GENDER DIVERSITY IN THE BOARD ROOM AND SUSTAINABLE GROWTH RATE: MODERATING ROLE OF FAMILY OWNERSHIP

Abstract

This study examines the impact of gender diversity on sustainability growth, and a moderating role of family ownership in an emerging economy, Pakistan. We employed 3730 firm-year observations, comprising of 307 non-financial listed firms on Pakistan Stock Exchange, over a period of 2008-2020. Using framework of agency theory, resource dependence theory and social identity theory, we report that gender diversity results in higher sustainable growth rate in our sample firms. Further, our results indicate that due to strong identification of family owners with their firms, their presence positively moderate this relationship. Overall, we report that despite a weak corporate governance mechanism, the presence of female directors and family owners in our sample firms result in a higher firm growth and low agency conflicts, which serves as positive signals for the investors. Our study provides empirical support to the mandatory appointment of female directors on the corporate board by Listed Companies (Code of Corporate Governance) Rules, 2017, and urge the policy makers to focus on capacity building and skill enhancement of female workforce.

1. Introduction

The separation of ownership and control function in the public listed firms and the divergence of interest between the shareholders and managers has been a major cause of concern for the investors. The downfall of Maxwell and Enron was considered a major failure of corporate governance and raised the fear among the shareholders regarding the safeguard of their wealth (Stiles and Taylor 1993; Vinten 2002). While, the several governance problems emerged from the wreckage of Maxwell and Enron, nevertheless, the passive and ineffective board was among the major reasons for these corporations' failure. Contextually, the publication of Cadbury report (1992) in UK and formulation of Sarbanes Oxley Act (2002) in USA, was considered a significant advancement in the corporate governance mechanism that urged the presence of effective board in the limited liability corporations for the management's monitoring and protection of shareholders (Solomon 2020).

Consistently, in Pakistan, the Listed Companies (Code of Corporate Governance) Regulations, 2017, laid down various governance provisions applicable on the listed firms. Evidently, the firms listed on Pakistan Stock Exchange (PSX) are mainly (around 62%) family firms, therefore, the implications of governance regulations for the protection of minority shareholders are important. Moreover, Pakistan is an emerging country with weak regulatory framework and like other emerging markets, is subject to weaker formal and informal institutions (Mirza et al. 2012). In this scenario, the implications of governance measures for the mitigation of principal-principal conflict

are necessary for the safeguard of wealth of minority shareholders. Overall, the code provided for the various measures for the effectiveness of corporate governance such as; number of directorship and composition of board, responsibilities of board of directors, and committees of board. From gender diversity point of view, the code mandated the listed companies to have at least one female director on their corporate board. While the placement of female directors on boards and allocation of gender quota on boards of listed firms across the globe gained significant attention of the researchers, the mandatory appointment of females on listed firms by regulators in Pakistan compelled the research scholars to investigate the effect of this provision on various firm outcomes in PSX listed firms.

The wide array of literature considers the gender diversity an important characteristic of the effective board (Gyapong et al. 2021). As compared to men, females are considered more independent and tough monitors, and their presence has been associated with better monitoring and better firm performance (Adams and Ferreira 2009). The increased benefits associated with females urged policy makers across the globe to increase their presence on corporate boards of listed firms (Terjesen et al. 2009). For instance, the federal legislation in France and Norway requires presence of at least 40% females on corporate boards. Similarly, the National Association of Corporate Directors Blue Ribbon Commission in USA recommended the fair representation of females on the corporate boards.

Moving ahead, the sustainable growth is desired by the corporations to survive and to gain competitive edge in the market (Ain et al. 2021). According to Higgins (1977), the sustainable growth indicates annual sales growth that is consistent with firms' financing policy. In order to achieve long term sustainable growth, the firms consider the sustainable growth as an important area of strategic plans and firm's objectives (Sakai and Asaoka 2003). The sustainable growth, however, is strongly related to corporate governance mechanism prevailing in the firm (Ahsan et al. 2020). The main reason being the mitigation of agency conflicts due to better monitoring of management, which ultimately results in better firm performance and firm value (Ren 2015). The empirical literature, from agency theory's point of view, considered gender diversity as an important corporate governance mechanism necessary to align the interest of shareholders and managers, and to help the management in achievement of its objectives (Amin et al. 2021). Consequently, multiple studies investigated the impact of gender diverse board and highlighted the economic benefits of females on various firm outcomes such as; firm performance (e.g., Papangkorn et al. 2021), risk taking (e.g., Saeed et al. 2021), corporate social responsibility (e.g., Issa and Fang 2019), and dividend payout (e.g., Chen et al. 2017). While, the role of gender diversity on various aspects of firm outcomes cannot be denied, nevertheless, their impact on sustainable growth is an important aspect of firm performance that received limited attention. The intention of corporations to achieve long term growth to survive in competitive markets urge them to formulate long term sustainable growth strategies (Ramezani et al. 2002). In this context, Sakai and Asaoka (2003) mentioned that establishment of appropriate corporate governance mechanism is critical for the firms to attain sustainable growth. Similarly, Ahsan et al. (2020) highlighted that corporate governance system reduces the agency conflict and facilitate in achieving long term

growth objective resulting in enhanced firm value. Surprisingly, very few studies examined the influence of gender diversity on sustainable growth of the firm, which is an important determinant of firm's long term growth and increase in shareholder value. Recently, Ain et al. (2021) examined this relationship in the context of China. However, the institutional contexts and cultural factors of Pakistan differs significantly from China, which restricts the generalizability of results obtained in case of China and makes Pakistan an interesting research ground for the examination of this relationship. Overall, we are of the view that there exists a significant research gap that how the presence of female directors on the board influence sustainable growth on PSX listed firms.

