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THE EFFECT OF FEMALE BOARD MEMBERS' RISK AVERSION AND MONITORING ON TRADE CREDIT USAGE AND FIRM PERFORMANCE

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Abstract

Trade credit is a business-to-business arrangement that allows customers to purchase goods without immediate payment, while suppliers view it as both a financing mechanism for customers and a marketing tool to enhance sales and profitability. Female directors–referred to as women on boards (WOB) in corporate governance–have recently become mandatory under company law in Pakistan. Despite this development, limited research exists on the attributes of women in boardrooms and their influence on corporate decision-making. This study focuses on the extension of trade credit from the supplier's perspective, examining how women directors' risk aversion and monitoring behaviors affect trade credit decisions and overall firm performance. The study analyzed panel data from 73 non-financial firms listed on the KSE-100 Index from 2011 to 2020, excluding financial firms and firms with missing data. Generalized Method of Moments (GMM) was employed using STATA 14 to address endogeneity, heteroscedasticity, and autocorrelation issues. Key variables examined included the percentage of women on boards, risk-adjusted sales (RASales), risk-adjusted turnover (RATurn), and return on equity (ROE). Findings indicate that women on boards are more cautious in extending trade credit, rigorously evaluating customer financials and emphasizing prompt recovery, reflecting strong monitoring behaviors. This disciplined approach positively impacts firm performance to a certain threshold. The results suggest that firms facing financial constraints may benefit from increasing female representation on boards to strengthen governance and enhance performance outcomes.

INTRODUCTION

Various firms across the globe find it difficult to get access to bank loans for fulfilling their day-to-day operational requirements of funds. Without such funds, these firms may not grow or even survive in the market. In such a scenario, trade credit is utilized as last resort financing source and as a substitute of bank loans, it has been extensively discussed by various authors as a key source of finance for every firm in developed and developing countries in order to maximize their profit and performance. (Petersen & Rajan, 1997; Cuñat, 2007; Fabbri, 2010; Maksimovic & Frank, 2005; Blasiol, 2005; Burkart & Ellingsen 2004, Fukuda, 2006; Ogawa 2013, Huyghebaert 2006 & Jain 2001).

Generally, Customers utilize trade credits as a financing source while on other hand, suppliers consider it as marketing tool to enhance sales, profitability, market share and to remain competitive and to build strong relationship with customers.

However, not all customers get access to trade credit because provision of trade credit involves customer's default risk. Hence, risk averse firm may not be willing to extend trade credits. So the policies of firms are formulated by their boards and its decision have significant effects on firms. Presence of diversity in board can thus, affect firms' level of risk taking significantly. The literature is full of evidence that women's nature is risk averse and gender diverse boards be risk averse (Hinz, 1996; Barua, 2010; Byrnes, Miller, & Schafer, 1999; Gulamhussen, 2015; Dwyer, 2002; & Wagner, 2001).

One more characteristic of gender diverse boards discussed is that women are better and strict monitors. They either avoid risk or rely on strict monitoring to minimize risk (Sila, Gonzalez, & Hagendorff 2016; Adams &Ferreira, 2009; Ahern & Dittmar, 2012; Gul, Srinidhi, & Ng 2011; Daily, Certo, & Dalton 1999; Chen, Ni, & Tong2016 and Cumming, Leung, & Rui, 2012). Therefore, this study aims to know the influence of gender diversity on supply to customer side of trade credit. We believe that gender diversity can have either negative (due to risk aversion) or positive relationship (because of extensive monitoring) with provision of trade credit in particular and its impact on overall firm performance.

