6835)	0.9649 (0.6066)
GC	0.0082 (0.0374)	0.0100 (0.0439)	0.1068 (0.5419)	-0.5366 (0.5832)
Dum_F2	-0.0104 (0.0150)	-0.0348** (0.0155)	0.1583 (0.2176)	0.2519 (0.2060)
Dum_F3	0.0169 (0.0125)	0.0071 (0.0131)	0.0177 (0.1812)	-0.3363** (0.1746)
AS	0.0477*** (0.0126)	0.0781*** (0.0166)	-0.1185 (0.1823)	-0.3623 (0.2209)
MC	0.0228*** (0.0053)	0.0214*** (0.0066)	0.9334*** (0.0774)	1.0123*** (0.0873)
BC	0.0144** (0.0059)	0.0066 (0.0070)	0.0446 (0.0857)	0.0540 (0.0927)
BS	0.0008 (0.0022)	0.0003 (0.0028)	0.0039 (0.0325)	-0.0511 (0.0373)
BT	-0.0040** (0.0017)	-0.0001 (0.0021)	0.0012 (0.0249)	-0.0374 (0.0280)
LV	-0.3725*** (0.0335)	-0.3787*** (0.0381)	-0.4057 (0.4852)	-0.2692 (0.5064)
Obs	425	340	425	340
R ²	0.3629	0.3524	0.3243	0.3834

Robust Standard errors in parenthesis ()

Note:

- - Significant at 10%
- ** - Significant at 5%
- *** - Significant at 1%

Table 9 – Fixed-Effects Regression Output on India-Specific Data Set

Variable	ROA		Tobin's Q	
	Fixed Effects (FE)	FE With Lagged Board Variables	Fixed Effects (FE)	FE With Lagged Board Variables
	(1)	(2)	(3)	(4)
Dum_CR	-0.0022 (0.0059)	0.0029 (0.0060)	0.2583 (0.2964)	0.6015* (0.3452)
GD	-0.1153** (0.0577)	-0.0178 (0.0290)	-1.4701 (2.8747)	-1.3216 (1.6741)
GC	0.0103 (0.0309)	0.0190 (0.0310)	0.1204 (1.5423)	-1.1282 (1.7884)
Dum_F2	0.0069 (0.0063)	-0.0047 (0.0043)	-0.0088 (0.3143)	-0.2480 (0.2508)
Dum_F3	0.0106 (0.0071)	-0.0103* (0.0059)	0.4168 (0.3524)	0.2961 (0.3398)
AS	-0.0702*** (0.0108)	-0.0912*** (0.0132)	-2.8909*** (0.5408)	-3.8775*** (0.7614)
MC	0.0277*** (0.0044)	0.0211*** (0.0052)	1.4637*** (0.2197)	1.7584*** (0.3003)
BC	0.0012 (0.0016)	0.0023 (0.0017)	0.1185 (0.0789)	-0.1093 (0.1005)
BS	-0.0011 (0.0011)	-0.0007 (0.0011)	-0.0263 (0.0569)	0.0053 (0.0615)
BT	0.0005 (0.0011)	-0.0002 (0.0013)	0.0176 (0.0554)	-0.0439 (0.0723)
LV	-0.0842*** (0.0203)	-0.0856*** (0.0238)	-0.1552 (1.0131)	1.4409 (1.3728)
Obs	430	344	430	344
R ²	0.2495	0.3319	0.1616	0.1747

Robust Standard errors in parenthesis ()

Note:

- - Significant at 10%
- ** - Significant at 5%
- *** - Significant at 1%

Table 10 – Difference-In-Difference Approach

Variable	ROA		Tobin's Q	
	Two Females On Board	Three Females On Board	Two Females On Board	Three Females On Board
	(5)	(6)	(7)	(8)
Treatment	-0.0073 (0.0066)	0.0011 (0.0073)	-0.1465 (0.1979)	0.2429 (0.1916)
DiD	0.0016 (0.0075)	0.0053 (0.0058)	0.1073 (0.1547)	0.0066 (0.1288)
AS	-0.0050 (0.0347)	-0.0044 (0.0347)	-1.2980** (0.6235)	-1.3175** (0.6353)
MC	0.0240*** (0.0084)	0.0234*** (0.0082)	1.0310*** (0.1351)	1.0211*** (0.1289)
BC	0.0034 (0.0024)	0.0036 (0.0025)	0.0883 (0.1055)	0.0932 (0.1076)
BS	0.0017 (0.0011)	0.0013 (0.0010)	-0.0035 (0.0230)	-0.0082 (0.0299)
BT	-0.0014 (0.0017)	-0.0012 (0.0017)	0.0184 (0.0301)	0.0280 (0.0290)
LV	-0.1960*** (0.0475)	-0.1975*** (0.0479)	0.0997 (0.6977)	0.1230 (0.7033)
Obs	855	855	855	855
R2	0.1979	0.1975	0.1314	0.1331

Robust Standard errors in parenthesis ()

Note:

- - Significant at 10%
- ** - Significant at 5%
- *** - Significant at 1%

Table 11 – Difference-In-Difference Approach on German Dataset

Variable	ROA		Tobin's Q	
	Two Females On Board	Three Females On Board	Two Females On Board	Three Females On Board
	(5)	(6)	(7)	(8)
Treatment	-0.0150 (0.0203)	0.0107 (0.0169)	0.1051 (0.1418)	0.0166 (0.1399)
DiD	-0.0067 (0.0181)	-0.0012 (0.0123)	-0.0804 (0.1759)	-0.1602 (0.1384)
AS	0.0473 (0.0326)	0.0454 (0.0307)	-0.1762 (0.4046)	-0.1915 (0.4062)
MC	0.0268** (0.0116)	0.0273** (0.0121)	0.9200*** (0.1506)	0.9313*** (0.1512)
BC	0.0121 (0.0097)	0.0115 (0.0094)	0.0219 (0.0409)	0.0229 (0.0454)
BS	0.0013 (0.0019)	0.0012 (0.0019)	0.0042 (0.0264)	0.0032 (0.0260)
BT	-0.0042* (0.0024)	-0.0039 (0.0017)	0.0025 (0.0310)	0.0014 (0.0308)
LV	-0.3367*** (0.0475)	-0.3348*** (0.0702)	-0.2328 (0.4987)	-0.2139 (0.4948)
Obs	425	425	425	425
R2	0.3398	0.3368	0.2850	0.2877

Robust Standard errors in parenthesis ()

Note:

- - Significant at 10%
- ** - Significant at 5%
- *** - Significant at 1%

Table 12 – Difference-In-Difference Approach on Indian Dataset

Variable	ROA		Tobin's Q	
	Two Females On Board	Three Females On Board	Two Females On Board	Three Females On Board
	(5)	(6)	(7)	(8)
Treatment	-0.0040 (0.0056)	-0.0040 (0.0058)	-0.2003 (0.2503)	0.1412 (0.2498)
DiD	0.0024 (0.0051)	0.0067 (0.0076)	0.1929 (0.2051)	0.2086 (0.2516)
AS	-0.0710 (0.0387)	-0.0705* (0.0390)	-3.0696*** (1.0708)	-3.0215*** (1.0878)
MC	0.0274*** (0.0059)	0.0264*** (0.0056)	1.1577*** (0.2488)	1.1352*** (0.2406)
BC	0.0012 (0.0019)	0.0013 (0.0020)	0.1024 (0.1123)	0.1094 (0.1152)
BS	0.0000 (0.0012)	-0.0000 (0.0011)	0.0137 (0.0340)	0.0047 (0.0312)
BT	0.0003 (0.0012)	0.0004 (0.0013)	0.0173 (0.0551)	0.0305 (0.0513)
LV	-0.0780** (0.0311)	-0.0774** (0.0308)	0.4508 (1.3772)	0.4832 (1.3354)
Obs	430	430	430	430
R2	0.2216	0.2220	0.1314	0.1335

Robust Standard errors in parenthesis ()

Note:

- - Significant at 10%
- ** - Significant at 5%
- *** - Significant at 1%

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