The role of female directors on the corporate board, however, may also depend on the ownership structure of the firm (Ararat et al. 2015). In this context, the ownership concentration, such as; family ownership, is considered an important aspect of corporate governance mechanism that reduces the agency issues due to stringent monitoring of controlling shareholders (Martínez-García et al. 2021). Contextually, Purkayastha et al. (2019) found that presence of family owners reduces the principal-agent conflict. Similarly, Ararat et al. (2015) found the positive effects of gender diversity on firm performance in family owned firms. On the contrary, the concentration of power in a hand of few individuals such as; family, may result in exploitation of minority shareholders as the family owners may strive to pursue family agenda that may not be aligned to minority owners (Villalonga and Amit 2006). Thus, resulting in principal-principal conflict. Since, the majority of the non-financial firms listed on PSX are family owned, therefore, this study considers the family ownership an important institutional setting that shape the firm's behavior and, hence, examine the moderating role of family ownership while, investigating the relationship between gender diversity and sustainable growth. Overall, this study attempts to answer two main research questions: first, whether the gender diversity in a board room affects sustainable growth rate, and second, whether presence of family ownership moderates the relationship between gender diversity and sustainable growth of the firm?

In order to address the research question, consistent with the literature, the study use framework of agency theory, resource dependence theory and social identity theory. The agency theory points to the effective monitoring of management by the female directors. Carter et al. (2003) mentioned that presence of female on boards' results in the better monitoring of the management and result in lower agency conflicts. Similarly, the resource dependence theory associate presence of female directors with the better advice and counsel, legitimacy, and effective communication channel with the external networks (Fan et al. 2019). Finally, the social identity theory highlights that family owners identify themselves with their family firm and exhibit strong commitment and affiliation for their firms, and undertake decisions under the socio-emotional wealth perspective.

Empirically, to test the hypotheses, the study employed 3730 firm-year observations comprising of non-financial listed firms over the period of 2008-2020. Our study contributes to the literature in several ways. First, our study adds to the limited literature on the impact of gender diversity on sustainable growth. While, the empirical literature examined the effects of gender diversity on various firm outcomes such as; firm performance, risk taking, corporate social responsibility, and

dividend payout, very few studies examined the role of gender diversity on sustainable growth. Our study, therefore, extend the limited literature by examining this nexus in context of Pakistan. Second, the ownership structure of the PSX listed firms are mostly family owned. Moreover, the economy of Pakistan is characterized by weak corporate governance mechanism and less shareholders' protection. Our study in this context adds to the governance literature by examining the effects of family ownership on firm outcomes in an emerging economy. Third, consistent with the global uproar for the inclusion of female directors on the corporate board, the Listed Companies (Code of Corporate Governance) Regulations, 2017, mandated the listed firms to appoint at least one female director on the corporate board. Our study, in this scenario, complement the global efforts of policy makers by highlighting the positive effects of gender diversity on sustainable growth. Fourth, we respond to research call made by Ain et al. (2021). The author examined the nexus between gender diversity and sustainable growth in context of state controlled firms in China and urged the future researchers to examine this nexus in other institutional settings. Consequently, this study addresses the research gap extended by authors by examining the moderating role of family ownership in this regard. To the best of the author's knowledge, this study offers novel findings considering the context of Pakistan to contribute to the literature.

The rest of the study proceeds in the following manners. Section 2 discuss the background of the study; section 3 discuss the theoretical framework of the study; literature review and hypotheses development are discussed in section 4; section 5 discuss the research design; empirical results are presented and discussed in section 6; section 7 concludes the study.

2. Background

We consider examination of relationship between gender diversity and sustainable growth in context of Pakistan for several reasons. First, Pakistan is an emerging economy, and like other emerging countries the corporate sector in Pakistan requires long term approach to sustainable growth to effectively participate in global competitive market (Ikram et al. 2020). The increasing trade deficit and the declining trend in foreign direct investment urge upon the regulators to take strong measures to boost investors' confidence to attract more domestic and foreign investment in a country. In this scenario, understanding the importance of corporate governance mechanism and the role of gender diversity in achieving sustainable growth is critical. Our study, therefore, provides insight to the corporations regarding the importance of gender diversity in achieving firms' sustainability and growth. Second, the last two decades witnessed extensive debate over the effectiveness of corporate governance system and its role in mitigation of agency conflict between the management and shareholders. Consistently, the Securities and Exchange Commission of Pakistan (SECP) launched the code of corporate governance 2012 that set a minimum benchmark in terms of governance standards. The main purpose of the code was to ensure consistency in the governance practices and promote transparency through enhanced disclosure requirements. Subsequently, the Listed Companies (code of corporate governance) Regulations, 2017 laid down various mandatory requirements for the listed firms such as; number of directorship and composition of board. Relatedly, the code require presence of not less than two or one third of the board members, whichever is higher, as independent directors. Moreover, the code restricted the

number of executive directors, including Chief Executive Officer, not to be more than one third of the board of directors. Similarly, the code mandated the listed firms to include at least one female director on the corporate board. In this context, we found numerous studies (e.g., Ullah et al. 2019; Wang et al. 2019) that examined the influence of gender diverse board on various firm outcomes in Pakistan. However, the researchers reported mixed findings. For instance, using sample of 220 Pakistani listed firms for the period of 2010-2017, Ullah et al. (2019) found positive influence of female directors on firm value. Moreover, the author reported stronger influence of female directors in non-state-owned enterprises. On the other side, Wang et al. (2019) examined the impact of board diversity using the sample of PSX 100 index firms for the year 2011-2014 and reported insignificant results of female directors on firm performance. These contradictory findings highlighted in this context require further investigation into the role of female directors on firm outcomes to suggest further improvement in the governance codes. Third, the overall cultural environment of Pakistan is male dominated that restricts the formal and professional education of women. Moreover, females face barriers that inhibit their progress to the board room and restrict their participation in firms' decision making (Amin et al. 2021). In this situation, the efforts of female directors to climb the corporate ladder against the preferences of male members of the society displays their better planning and networking talents. The effectiveness of a female on corporate boards, in this scenario, is an important area of research which this study attempts to address. Finally, unlike the listed firms in developed economies that are mainly characterized by the dispersed ownership and presence of minority shareholders, the ownership in emerging markets is mainly concentrated that occur through different ownership types such as; state ownership and family ownership. Relatedly, Armitage et al. (2017) noted that principal-agent conflict is mainly visible in developed countries due to small shareholding, whereas, the principal-principal conflict is mostly evident in emerging economies with concentrated ownership and pyramidal ownership structures. In this context, Pakistan is an emerging country characterized with the weak corporate governance regulations and mainly the firms listed in PSX are family firms (Shahzad et al. 2018). According to Federo et al. (2020), family ownership offers different kind of ownership structure due to involvement of a family group in management and operations of the firm. Moreover, in such firms the family owners make strategic decisions from socioemotional wealth perspective which is referred as "nonfinancial characteristics of the firm that bear on the family's affective endowments" (Kabbach de Castro et al. 2017). Since, the social values and behavior of family owners differs from other ownership types, therefore, the examination of relationship between gender diversity and sustainable growth in presence of family owners in an emerging market context will provide interesting results for the prospective investors and policy makers.