Gender Diversity in Boards:

Board gender diversity is a significant aspect of corporate governance, it is defined as the presence of female directors in corporate boards (Carter, Simkins, & Simpson, 2003). Report of McKinsey Global Institute (2015) suggested that an equal participation of women and men in labor force may enhance economic output of the world by 26 percent. Moreover, Studies have identified several firm-level advantages linked with gender diversity on the boards. Consisting of efficient decision-making (Milliken & Martins, 1996), effective monitoring and control of board (Nielsen and Huse, 2010)(Adams and Ferreira, 2009) (Benkraiem, Hamrouni, Lakhal,&Toumi, 2017) and higher firms' financial performances (Terjesen, Couto, & Francisco, 2016)

A report published by credit Suisse on post financial crisis 2008 suggested that companies with more gender diverse teams performed better compared with the male counterpart, female directors are believed to have skills to provide advisory role in the boards (Adams and Ferreira, 2004) which has an ultimate impact on reducing information asymmetry and agency cost (Chen, Martin, Roychowdhury, Wang, & Billett, 2018) (Jiang, Ma, & Shi, 2017). As per latest global statistics from Deliotte (2022) that women now hold 19.7percent of the board seats worldwide, while 6.7percent of the board chair positions; 5percent of the CEO roles; and 12.7 percent of CFO roles in the world which again shows a symbolic representation of women in boardrooms

Considering global paradigm shift, Pakistan also has increased its focus on creating gender diverse boards. So In Companies Act 2017 of Pakistan, it is directed with the new provision in Section 154 of the Act that all public interest companies to have female representation in boards.

Trade Credits & Attributes of Gender Diverse Boards:

However, not all customers get access to trade credit because provision of trade credit involves customer's default risk. Hence, risk averse and financial constraints firms may not be willing to extend trade credits.(Barua, 2010). The policies of firms are formulated by their boards and its decisions have significant effects on firms' risks and performances. (Eckel and Grossman, 2008). The literature is full of evidence that women's nature is risk averse. (Jianakoplos and Bernasek,1998) and socially sensitive. However, risk aversive attributes of women are largely based on the personal characteristics which is applied to the general population and have a direct impact on professional settings like boardrooms. (Adams and Funk, 2012). Thus, Presence of diversity in board can affect firms' level of risk taking significantly. (Hinz, 1996)(Byrnes, Miller, &Schafer, 1999) (Gulamhussen,2015) (Dwyer, 2002; & Wagner, 2001). One more characteristic of gender diverse boards discussed is that women are better and strict monitors. (Chen, Ni, & Tong 2016) (Adams & Ferreira, 2009). Many

of these studies focused on the monitoring role of boardroom gender diversity (BGD), finding women as an effective monitor in mitigating stakeholders' concerns. (Jain and Zaman, 2020). It further suggested that GDB improve organizational processes, enhance transparency and promote quality decision-making (Jain and Jamali, 2016)(Sila et al., 2016) and also presence of WOB promotes ethical thinking and efficient decision-making (Lewellyn and Muller-Kahle, 2020) (Moreno-Gómez & Calleja-Blanco, 2018). Another finding closely related to the discussion states that women on board in profitable firms do tougher monitoring after taking risk decisions. (Ahern & Dittmar, 2012). Women while in highier position at boardroom either avoid risk or rely on strict monitoring to mitigate firm risk (Sila, Gonzalez, & Hagendorff 2016) (Cumming, Leung, & Rui, 2012).

Problem Statement:

Firms often intend to extend trade credits to customers in order to raise market share and profitability but customer's default risk threatens their financial performance and liquidity of the business. Therefore, not all firms are willing to allow trade credits to their buyers at all times. This act of allowing low credits may affect their firms' performance, which has negative effect on sales growth and business relationship with customers. So for this instance, directors of the board formulate risk management policies for provision of trade credits and obviously the board rooms are mix of male and female members. Thus the researcher is intended to assess attributes of women while formulating risk policies at boardrooms, who by natural phenomenon are risk averse and strict monitors as indicated by various studies. Therefore, the study is intended to asses that how the gender diverse firms are behaving while extending trade credits to its customers and its overall impact on firm performance. Furthermore, Gender diverse boards' behavior, especially on customer side and its overall impact on firm performance, has not been assessed previously in Pakistan. Hence, this study intends to fill the gap in literature of supply to customers on trade credit by looking at impact of gender diverse boards on provision of trade credit from their two attributes one risk averse behavior and other one is better and strict monitoring behavior and its overall impact on firm performance.

