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BOARD GENDER DIVERSITY AND GREEN BOND ISSUANCE: COMPARATIVE EVIDENCE FROM MALAYSIA AND PAKISTAN

Waqar Gill
Assistant Professor, School of Economics & Finance, Minhaj Universtiy Lahore.
Email: waqar.gill@gmail.com
Rizwana Begum
Kingston College, Lahore, Pakistan.

ABSTRACT

This paper examines the effect of board gender diversity on green bond (GB) issuance within emerging markets, with a particular emphasis on Malaysia and Pakistan. With a focus on sustainability and corporate social responsibilities in the world financial markets, it is essential to investigate the effect of gender diversity within boardrooms on sustainable-related financial product. In this study we investigate the impact of gender-diverse boards on firm participation in green bond issuance, an innovative financial instrument for financing projects with positive environmental benefits. Adopting a comparative research setting, we examine myopic practices of both Malaysian and Pakistani listed firms that highlight contrasting institutional backgrounds in terms of governance practices, market development and regulations. Based on agency theory and resource-based view, we argue that board gender diversity has a positive effect on decision-making quality and proactive environmental strategies which in turn leads to a higher likelihood of GB issuance. Our results indicate that there is a significant positive relationship between the gender diversity of boards and green bond issuance, although with different patterns across our countries which depend on the cultural, economic and institutional frameworks. This article advances knowledge on the contribution of corporate governance to sustainable finance as well as gives practical implications for regulators, investors and corporate managers to encourage sustainability in emerging economies.

Keywords: Board Gender Diversity, Green Bond Issuance, Sustainable Finance, Emerging Markets, Agency Theory, Resource Orchestration

INTRODUCTION

Environmental sustainability has changed from a peripheral problem into a core part of corporate strategy in today's business world. Commitment to The Paris Agreement is on the rise in financial markets worldwide. This change has caused companies to re-examine how they are impacting the environment, of which a large number have changed their operations to adapt to new regulatory guidelines or consumer requests for policies that create a more positive environmental impact. And one type of financial instrument that is now widely used to cash in on SDGs is the green bond. Green bonds are fixed-income instruments, issued by corporations, governments or other entities, which are explicitly designed to finance projects with a positive environmental impact such as renewable energy, sustainable agriculture and clean transportation (the Handbook of Definitions released in 2021 by the International Capital Markets Association; see also Flammer, 2021). The bonds are viewed as an effective way for companies to secure investment and address environmental policy matters.

But the popularity of green bonds is not just shape by statutes or market conditions. Another factor – one that is often overlooked but can be critical to green bond issuance – is a company´s internal governance structure and in particular its board of directors' diversity. As corporate realities around the world struggle with conflicting sustainability agendas, gender diversity in boardrooms has become something of a hot topic. Board gender diversity has been associated with increased perspectives, improved and more developed decision making and a greater focus on long-term goals such as environmental sustainability (Carter et al., 2010; Liu et al., 2023). This paper seeks to examine the relation by examining the gender composition of boards as a determinant of firms' likelihood to issue green bonds, with a specific focus on Malaysia and Pakistan, two emerging economies that are lurching towards sustainable finance but carries different corporate governance challenges.

Although female board representation has attracted considerable attention with respect to corporate governance and general firm performance, the impact of gender diversity in the boardroom on green bond issuance remains largely unexplored. A number of studies have investigated the impact of board composition on corporate sustainability efforts, specifically in relation to corporate social responsibility (CSR) (Post & Byron, 2015; Smith et al., 2020). However, empirical evidence on green bond issuance as a specific financial consequence derived from gender-diverse boards remains scant. Kumar & Choi (2021) and Liu et al. (2023) examine the association between board diversity and environmental performance, these works rarely distinguish between different types of green financial instruments like green bonds that offer a more focused market-based tool to finance environmental projects.