3. Theoretical framework

3.1 Agency theory

Agency theory posits that the separation of ownership and control between the owners (shareholders) and agents (manager) give rise to agency conflict (Jensen and Meckling 1976). Being a utility maximizer, the interest of the managers diverges from the interest of shareholders

giving rise to principal-agent conflict. For instance, while shareholders are desirous of undertaking long term projects to maximize the firms' wealth, managers on the other hand, focus on short term projects to gain high salaries and benefits (Pucheta-Martínez et al. 2016). The agency literature considers board of governors as an important aspect of corporate governance mechanism to align the interest between both the parties and to reduce agency conflicts (Li et al. 2015). However, Liu et al. (2015) mentioned that board is effective if it is independent and take impartial decisions. Relatedly, the gender diverse board is considered more effective due to more independent and tough monitoring of management by the female directors (Adams and Ferreira 2009). Nguyen and Faff (2007) highlighted that gender diversity increases management effectiveness and brings more creativeness and innovation. Evidently, sustainable growth which is an indication of long-term profitability and perpetual growth, is generally a long term goal and management may be reluctant to focus on sustainable areas because the benefits of such decisions are not immediately visible (Bae et al. 2018). In this context, gender diverse board may reduce agency conflict and problem of information asymmetry by increasing board effectiveness (Elmagrhi et al. 2019), which may improve sustainable growth. Thus, we may assume that presence of female directors on the board reduce the agency conflict and increases sustainable growth rate of the firm.

In a similar vein, corporate governance literature considers the ownership concentration an effective governance mechanism that mitigates agency conflict (Anderson and Reeb 2003). From agency theory's point of view, the presence of controlling shareholders results in stringent monitoring of management, which leads to alignment of interest and wealth maximization (Gaaya et al. 2017). In this scenario, family owners provide monitoring benefits due to close and effective monitoring of management. Their diligent monitoring restricts the opportunistic self-serving behavior of managers that detracts them from creating shareholder value (Gomez-Mejia et al. 2011). In this case, we may expect higher sustainable growth rate in presence of family owners. Empirically, Jansson et al. (2016) found lower principal-agent conflict in the family-owned firms. However, the presence of family owners may result in principal-principal conflict due to their fulfillment of family agenda and involving themselves in dubious related party transactions leading to exploitation of minority shareholders. According to Villalonga and Amit (2006), the dominant position of family owners results in excessive power in hands of family to influence and control board composition and make strategic decisions of the firm. Moreover, the consideration of socioemotional wealth may force the family owners not to take risky decisions, although such decisions might benefit the other shareholders and may increase firm value in the longer term. In this perspective, Purkayastha et al. (2019) found negative effects of family ownership on firm value due to principal-principal conflict arising as a result of family's power and dominance over the firm's strategic behavior. Overall, consistent with the literature, we consider agency theory as a basic framework to discuss the agency conflict in our sample firms and its effects on sustainable growth rate of the firm.

3.2   Resource dependence theory

The resource dependence theory posits that firms depend on the external environment for their survival (Pfeffer and Salancik 1978). The uncertainties arising in this context poses serious challenge to the firm. In order to reduce their dependence and acquire resources, firms develop linkages with the external environment. The theory considers board of directors an important linkage between the firm and external resources. The board of directors, in this scenario, benefits the firms by providing strategic advice and counsel to the management, by bringing legitimacy to a firm in the eyes of a society, and by providing external communication channels and acquisition of external resources through these channels. In a similar vein, the academic literature provides the effects of gender diverse board on the benefits outlined by the resource dependence theory acquired through links of board of directors (Fan et al. 2019: Hillman et al. 2007). In this context, gender diverse board provides solution to complex problems, facilitate creativity on the board, and leads to higher quality discussions on the board (Huse and Solberg, 2006). Due to different skills and knowledge base, the female directors bring unique and different perspectives that are divergent to male members. Further, the society consider gender diverse board more legitimate, and due to different experience sets and beliefs, as compared to men, the female directors offer better linkages between the firms and outside suppliers such as; investors (Hillman et al. 2007). In this scenario, the gender diverse board may increase the effectiveness of the firm in the eyes of stakeholders through better skills and corporate decision making. Consequently, the management may feel pressure to improve sustainability for the satisfaction of stakeholders and gain access to the external resources. In summary, the resource dependence theory, points to the benefits of gender diverse board for the firm through better decision making and by offering better linkages with the external environment that may lead to higher sustainable growth.

4. Literature review and hypotheses development

4.1 Gender diversity and sustainable growth

The agency literature considers board of directors an important mechanism that reduce the agency conflict through intense monitoring of management. The board of directors of the firm are mainly entrusted with four important functions: to provide direction, executive management, accountability, and supervision (Stiles and Taylor 1993). In a similar vein, Sarhan et al. (2019) mentioned that diversified boards are more independent and effective monitors of management actions. The inclusion of female members on the board mitigates the agency conflict and minimize the problem of information asymmetry leading to increase in firm value (Ntim 2015). In a similar vein, Nguyen et al. (2020) mentioned that despite of being faced with gender-based challenges, the inclusion of female director on boards increases performance of the firm. Thus, the gender diverse board is considered an effective tool of corporate governance that may reduce the agency conflict and increase sustainable growth of the firm. Further, as compared to male, they are more independent, diligent, and responsible (Li and Li 2020) and their inclusion in the top management team reduces systematic biases and extend social networks (Bass 2019). They are tougher monitors of CEO and their presence ensure better attendance and low agency conflicts (Carter et al. 2003). Similarly, the resource dependence theory suggests that presence of female directors on the board improves the firm growth as pressure is built on management to seek support of external

stakeholders and access to critical resources (Haque and Ntim 2018). In a similar vein, Shahab et al. (2018) argued that the presence of higher number of female directors on boards increases the legitimacy of firm in the eyes of stakeholders resulting in more resources and higher sustainable growth. Contextually, prior literature (e.g., Liu et al. 2014) mainly considered positive effects of female presence on firm performance and growth.