Research Gap

Although, trade credits as a research constructs has been discussed extensively. However, attributes of gender diverse boards, trade credits to customer and firm performance, has not only been assessed previously in Pakistan**.** Hence, this study intends to fill the gap in literature of supply to customers on trade credits by looking at an impact of gender diverse boards in provision of trade credits from their two attributes risk averse and better and strict monitoring and its overall impact on firm performance.

Research Objective:

- To understand risk taking capacity of gender diverse boards in organizational lending policies.
- To evaluate strict monitoring and better control attributes of women on boards while financing the trade credits to customers.
- To apprehend the impact of gender diverse boards on firm financial performances.
- To understand influence of women on board in firms.

VARIABLES AND HYPOTHESES DEVELOPMENT

Variables

In this research study, different variables are used to determine relationship between attributes of gender diversity, trade credits and firm performances. So for this instance, we have three dependent variables and one independent variable along with some control variables.

Dependent Variables

Dependent variable may change with the variations in values of independent variables (Stock and Watson, 2015). Our dependent variable is trade credit to customers measured as ratio of accounts receivables to total sales (Rind et al., 2021; Petersen &Rajan, 1997) which measures the risk taking capacity of the firm while extending trade credits to the customers and while other measure of variables is

receivable turnover which is calculated as ratio of total sales to account receivables (Siregar & Mardiana, 2022; Ferrando, & Mulier, 2013) which again measures an impact of better and strict monitoring control while extending credits to the customers. However, to know how profitability responds, different measures of profitability are used to analyze the firms' performance. Among others, return on assets (ROA), return on equity (ROE), profit margin, Tobin's Q are the most commonly used as performance indicators (Persia, Kurnoga, & Sopta, 2017). Some earlier studies on the same area have used the return of assets (ROA) and Tobin's Q (Altaf, 2020; Altaf & Ahmad, 2019; Laghari & Chengang, 2019)and other used return of equity (ROE) (Caballero, Teruel, & Solano, 2016; Dinçergök, 2018; Mahmood, Han, Ali, & Shahzad, 2019; Purwoto, 2019). Hence, this study uses return on equity (ROE) and it is computed by net profit divided by total equity (Rizki, Anggraeni, & Hardiyanto, Jan-2019).

Independent Variable

Our explanatory variable is gender diversity measured by the number of female directors relative to the total number of directors in board.(Gul et al. 2011; Jizi, M. I., & Nehme, R. 2017; Julizaerma, M. K., & Sori, Z. M. 2012) .

Control Variables

Following previous studies (Petersen & Rajan, 1997; Sila et al.,2016; Benkraiem, Hamrouni, Miloudi, & Uyar, 2020; Rind et al., 2021) on trade credit, we control firm's characteristics which effects on trade credit. These include 1) Current Ratio (CR) measured as Current assets divided by current liabilities, (Siregar & Mardiana, 2022; Husna & Satria, 2019). 2) Sales Growth (SG) which is (Current year's Sale minus Previous year's Sale) scaled by previous year's sale. (Nyeadi, Sare, & Aawaar, 2018) Firms with good growth opportunities will be less likely to offer trade credit because they would like to have more liquid assets in hand. 3) Firm size is defined as log of total assets.(Eluyela, Akintimehin, Okere, Ozordi, Ilogho, & Oladipo, 2018) We are using firm size because large firms may not need to extend credit since they already will have sufficient number of customers and may prefer cash sales and focus more on growth opportunities. 4) Leverage (long term debt to total assets)(Awan, Ishtiaque, Hamid, & Khurram, 2017) it is expected to be negatively related to receivables. 5) ROA (EAT divided by Total Assets) (Siregar & Mardiana, 2022). 6) Board Size (BZ) Log of number of board of directors (Huang, & Kisgen, 2013). 7) Firm Age (Age) no of years the firm has been doing business (Handriani & Robiyanto, 2020). Additionally, we control for industry and time effects (Adams & Ferreira, 2009).