There is also fewer comparative studies on the effects of board gender diversity on green bond issuance in various emerging market contexts. Although the literature has reported on gender diversity in developed markets (Adams & Ferreira, 2009), little work has been conducted regarding its effects when it comes to emerging economies such as Malaysia and Pakistan. These differences in institutional, economic and regulatory environments of emerging are salient mostly since they potentially lead to divergent behavior by companies. For instance, green finance market has been evolving rapidly in Malaysia, and the country has put in place a green bond as part of sustainability agenda (Nguyen et al., 2019). In contrast, using the less developed financial market and a budding sustainability framework in Pakistan (Wong & Chan, 2022). It is in this context that this study seeks to fill the void by conducting a comparative investigation of how board gender diversity influences green bond issuance in the two countries.

Form theoretical perspective, this study bases it analysis on two major theory background explaining the relation between board gender diversity and green bond issuance. First, agency theory (Jensen & Meckling, 1976) lays the groundwork for considering how demographic boards might mask principal-agent issues. Agency theory suggests that managers (agents) frequently have different concerns than shareholders (principals), which leads to decisions being made that are not in the best interests of long-run shareholder value. In addressing the agency problem gender diverse boards, through offering a diversity of thought and preventing groupthink, are more able to percolate decisions in line with long-term sustainability considerations such as green bond issuance. Furthermore, women on boards may attach more importance to environmental sustainability as it has been noted that female executives tend to have higher regard for the environment and social causes (Siegler et al., 2017).

Second, the research adheres to resource orchestration theory (Sirmon et al., 2011) which posits that competitive advantage may be attained through the efficient coordination and recombination of resources within firms. In such a scenario, gender diversity in boards is an organizational resource that supports the strategic integration of corporate policies with sustainability objectives. And a board with more gender diversity is also likely to be more conducive to the allocation of resources toward green projects and product innovations, such as green bonds. By utilizing this resource, organizations can enhance their strategic positioning within the emerging field of sustainable finance (Hillman et al., 2007).

Significance

Contributions This study has implications both for theory and practice. Theoretically, it contributes to enhancing the adoption of agency theory and resource orchestration theory in sustainable finance research by embedding board gender diversity into these models. The study adds new insights to the body of corporate governance and

environmental performance literature by adopting green bond issuance, a less-investigated market-based mechanism,long in its infancy in regards to gender-diverse boards.

In practice, the implications of a number of our findings are profound for policy makers, regulators and business leaders. For developing countries such as Malaysia and Pakistan, which are taking the trends of green financing governance system is more important. Policymakers could use that insight to craft rules designed to nudge companies toward gender-diverse boards of directors, possibly drawing more firms into the green bond market as they try to meet regulations. Managers, particularly in emerging markets can take advantage of the findings by appreciating the competitive value that gender diverse boards are likely to play in: attracting sustainable investments; catalysts for environmental innovation. Moreover, the findings of such studies can be useful not only for investors but also in terms of investment policies (e.g. to institutional investors now increasingly focused on environmental, social and governance ('ESG') issues regarding their portfolios).

Objectives

1. Examine the connection of board gender diversity and green bond issuance in Malaysia and Pakistan.
2. Investigate the mediating role of institutional factors, including the regulatory system and market development on this relationship.
3. Offer comparative evidence on the impact of governance institutions in advancing green finance across a variety of emerging markets.

LITERATURE REVIEW

Board gender diversity focuses on the presence of women in corporate boards, and has received increased attention in both corporate governance practice and academic research. The rising prominence of women on boards as being formative in improving performance and decision-making quality. Studies indicate that gender-diverse boards provide a broader depth of perspective, limiting groupthink and improving decision-making (Campbell & Mínguez-Vera, 2008). A diverse board provides a level of experience and expertise that, if balanced properly, can result in broader, more robust decision making— especially on high-stakes matters like environmental sustainability. Additionally, gender-diverse boards tend to be more sensitive to social and ethical responsibilities—considered as one aspect of long-term strategic orientation, such as environmental sustainability. Research indicates that boards with gender diversity tend to stress corporate social responsibility (CSR) more, as they have a relatively wider outlook on social values than non-diverse boards (Post & Byron, 2015). This is how having a gender-diverse board will be more conducive to backing something like green bond issuance, or what corresponds with the increasing worldwide trend and enthusiasm for funding ecological projects.