The extant literature examined the influence of gender diversity on various firm outcomes and found mixed results. For instance, Bennouri et al. (2018) found the positive effects of female directorship on firm performance in case of French firms. Similarly, Amin et al. (2021) reported that presence of female on corporate boards reduces agency cost and mitigate agency conflict. Further, Chen et al. (2017) mentioned that female directors impose higher dividend payout in case of S&P 1500 firms. In a similar vein, Carter et al. (2003) in context of fortune 100 firms and Jurkus et al. (2011) in case of Fortune 500 firms found that female presence on the board reduce the agency conflict. Finally, Ain et al. (2021) reported positive effects of gender diversity on sustainable growth in case of Chinese listed firms. On the contrary, Adams and Ferreira (2009), mentioned that if boards are already good monitors, the female presence on board may not result in better monitoring. In addition, Marquez-Cardenas et al. (2022) reported insignificant influence of board gender diversity on firm performance in case of Latin America.

Summarizing the discussion, we argue that due to tough and independent monitoring, the presence of female on the corporate boards reduces the agency conflicts and positively affect the sustainable growth of the firm. We, therefore, hypothesize that:

H1: Board gender diversity is positivity associated with sustainable growth of firms

4.2   Moderating role of family ownership

The agency literature considers ownership concentration, such as family ownership, an important aspect of corporate governance that reduces the agency conflict. The family ownership is a prominent type of ownership concentration found in emerging economies (Armitage et al. 2017). This kind of ownership differs from other ownership types due to an overlap of management and control function by a single family. Moreover, Kabbach de Castro et al. (2017) noted that the strategic decisions in family firms are usually taken under the socioemotional wealth perspective, and mainly the firms are considered as a legacy to be transferred to next generation. From the agency theory's perspective, the close involvement of family owners in the affairs of business provides stringent managements' monitoring and reduce the problem of information asymmetry, leading to reduction in principal-agent conflict in such firms and higher firm growth (Gyapong et al. 2021). However, the controlling shareholders due to more influential position control board composition and strategic behavior of the firm. In this scenario, in order to pursue the family agenda, the family owners may exploit the minority shareholders by extracting private benefits and involve in dubious related party transaction, thus, depriving them of their share of wealth and leading to principal-principal conflict (Villalonga and Amit 2006). The presence of dominant

shareholders, therefore, can either reduce the principal-agent conflict due to strong monitoring of management, or it may result in principal-principal conflict due to extraction of private benefits at the expense of minority shareholders (Filatotchev et al. 2013).

Pakistan is an emerging economy and most of the listed firms on PSX are family owned. This study, therefore, concentrate on firms where the families are dominant owners. The empirical literature while examining the role of family ownership on firm performance highlights mixed findings. While some studies (e.g., Heugens et al. 2009) found positive influence of controlling shareholders on firm performance, other authors (e.g., Kouki and Guizani 2015: Saidat et al. 2018) reported negative relationship in this context. Additionally, the literature highlights distinct social behavior and social values of different types of owners such as; family owners, institutional owners, corporations and state, that affect the firm outcomes in different manners (Miller et al. 2011). For instance, while, corporations are mainly interested in firm growth, the family owners are more focused on firm's survival (Collin et al. 2017). The family owner's behavior, therefore, significantly influence the strategies and objectives (Miller et al. 2011), and governance mechanism prevailing in the firm which ultimately affect the firm outcomes (Federo et al. 2020). Moreover, the role of gender diversity in presence of family owners has been examined previously, and provide mixed findings. For example, Ararat et al. (2015) reported positive effect of gender diversity on board monitoring and firm performance in family owned firms, whereas, Saeed and Sameer (2017) mentioned that women directors in family owned firms are mainly under influence of founding families and more oriented towards the interest of family owners.

Overall, we argue that due to strong identification with their firm, the family owners exhibit high affiliation and commitment and strongly influence the governance mechanism prevailing in the firm. Further, due to their desire for the transfer of legacy to their descendants, their presence is associated with higher sustainable growth. Thus, we hypothesize that:

H2: The presence of family ownership strengthens the relationship between board gender diversity and sustainable growth of firms

5. Research design

5.1 Sample selection

The data for the study was gathered from the annual reports of the firms available on website of PSX and on the website of the respective firm. Our initial sample was based on 7215 firm-year observations comprising of 432 firms listed on PSX over the period 2008-2020. We excluded the financial firms because these firms operate under separate regulatory frameworks and have different financial characteristics. After exclusion of financial firms and firms with missing observations, our final sample comprises of unbalanced panel data with 3730 firm-year observations. The sample selection procedure is depicted in table 1.

{Insert table 1 about here}

5.2   Variable measurement

In order to test the hypotheses, the study employed dependent, independent, and control variables, as depicted in table 2.

5.2.1   Dependent variable

We measure our dependent variable, sustainable growth (SG), using sustainable growth rate, which is a measure of long-term profitability and perpetual growth (Ain et al. 2021). Consistently, we used two models: Higgin's (1977) model (SG1) and Van Horn's static model (SG2), to calculate sustainable growth rate. The Higgins model considers sustainable growth rate as a maximum rate at which a firm can expand its sales or revenues without depleting its financial resources. On the other hand, Van Horne considers the sustainable growth rate as the largest growth percentage of firm's sales under a certain operating and debt-to-dividend ratio, and emphasize the growth rate as a target value rather than the actual value (Huang et al. 2019).