Hypothesis:

Hypotheses are developed on the basis of probable responses of variables used in this research.

Risk Adverse Attribute of Gender Diverse Boards and Trade Credits.

Dwyer, (2002) have argued that women are risk averse, they remain very cautious in taking decision specially decisions involving risk of investing funds. Therefore, it is very unlikely that they favor giving credit sales due to fear of default. Hinz (1996) found that women invested their assets in a conservative manner than men i.e most women put their funds in less risky portfolios. Barua (2010) reported better quality of accruals of firms with female CFOs. This also shows presence of risk averseness in women. Gulam hussen (2015) also found inverse relation between existence of women in board room and risk (confirming risk averse attitude of women). Dwyer (2002) exhibited risk averse nature of women than men by analyzing mutual investment decisions in mutual funds. Consequently, Why women are risk averse has also been discussed by Chen (2018) who argued that there is element of risk and fear in all their financial decisions. So therefore we hypothesized that:

H_1 Risk Averse attribute of gender diverse boards have negative impact on trade credit.

Monitoring Control of Gender Diverse Boards and Trade Credits

Adams, & Ferreira (2009) reported that boards in risky firms make decisions to hire female directors having reputation for excellent monitoring and female CFOs mighty be involved in over monitoring

accruals or desiring much more information about their customers. Such extensive monitoring and information seeking may not be possible without incurring additional costs. Byrnes et al. (1999) reviewed various studies related to gender differences in risk taking and revealed that women avoid risks and less aggressive than men so they rely most on customer information and their own monitoring. Hence, the only way they might extend credit is through tough and strict monitoring. Sila et al. (2016) suggested that there are more chances that women directors become effective monitors than that of men. Another finding closely related to our discussion came from Ahern &Dittmar (2012)who observed that women on board in profitable firms do tougher monitoring after taking risk decisions. We also believe that when women extend trade credit, they will rely on tough monitoring. Some what same findings were reported by Gul et al. (2011) who mentioned that when gender diversity rises in top management roles, it betters monitoring process and strengthens control. The results of (Daily et al.,1999; Chen et al., 2016) concluded that as females are better monitors, they can help in improving risk management via increased board efficiency. Finally, Cumming et al. (2012) reported a key finding that chances of committing accounting frauds are less in firms having better strength of females as members of board of directors. Following the findings of Ahem & Dittmar (2012), we hypothesized that:

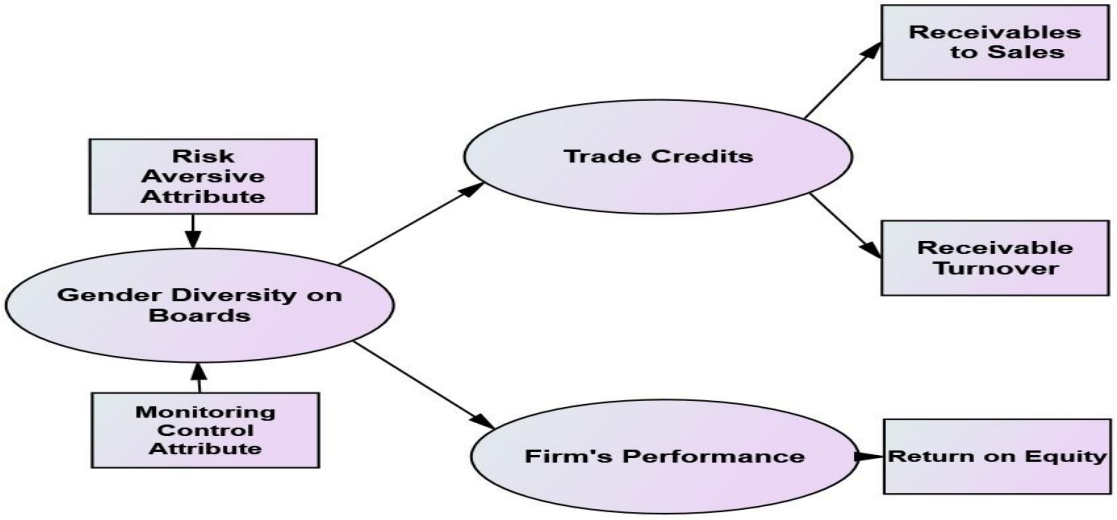
H_2 Better and strict monitoring control of gender diverse boards have positive effects on trade credits.