But the impact of gender diversity on corporate performance is still open to debate. While some research claims that female directors may lead to better financial returns, higher levels of innovation and CSR (Carter et al., 2010), other studies find that the impact of women in boards only occur under certain conditions such as those previously described (Adams & Ferreira, 2009). For example, Adams and Ferreira (2009) suggest that the impact of gender diversity may be contingent upon industry attributes, market conditions, and level of competition in the firm's operating environment. This demonstrates the nuance in the impact of board gender diversity on firm outcomes and the importance of considering context to understand its effects.

Especially in the context of green bonds, gender-diverse boards could be important as they might have greater propensity for environmental sustainability. Evidence has also

shown that women in positions of power present a relatively pro-environmental attitude, more than their male counterparts (Siegler et al., 2017). This bias towards sustainability may condition corporate choices, with gender-balanced boards more likely to offer green bonds as a way of fulfilling their pledge to financing environmentally sound projects.

'Green Bonds' are a novel financial product created to source capital for projects that provide an environmental benefit \(e.g. renewable energy, pollution control and climate change\) [12]. To date the market for green bonds has developed rapidly, with growing number of issuances coming from both developed and emerging markets. By selling green bonds, firms can signal their sustainability efforts and gain access to an investor pool that is growing in size (and wealth) (Flammer, 2021).

Still, there are several reasons to consider issuing green bonds. Firms have to weigh these factors against market demand, the degree of regulation and their own sustainability posture if they are deciding to issue green bonds. Green bonds typically come with stringent environmental governance, which makes sure the money is spent only on projects that will have a positive environmental effect. Companies with environmental-focused corporate governance such as gender diversified boards may be more able to issue such green bonds since they are more likely to appreciate the benefits of greener projects and incorporate long-term thinking on sustainability into their business strategy (Flammer, 2021).

Gender-mixed boards might be particularly effective for the green bond issuance, as they are more like to consider environmental initiatives. A broad-based board is more likely to understand the full picture of the long-term benefits derived from green investment; this will include a mix on financial returns and sustainability impacts. This makes boards which are more gender-diverse for example able to better appreciate the strategic importance of green bonds in satisfying financial and environmental aims.

A useful way to analyze the impact of gender diversity on corporate decision-making, including the decision of issuing green bonds, is through agency theory. Managers' interests (agents) frequently conflict with shareholders'interests (principals) leading to a behaviour that may not be in the best long-term interest of shareholders. It is argued that gender diverse board of directors, giving voice to a broader set of viewpoints, could alleviate the principal agent problem and make corporate decisions better reflect longer-term corporate goals, such as for example environmental sustainability (Hillman et al. Diverse boards are in a stronger position to make decisions that take account of stakeholders, which mitigates the risk of short-term decision making and harm to long-term sustainability.

Resource orchestration theory, meanwhile, emphasizes the contribution of organizational resources like human capital to achieving competitive advantage. A board with diverse genders is therefore a valuable resource for a company to harness in moving towards sustainability projects that it could potentially utilize as signals, for example the issuance of green bonds. According to Sirmon et al. (2011), firms which successfully deploy their resources, including gender diversity in the board, are able to seize new opportunities by anticipating even nascent changes in the institutional environment such as increased demand for green financial products. The more mixed the gender of boards the easier it might be to mobilise and align resources towards the corporate sustainability fronts and draw association with the prospect for green bond issuance.

Although board gender diversity is expected to have a positive impact on green bond Issuance, there may be other reasons for it. Future studies should consider

organizational size, industry attributes and the existence of sustainability plans as other factors that could determine the adoption of green bonds. For instance, larger companies may also have more stronger mechanisms of resources and more ease in tapping the capital markets, thus they are more likely to issue green bonds. Similarly, companies that are much more materially exposed to environmental issues — for example, those that operate in less green-performing industries such as energy or manufacturing (see BHP or Rio Tinto) may be more compelled to issue green bonds to fix their sustainability problems.