5.2.2   Independent variables

Consistent with Adams and Ferreira (2009), our independent variable gender diversity was measured using two proxies: first, by using the proportion of female directors on the board (PFD_BD) and, second, by using dummy variable (FD_BD), where "1" represents presence of at least one female director and "0" otherwise. Consistent with Murro and Peruzzi (2019), the family ownership was assumed where an individual or family hold at least 20% stake in the equity of the firm. Consistently, the family ownership (FO) was measured using dummy variable, where "1" represents the existence of family ownership and "0" otherwise.

5.2.3   Control variables

 In order to address the endogeneity issue that may lead to biased results, consistent with Nekhili et al. (2020), the study employed control variables to control for the board characteristics and firm characteristics. Contextually, board independence (BD_IND) and board size (BS) were used to control for the board characteristics and three proxies: return on assets (ROA), leverage (LEV) and firm size (FS) were used to control for the firm characteristics.

{Insert table 2 about here}

5.3   Econometric model

In order to test the hypotheses, the basic regression models are developed as follows:

$$\sum_{x=1}^{2} SG_{i,t} = \alpha_{i,t} + \sum_{k=1}^{2} \beta_k BD\_GD_{i,t} + \beta_l BD\_IND_{i,t} + \beta_m BD\_SIZE_{i,t} + \beta_n ROA_{i,t} + \beta_o LEV_{i,t} + \beta_p FS_{i,t}$$

$$+ \sum_{q=1}^{r} \beta_q Industrydummy_{i,t} + \sum_{s=1}^{t} \beta_s yeardummy_{i,t}$$

$$+ \varepsilon_{i,t} \qquad\qquad\qquad (Model\ 1)$$

$$\sum_{x=1}^{2} SG_{i,t} = \alpha_{i,t} + \sum_{k=1}^{2} \beta_k BD\_GD_{i,t} + \beta_u FO_{i,t} + \beta_v BD\_GD_{i,t} * FO_{i,t} + \beta_l BD\_IND_{i,t} + \beta_m BD\_SIZE_{i,t}$$

$$+ \beta_n ROA_{i,t} + \beta_o LEV_{i,t} + \beta_p FS_{i,t} + \sum_{q=1}^{r} \beta_q Industrydummy_{i,t} + \sum_{s=1}^{t} \beta_s yeardummy_{i,t}$$

$$+ \varepsilon_{i,t} \qquad\qquad\qquad (Model\ 2)$$

Whereas, SG is our independent variable, sustainable growth rate, which is measured using two models: Higgin's model (SG1) and Van Horn's model (SG2); BD_GD is our independent variable, gender diversity, which is measured using two proxies: proportion of female directors on the board (PFD_BD) and dummy variable (FD_BD); FO represents moderator, family ownership which is measured using dummy variable; Board independence (BD_IND), board size (BS), return on assets (ROA), leverage (LEV) and firm size (FS) are the control variables; BD_GD*FO is the interaction term; β_k, β_l, β_m, β_n, β_o, β_p, β_q, β_s, β_u, and β_v are the regression coefficients of main variables, control variables, industry dummy, year dummy and interaction terms; $\alpha_{i,t}$ is the intercept of the model; $\epsilon_{i,t}$ is the error term; and i represents firm at time t. Model 1 is used to examine the direct effects whereas model 2 will be used to determine the moderating impact.

6. Empirical results and discussion

6.1 Descriptive statistics

Table 3, reports the number of observations, mean, standard deviation, minimum, and maximum of all the variables. The table shows mean of SG1 and SG2, 0.041 and 0.037, respectively. Similarly, the mean of PFD_BD is 14.10% with a minimum value of 0 and maximum 38%. This mean value is consistent with the code of corporate governance, which requires the minimum board size of seven and presence of at least one female director on the board. The findings also suggests that some firms have up to 38% of female on boards whereas some firms do not have even single woman on the board. Since, our sample covers the time period before the promulgation of code of corporate governance 2017 that mandated the inclusion of at least one woman on the board, therefore, the absence of female on corporate boards is not surprising. The FO reflects mean value of 0.621 which shows that 62% of the sample firms are family owned. This is consistent with the findings of Armitage et al. (2017) who highlighted the greater presence of family-owned firms in an emerging economy. Similarly, mean of BD_IND is 11.10%; mean of BD_SIZE is 7.99; average ROA is 6.44%; mean of LEV is 21.10%; and mean FS is 22.79.

{Insert table 3 about here}

6.2 Pearson correlation

Table 4, reports the Pearson correlation and Variance inflation factor (VIF), of all the variables used in the study. The results show positive correlation between SG1 and PFD_BD (0.023), and SG2 and PFD_BD (0.016). Similarly, positive correlation in the expected direction was found in case of SG1 and FO (0.027) and SG2 and FO (0.014). According to Gujarati (2016), if the correlation coefficient exceeds 0.8, then there is a threat of multicollinearity. In all the cases, except between PFD_BD and FD_BD, the coefficient was well below 0.8, hence the problem of multicollinearity does not exist in our data. The high correlation between PFD_BD and FD_BD is not surprising because the FD_BD is dummy variable created on the basis of PFD_FD. Additionally, consistent with Caramanis and Spathis (2006), the absence of multicollinearity was further confirmed, as the reported values of VIF falls below the severity level of 5.

{Insert table 4 about here}

6.3 Regression analysis

In order to test our first hypothesis H1, we perform regression analysis using sustainable growth as a dependent variable and gender diversity as an independent variable, and the results obtained are reported in table 5. Under hypothesis H1, we hypothesized that gender diversity increases the sustainable growth rate in our sample firms. In order to determine the influence of gender diversity on sustainable growth, we first run SG1 on both PFD_BD and FD_BD, including control variables, using model 1. Our results show significant positive association between SG1 and both measures of gender diversity. In both the cases the results were significant at 5% level of significance. We

again ran the model using SG2 as dependent variable and again found positive and significant influence of SG2 on both PFD_BD and FD_BD. In both the cases, our results were significant at 10% level of significance. The findings provide support for hypothesis H1 and are consistent with the prior studies (e.g., Ain et al. 2021) that examined the influence of gender diversity on sustainable growth. Our results are also consistent in context of emerging markets (e.g., Ain et al. 2021: China) and provide for the positive influence of gender diversity on sustainable growth. Thus, our results indicate similar patterns being followed in Pakistan in terms of gender diversity as highlighted in other emerging economies.