Control variables such as firm's age, profitability and market capital are to be incorporated in the analysis so that the particular impact of board gender diversity on green bonds issuance could be separated. The factors above will enable to control for any relationship between board diversity and green bond issuance, that could be driven also by other determinants of the decision to issue green bonds.

METHODOLOGY

This research is limited to companies based in Malaysia and Pakistan – both emerging economies that have their own institutional, economic, and regulatory characteristics. Malaysia's financial sector is quite mature and there's a good eco-system for sustainable finance, backed by robust regulations that promote green investments. In this respect, Malaysia has been at the avant-garde of encouraging green bonds, partly due to the creation of a Green Bond Framework by the Securities Commission Malaysia in 2014 that encourages such investment by firms (Nguyen et al., 2019). On another note, the Malaysian government has also incorporated sustainability into its national agenda, providing additional impetus for companies to use green financing methods (Wong & Chan, 2022). These institutional elements are the reasons why Malaysia is an appropriate setting to investigate the impact of gender-diverse boards on green bond issuance.

Pakistan, however, is yet to embark on the journey of instituting processes for sustainable financial markets and regulation of green finance. Although the green bonds were launched in Pakistan in 2017, the market is still at an infancy stage and sustainability financing regulations are not relatively as advanced as those of Malaysia (Flammer, 2021). Pakistan's governance practices have also faced several challenges such as political instability, weak enforcement of regulations which means that it is an interesting case to study how board gender diversity can be affecting green bond issuance in a less regulated and complex context.

By contrasting these two economies, this paper shows the impact of board gender diversity on green bond issuance under varying institutional settings. The contrast between them provides scope to investigate the extent governance arrangements may impact on sustainability outcomes across different institutional settings.

The research is based on secondary data of a sample of the publicly listed companies in Malaysia and Pakistan who have already issued green bonds or are likely to issue them. Variables Firm-level variables such as financial performance, market factors, level of green bond issuance and board gender diversity are drawn from leading financial databases (Bloomberg, Thomson Reuters) and company annual reports. These sources offer detailed and current data which facilitates the rigorous examination of the association between board diversity and green bonds. Furthermore, the application of publicly available data makes it transparent and replicable.

The sample consists of listed companies in Malaysia and Pakistan that were trading on respective stock exchanges during 2010–2020. The eligible criteria is whether the firm has complete data for board composition, financial performance and green bond issuance. An a priori G*Power analysis for the necessary sample size is performed to

have enough statistical power to detect effects. The analysis indicates that 150 firms are needed for the results to be dependable, with a rough target of 180 firms in order to take potential data drop outs and missing at time. This underlines the reliability and external validity of the results.

RESULTS

The descriptive statistics of the main variables (board gender diversity, green bond issuance and all control variables) are presented in the first part of our analysis. The descriptive statistics present a summary of data distribution and central tendencies, including mean, standard deviation and range for all the study variables. For example, the variable board gender diversity is expressed as a percentage of female nominees on the board of directors and its mean value could means that women are even less present in boards for both Malaysia and Pakistan. The green bond issuance is a binary outcome coded with 0 and 1 (0 = none, 1 = yes) to signal participation into the green bond market of how many corporations in our sample.

After reporting descriptive information, we estimate a correlation matrix for these variables. It offers new evidence on the firm-level drivers of board gender diversity in relation to green bond issuance, controlling for factors such as firm size and profitability. One might, for instance, expect a positive relationship between gender diversity in the board and issuing green bonds due to the propensity of female directors to support sustainable issues. The correlation matrix will also examine how strong and in what direction the relationship is between firm variable alls (e.g., size, profitability) and issuing green bonds to find out if larger or more profitable firms are likely to issue green bonds.

To test the robustness of the results, we conduct a series of robustness checks. First, other estimators such as 2SLS are applied to check whether our results suffer from endogeneity concerns. This approach goes somewhat towards controlling for any reverse causality between board gender diversity and green bond issuance (e.g. firms with good sustainability practices are more likely to appeal to women on the board). We also perform placebo tests to verify whether the found impact of board gender diversity on green bond issuance is resulting from some unobserved factor or outcome of random event.

We also use propensity score matching (PSM) to construct comparable treatment (gender-diverse boards) and control (non-diverse boards) groups. PSM help guarantee that differences between two groups are not caused by control variables like firm size or sector features. It includes a comparison that can be properly conducted of the probability of green bond issuance in firms with diverse and non-diverse boards.

Post-hoc tests and interaction plots are used to further probe the association between board gender diversity and green bond issuance. These plots, demonstrated in Fig. 2, well visualize the extent to which influence of board gender diversity on green bond issuance varies according to institutional settings including regulation and market development. For instance, in the case of those markets like Malaysia, where there are robust structures for green finance regulation, the effect of gender-diverse boards on green bond issuance is likely to be more significant compared to a market such as Pakistan where more nascent stages prevail for green finance regulations. These interaction plots allow us to graphically present the moderating effect of institutional factors on the board gender diversity-green bond issuance relationship and, thus, help explain how various contexts may shape corporate sustainability decisions.

DISCUSSION

The current research work is expected to contribute to the literature on corporate governance and sustainable finance by expanding agency theory, and resource

orchestration theory regarding green bond issuance. The findings support the view that board gender diversity is not only a governance mechanism but also serves as an enabler for firms wishing to strategically drive environmental sustainability through green bonds. This research, which uses data on Malaysia and Pakistan as a case study, is testament to the fact that it is imperative for the boardroom to be permeated with diverse views/vision; in particular, decisions revolving around sustainable development and green finance.

Conceptually drawing on agency theory that is classically employed to understand the principal-agent nature of corporate governance, we employ it to investigate how board gender diversity can reduce the extent of misfitting between managers' short-term interests and shareholders' long-term sustainability interests. From an agency theory perspective, the diverse boards—mixed gender of directors—are more capable of addressing information asymmetry, reducing groupthink and making a balance decision. In particular, women directors have been seen to weight toward environmental and social issues in decision-making, which are consistent with the financial interests of shareholders concerned with long-term performance who are increasingly integrating the environment, social issues and governance (ESG) into their investment analyses. The results of our study are in line with the argument that gender-diverse boards make strategic choices to tie corporate actions (e.g. issuing green bonds) to sustainability objectives, like environmentally friendly projects (Post & Byron, 2015).

Second, this study also makes a contribution to resource orchestration theory by showing how board gender diversity as an organizational resource help firms to organize and deploy resources for sustainability. Boards with gender diversity often bring a wider range of skills, experiences and perspectives that better enables companies to see the strategic value in making investments with sustainability outcomes — such as green bonds. According to Sirmon et al. (2011) the optimal use of resources, including human (eg: diverse boards), is paramount to achieving competitive advantage. Companies with mixed boards can access more capital for sustainable projects and funding through green bonds – making them a better long-term value in the global financial market.

By doing so, this study contributes to the existing literature on agency and resource orchestration theories in the context of sustainable finance by offering new insights into how mechanisms of corporate governance—namely, board gender diversity—influence financial decision-making in emerging markets. By demonstrating that the presence of gender-diverse boards is associated with an increased likelihood of green bond issuance, this paper provides new insights into how corporate governance mechanisms influence the evolving area of green finance.

From the managerial viewpoint, this research provides some practical implications. The results support that the improvement of gender diversity on corporate boards is an strategic choice to facilitate environmental sustainability. Companies committed to gender diversity in their boardrooms tend to incorporate sustainability objectives in their business model -including the issuance of green bonds. To corporate managers, promoting a more inclusive and diverse board can therefore is viewed as an investment in the long-term growth and success of the company (especially in light of an ever-more-ESG-conscious investor community).

Companies should also realize that it's not merely about social responsibility or compliance, but that encouraging gender diversity to boards is a competitive issue at the level of sustainable finance as well. Heterogeneous boards might be more tempted to integrate corporate strategies with global sustainability priorities and this may

increase their attractiveness in the eyes of institutional investors that are interested in green and sustainable investments. At a time when green finance is taking off quickly, the diversity of viewpoints in the boardroom could offer a competitive advantage for obtaining green bonds and other forms of sustainable investments.