Under the framework of agency theory, we argued that due to tough and independent monitoring the presence of female directors on the board is associated with higher sustainable growth rate. Our results extend support to agency theory (Adams and Ferreira 2009; Sarhan et al. 2019), which suggests the positive influence of gender diversity on management's monitoring and financial performance of the firm. The results also provide empirical support to resource dependence theory (Loukil and Yousfi 2016; Salloum et al. 2019), which highlights that presence of female directors brings diverse experience and knowledge in the firm and increases the legitimacy of the firm which ultimately leads to better firm performance and sustainable growth.

{Insert table 5 about here}

Similarly, table 6, shows the results of moderating impact of family ownership on the relationship between gender diversity and sustainable growth rate. We hypothesized in second hypothesis H2 that the presence of family ownership strengthens the relationship between gender diversity and sustainable growth rate. We performed regression analysis using model 2 and our results showed significant positive relationship between interaction term and both measures of sustainable growth, showing support for hypothesis H2. In case of first proxy of sustainable growth, SG1, our results were significant at 5% level of significance, whereas, in case of SG2 the results were significant at 10% level of significance. Our results extend support to prior studies (e.g., Ciftci et al. 2019) which mentioned positive behavior of family ownership on firm growth and are also in agreement with the results found by Ararat et al. (2015) in context of an emerging economy, Turkey. The findings imply the active participation of family owners in family firms listed on PSX, and indicates lower principal-principal conflict and higher firm value in such firms.

{Insert table 6 about here}

6.4   Additional analysis

In order to check for the robustness of our results, we employed several additional analyses. First, consistent with Amin et al. (2022), the study employed generalized method of moments (GMM) to check for the endogeneity issue. The results obtained from the ordinary least squares (OLS) regressions may suffer from biases due to unobserved heterogeneity and simultaneity, and therefore, two step GMM estimator is a preferred method that can be used to control the

endogeneity problem Abad et al. (2017). Consistently, we re-run our models using two-step GMM estimators and found confirmation for the results obtained from OLS regression. The results obtained are reported in Table 7-8. In all cases, results for AR(2) were insignificant, which shows the absence of serial correlation in second difference. Further, the Hansen-j test of over-identifying restrictions and the autocorrelation also confirmed the validity of our results.

Second, we examined the relationship between gender diversity and sustainable growth using the framework of critical mass theory. According to the theory, the role of women becomes effective when they gain critical mass on the board. According to Kristie et al. (2011), when the number of women on boards reaches three, their voices are being heard and they can effectively participate in decision making. Consistently, we created three dummy variables FD1, FD2, and FD3 to empirically support our argument. FD1 represents '1' if there is at least one woman on the board '0' otherwise; FD2 represents '1' if there are at least 2 women on the board, '0' otherwise, and FD3 represents '1' if there are three or more than 3 women on the board, '0' otherwise. The regression results obtained are depicted in Table 9. The results indicated that appointment of a single woman on the board increases sustainable growth. The influence of female directors further increases when there are two female directors on the board (FD2) as the higher coefficient is obtained, however, the highest coefficient and significance was obtained in case of FD3, which support critical mass theory (Amin et al. 2021) and extend support to our earlier obtained results.

Finally, consistent with Ain et al. (2021), we investigated the relationship between gender diversity and sustainable growth by employing Blau index (Blau 1977) and Shannon index (Shannon 1948) as an alternative measure of gender diversity. The results reported in Table 10 confirms the positive and significant influence of gender diversity on sustainable growth.

{Insert table 7-10 about here}

7. Summary and conclusion

This study examines the relationship between gender diversity and sustainable growth, and moderating role of family ownership on this nexus in context of an emerging market. We employed 3730 firm-year observations comprising of 307 non-financial PSX listed firms over the period 2008-2020. Our study extends contribution to the literature in several ways. First, we add to the limited literature on the effect of gender diversity on sustainable growth. While, the prior studies examined the role of gender diversity on different firm outcomes such as firm performance, risk taking, dividend payout etc., our study investigated its impact on sustainable growth. Second, we responded to the research call of Ain et al. (2021) by examining this relationship in context of family ownership and complement the findings of the authors by highlighting the positive role of gender diversity on sustainable growth in an emerging economy. Third, our study provides empirical support to the mandatory appointment of female director on the corporate board of listed firms by Listed Companies (Code of Corporate Governance) Regulations 2017. Our findings, thus; support the global measures for the implementation of mandatory quota for female on corporate

boards. Finally, we provide novel evidence by examining this nexus in context of Pakistan which was yet unexplored.

Using the framework of agency theory and resource dependence theory, under hypothesis H1, we hypothesized that gender diversity leads to higher sustainable growth rate. We argued that due to tough and independent monitoring of management, the presence of female directors on the corporate board increases the sustainable growth rate of the firm. Our hypothesis H1 and our argument were supported as we found significant positive association between the two variables. Empirically, our results were consistent with the literature (e.g., Ain et al. 2021) in this regard.

Similarly, under hypothesis H2, we hypothesized that family ownership positively moderates the relationship between the gender diversity and sustainable growth rate. Our hypothesis H2 and our argument were supported, as we found significant moderating influence of family ownership in the expected direction. Empirically, our results were in line with the prior studies (e.g., Ararat et al. 2015) who reported positive influence of gender diversity in the family firms.

Our study provides several theoretical implications for gender diversity literature. First, while, multiple studies examined the influence of gender diverse board on different firm outcomes, very few studies investigated the effects of gender diversity on sustainable growth rate of the firm. Our study extends the gender diversity literature by highlighting the positive outcomes of the female presence on the board on sustainable growth rate. Second, our findings enrich the family business literature by highlighting the role of family owners on sustainable growth rate. As such, we shed light on the positive role of family owners and absence of principal-principal conflict in our sample firms. Finally, our results extend empirical support to agency theory, and resource dependence theory in context of an emerging economy.