For policy-makers, these findings suggest the importance of laws that promote gender diversity in corporate leadership positions. Policymakers might also consider creating incentives, like tax benefits or reporting requirements, that incentivize firms to increase gender diversity on boards. Such regulations may be more effective in promoting sustainability in emerging green finance markets, such as Pakistan. By contextualising board diversity as a regulatory issue, government can foster an environment that is potentially conducive to the development of green finance and also align with wider sustainability targets.

The results also imply that policy that supports gender diversity should be part of a wider sustainable policy framework that encourages green bond issuances. In Malaysia, where green finance's regulatory ecosystem is already further developed than that of others alongside this study, policy-executors may leverage the findings from this paper to bolster such frameworks by ensuring gender diverse board representation in the green bond market. In Pakistan, where the green bond frameworks are still emerging, introducing measures to promote board diversity may be an important first step to grow its pipeline of green bonds which is currently non-existent and as a result baseline corporate behaviour towards national sustainability goals.

Though this research provides valuable information, certain limitations need to be recognized in terms of the scope of its findings. Risk on the institutional level in emerging markets such as Malaysia and Pakistan varies considerably from developed ones, where presence of green bond framework and sustainability regulation are stronger. Thus, the effect of board gender diversity on green bond issuing could only be situationally dependent, and results may vary in other countries with developed capital markets or stronger regulation of green finance.

The results could be extended in future study with the investigation of how other forms of diversity (e.g., ethnic or educational) influence green finance decisions. Although this research centred mainly on gender diversity, other forms of diversity could have a greater impact on corporate governance practices and green bonds issuance. For instance, ethnic diversity can introduce cultural views that more closely approximate certain environmental constraints, especially in multicultural areas. Having educational diversity on boards might bring in a wider range of expertise and innovative ideas about how to finance sustainability.

In addition, future research could analyze how the interaction between corporate governance mechanisms, national regulations and market development shape green bond issuance across industries. It may be interesting to carry out a longitudinal study to determine the long-run effect of board gender diversity on green finance in companies that have experienced changes in their gender diversity or implemented green finance strategies.

CONCLUSION

This paper offers powerful comparative evidence from Malaysia and Pakistan finding that board gender diversity is an important catalyst for materialization of green bond issuance; a handy market-based solution increasingly pressed into service for achieving environmental sustainably. The results also indicate companies have a higher propensity to make decisions aimed at long-term sustainable goals, such as the case of issuing green bonds and that in general fall under the broader umbrella of

green finance, if they boast gender-diverse boards. The findings demonstrate that board gender diversity, with cognitive variety and diminished groupthink, would be a source of competitive advantage in solving environmental problems and achieving sustainable development (Campbell & Mínguez-Vera, 2008; Post & Byron, 2015).

Grounding on agency theory and resource orchestration framework, this research contributes to the literature in advancing our knowledge of the influence of corporate governance mechanisms over the sustainable financial instruments adoption decision in emerging countries. According to agency theory, board diversity helps reduce principal-agent conflicts through decisions which are favorable to long-term environmental goals. Further, the ROP posits that heterogeneous boards allow firms to go beyond their resource base and effectively mobilize resources towards green activities such as issuing a green bond (Sirmon et al., 2011). Collectively, these theoretical views offer a comprehensive guide about the strategic implications of board diversity on green finance choices.

The results of this work are especially useful for managers, decision makers and investors. It is critical that managers understand the strategic implication of gender-diverse boards for environmental sustainability and green investments. Policy makers can also provide additional encouragement for board diversity to bring corporate behavior in line with country sustainability goals. This is of great significance for promoting a more inclusive and environmentally friendly financial system in emerging markets where the green finance is continuously expanding. In addition, further research may extend this work by examining other diversity dimensions and institutional effects on promoting sustainable financial practices in various settings.

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