Our study offers practical implications for policy makers and investors. For policy makers and regulators, our study provides empirical support for the mandatory appointment of female directors on the corporate board of the listed firms. Our study in this context provides positive effects of gender diversity on sustainable growth and thus; complement the efforts of regulators for the mandatory quota of female directors. Further, the corporate environment in Pakistan is mainly male dominated and females are normally restricted to climb up the corporate ladder. Our study urges the policy makers to focus more on the improvement of skills of female workers to derive corporate benefits from their effective leadership. For investors, Pakistan is an emerging country, and the institutional environment is characterized by the weak corporate governance mechanism and low shareholders' protection. In this scenario, the presence of gender diverse board supplemented by family ownership is a positive sign for the future investors. While, analyzing the future avenues for investment, the investors should consider the gender diverse board and presence of family owners for their wealth protection and maximization.

Like other studies, this study also suffers from some limitations, which can serve as directions for future research. The ownership concentration in listed firms occur through different types of ownership such as; family ownership, corporations, foreign ownership and state. While, this study considered only one kind of ownership, family ownership, the other types of ownerships could also have significant effect on sustainable growth rate. Future studies may consider the impact of other ownership types on sustainable growth. Further, this study only considered the "gender" aspect of diversity, the future studies can also consider the other characteristics of board diversity such as; age, qualification, tenure, and ethnicity.

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Table 1. Sample selection procedure

Sample selection	
Initial observations of all listed firms for the period 2008 to 2020	7215
Less: Firm observations of financial firms	1794
Less: number of firm-year with missing observations	1691
Final sample	3730

The table reports the selection procedure of the sample used in the study.

Table 2. Variable measurements

Nature	Variable	Symbol	Measure
Dependent variable			
Sustainable growth	Sustainable growth rate (Higgin's model)	SG1	(Profit margin * asset turnover * leverage factor * retention ratio)
	Sustainable growth rate (Van Horn's model)	SG2	(Profit margin * asset turnover * leverage factor * retention ratio) / (1- Profit margin * asset turnover * leverage factor * retention ratio)
Independent variable			
Gender diversity	Proportion of female directors on the board	PFD_BD	Female directors on board divided by total number of directors on the board
	Female directors on the board	FD_BD	Dummy variable equal to one, if there is at least one female director on the board, zero otherwise.
Moderator			
Family ownership	Family firm	FO	Dummy variable equal to one if the firm's main shareholder is a family or an individual and he owns more than 20% of the company, zero otherwise
Control variable	Board independence	PID_BD	Independent directors on the board divided by total directors on the board
	Board size	BS	Number of directors on the board
	Return on assets	ROA	Net profit divided by total assets
	Leverage	LEV	Total debt divided by Total assets
	Firm size	FS	Log of total assets

The table displays the nature, symbol and measurement of all the variables used in the study.

Table 3. Descriptive statistics

Variables	N	Mean	SD	Min	Max
SG1	3730	0.041	0.051	0.003	0.082
SG2	3730	0.037	0.080	0.001	0.078
PFD_BD (%)	3730	14.101	2.211	0.000	38.00
FD_BD (dummy)	3730	0.460	0.067	0.000	1.000
FO (dummy)	3730	0.621	0.094	0.000	1.000
BD_IND (%)	3730	11.102	3.151	18.180	36.020
BD_SIZE	3730	7.990	1.270	7.000	13.000
ROA (%)	3730	6.440	3.110	-12.510	26.140
LEV (%)	3730	21.102	3.890	3.210	58.910
F_SIZE	3730	22.790	1.521	19.031	26.560

The table reports number of observations, mean, standard deviation, minimum and maximum of all the variables used in the study.

Table 4. Correlation matrix

Variables	SG1	SG2	PFD_BD	FD_BD	FO	BD_IND	BD_SIZE	ROA	LEV	FS	VIF
SG1	1										
SG2	0.011	1									
PFD_BD	0.023	0.016	1								4.13
FD_BD	0.019	0.010	0.868^{***}	1							4.31
FO	0.027	0.014	0.014	0.047^{**}	1						1.03
BD_IND	0.011	0.001	0.047^{**}	0.018^{***}	0.018	1					1.14
BD_SIZE	0.016	0.005	0.088^{***}	0.043^{**}	0.049^{**}	0.118^{***}	1				1.03
ROA	0.016	0.006	0.036^{*}	0.037^{*}	0.012	0.029	0.011	1			1.02
LEV	0.004	0.049^{**}	-0.016	0.009	-0.027	0.022	0.019	0.052^{**}	1		1.02
FS	0.029	0.002	0.044^{**}	0.052^{**}	0.078^{***}	0.045^{**}	0.008	0.010	0.124^{***}	1	1.03

The table reports the Pearson correlation and VIF of all the variables used in the study. *,**, and *** indicates significance at 10%, 5% and 1% level of significance.

Table 5: Regression analysis-gender diversity and sustainable growth

Variables	SG1	SG1	SG2	SG2
PFD_BD	0.025**		0.021*	
	(0.006)		(0.010)	
FD_BD		0.023**		0.027*
		(0.024)		(0.016)
BD_IND	0.012	0.019	0.026	0.023
	(0.001)	(0.006)	(0.017)	(0.011)
BD_SIZE	0.063	0.068	0.114	0.115
	(0.074)	(0.074)	(0.009)	(0.008)
ROA	0.010	0.010	0.005	0.005
	(0.009)	(0.009)	(0.051)	(0.051)
LEV	0.018	0.019	0.019*	0.013*
	(0.016)	(0.016)	(0.005)	(0.065)
FS	0.072	0.071	0.097	0.093
	(0.063)	(0.063)	(0.340)	(0.340)
Constant	2.584*	2.621*	1.863	1.689
	(0.057)	(0.053)	(0.087)	(0.086)
Observations	3730	3730	3730	3730
Number of firms	307	307	307	307
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes
R square	0.22	0.23	0.25	0.25
Hausman Chi^2	14.98	15.33	15.08	16.55

The table reports regression analysis of gender diversity and sustainable growth. *,**,*** represents significance at 10%, 5% and 1% level of significance. Standard errors are reported in parenthesis.

Table 6. Regression analysis-gender diversity, family ownership and sustainable growth

Variables	SG1	SG1	SG2	SG2
PFD_BD	0.021**		0.022*	
	(0.014)		(0.016)	
FD_BD		0.022**		0.099*
		(0.014)		(0.018)
FO	0.027*	0.026*	0.016*	0.019*
	(0.273)	(0.285)	(1.323)	(1.406)
PFD_BD*FO	0.022**	0.026**	0.020*	0.022*
	(0.053)	(0.050)	(0.005)	(0.002)
BD_IND	0.012	0.078	0.034	0.078
	(0.002)	(0.007)	(0.017)	(0.013)
BD_SIZE	0.061	0.066	0.038	0.014
	(0.074)	(0.074)	(0.409)	(0.008)
ROA	0.010	0.010	0.005	0.006
	(0.009)	(0.009)	(0.051)	(0.051)
LEV	0.016	0.017	0.023*	0.019*
	(0.096)	(0.096)	(0.066)	(0.066)
FS	0.068	0.067	0.008	0.097
	(0.063)	(0.063)	(0.041)	(0.041)
Constant	2.572*	2.608*	1.280	1.296
	(0.058)	(0.058)	(0.094)	(0.091)
Observations	3730	3730	3730	3730
Number of firms	307	307	307	307
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes
R square	0.22	0.23	0.25	0.25
Hausman Chi^2	14.98	15.33	15.08	16.55

The table reports regression analysis of gender diversity, family ownership and sustainable growth. *,**,*** represents significance at 10%, 5% and 1% level of significance. Standard errors are reported in parenthesis.

Table 7. GMM analysis-gender diversity and sustainable growth

Variables	SG1	SG1	SG2	SG2
L.SG1	0.019*	0.019*		
	(0.023)	(0.024)		
L.SG2			0.035*	0.038*
			(0.015)	(0.010)
PFD_BD	0.022**		0.024*	
	(0.079)		(0.057)	
FD_BD		0.119**		0.067*
		(0.046)		(0.028)
BD_IND	0.040	0.054	0.073	0.080
	(0.014)	(0.012)	(0.018)	(0.016)
BD_SIZE	0.051	0.049	0.094	0.091
	(0.056)	(0.054)	(0.019)	(0.017)
ROA	0.007	0.007	0.009	0.010
	(0.008)	(0.007)	(0.023)	(0.023)
LEV	0.038	0.030	0.032	0.027
	(0.061)	(0.065)	(0.016)	(0.010)
FS	0.027*	0.025*	0.116	0.113
	(0.044)	(0.043)	(0.485)	(0.473)
Constant	2.334	2.641**	2.747	2.596
	(0.071)	(0.036)	(0.054)	(0.013)
Observations	3423	3423	3423	3423
Number of firms	304	304	304	304
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes
No. of instruments	85	84	85	84
AR 2 (p value)	0.774	0.766	0.539	0.535
Hansen J test (p value)	0.335	0.351	0.224	0.214

The table reports GMM analysis of gender diversity and sustainable growth. *,**,*** represents significance at 10%, 5% and 1% level of significance. Standard errors are reported in parenthesis.

Table 8. GMM analysis-gender diversity, family ownership and sustainable growth

Variables	SG1	SG1	SG2	SG2
L.SG1	0.029*	0.022*		
	(0.015)	(0.011)		
L.SG2			0.034*	0.035*
			(0.012)	(0.015)
PFD_BD	0.044*		0.047*	
	(0.009)		(0.004)	
FD_BD		0.118*		0.033*
		(0.011)		(0.015)
FO	0.152*	0.104*	0.122*	0.126**
	(0.018)	(0.015)	(0.019)	(0.012)
PFD_BD*FO	0.089*	0.052*	0.035*	0.038**
	(0.008)	(0.003)	(0.009)	(0.014)
BD_IND	0.022	0.020	0.045	0.031*
	(0.016)	(0.013)	(0.001)	(0.005)
BD_SIZE	0.030	0.032	0.017	0.011
	(0.006)	(0.002)	(0.015)	(0.013)
ROA	0.017	0.019	0.025	0.031
	(0.009)	(0.008)	(0.003)	(0.009)
LEV	0.021	0.014	0.011	0.013
	(0.073)	(0.072)	(0.029)	(0.015)
FS	0.041	0.025	0.061	0.048
	(0.005)	(0.002)	(0.009)	(0.008)
Constant	3.324	2.798	3.409	2.635
	(0.073)	(0.055)	(0.058)	(0.062)
Observations	3423	3423	3423	3423
Number of firms	304	304	304	304
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes
No. of instruments	86	86	86	86
AR2	0.771	0.798	0.402	0.429
Hausman Chi^2	0.344	0.357	0.224	0.229

The table reports GMM analysis of gender diversity, family ownership and sustainable growth. *,**,*** represents significance at 10%, 5% and 1% level of significance. Standard errors are reported in parenthesis.

Table 9. Gender diversity and sustainable growth (Critical mass perspective)

Variables	SG1			SG2		
FD1	0.045*			0.022*		
	(0.016)			(0.019)		
FD2		0.049*			0.024*	
		(0.018)			(0.017)	
FD3			0.051***			0.027***
			(0.022)			(0.011)
Constant	2.210***	2.641*	2.114*	2.084***	2.033***	2.081***
	(0.047)	(0.041)	(0.044)	(0.033)	(0.034)	(0.034)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3730	3730	3730	3730	3730	3730
Adjusted R2	0.22	0.23	0.22	0.25	0.25	0.24

The table reports regression analysis of gender diversity and sustainable growth from critical mass perspective. *,**,*** represents significance at 10%, 5% and 1% level of significance. Standard errors are reported in parenthesis.

Table 10. Alternative measures of gender diversity-Blau and Shannon index

Variables	SG1	SG1	SG2	SG2
Blau	0.087*		0.062*	
	(0.003)		(0.011)	
Shan		0.060*		0.051*
		(0.012)		(0.015)
Constant	0.110**	0.118*	0.041*	0.047*
	(0.006)	(0.008)	(0.007)	(0.008)
Observations	3730	3730	3730	3730

The table report the regression results of gender diversity and sustainable growth using Blau and Shannon index. *,**,*** represents significance at 10%, 5% and 1% level of significance. Standard errors are reported in parenthesis.