Attributes of Gender Diverse Boards and Firm Performance

As risk of default always prevails in extending trade credit hence, risk averse suppliers may not want to give trade credits. Since women are also risk averse, as suggested by many studies, presence of gender diversity in board can have significant effect on firms' level of receivables and performance. (Bibi, 2016). The businesses having gender diversity allows them to get significant talented workforce that have new and creative thoughts, ideas and risk averse attitude which could limit its extention of credit to customers, which allows firms to look at a problem from various perspectives and have multiple options to tackle that problem. (Adams and Ferreira, 2009). However, (Shrader, Blackburn & Iles, 1997; Julizaerma, 2012; Gulamhussen, 2015) have found favorable effects of existence of female directors on financial returns of firms. Performance of firms' gender diversity in their board becomes better as found by (Adams and Ferreira, 2009). In another study, Cedric Herring (2009) exhibited that gender diversity results in enhanced sales revenue, profit, and more customers. While, Jizi (2017) suggested that presence of gender diverse boards has favorable effect on risk of firm as variation in stock return of firms decrease due to its strict monitoring control. Ittonen (2013) reported that firms whose records are audited by females have lesser abnormal accruals and improved financial performance. Despite these findings, importance of gender diversity has been recognized worldwide due to its strict monitoring control and other various important attributes of women which are supposed to be tested in following settings.

H_3 Attributes of gender diverse boards affect firm performance positively.

Conceptual Research Model



RESEARCH METHODOLOGY

Data Collections

This study seeks to explore how gender diversity attributes influence both trade credit practices and the financial performance of firms. Specifically, it targets unconsolidated financial statements of non-financial public companies listed on the Pakistan Stock Exchange's KSE 100 index. Over a span of a decade, from 2011 to 2020, data is sourced from the websites of selected firms and the electronic platforms of the Pakistan Stock Exchange (PSX) and central bank; State Bank of Pakistan (SBP).

Research Model & Techniques

According to Studenmund (2014), regression analysis contains estimation between explanatory and dependent variables. To clarify, regression analysis specifically entails examining the anticipated association among one dependent variable and independent variables. Dougherty (2007) further clarified that there is a cause and effect relationship between the variables which has previously been hypothecated. So therefore, regression econometric model is used to investigate the linear relationship among variables, specifically attributes of gender diverse boards, trade credits and firm performance by using STATA software.

There are basically three multiple regressions used here to identify and validate the relationship among the variables.

Regression Model-I:

$$R/A \text{ to } Sales_{i,t} = \beta_0 + \beta_1 GD_{i,t} + \beta_2 SG_{i,t} + \beta_3 CR_{i,t} + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + + \beta_6 Lev_{i,t} \beta_7 BS_{i,t} + \beta_8 Age_{i,t} + \varepsilon_{i,t}$$

Regression Model-II

$$R/A \text{ Turnover}_{i,t} = \beta_0 + \beta_1 GD_{i,t} + \beta_2 SG_{i,t} + \beta_3 CR_{i,t} + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 Lev_{i,t} + \beta_7 BS_{i,t} + \beta_8 Age_{i,t} + \varepsilon_{i,t}$$

Regression Model-III

$$ROE_{i,t} = \beta_0 + \beta_1 GD_{i,t} + \beta_2 SG_{i,t} + \beta_3 CR_{i,t} + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 Lev_{i,t} + \beta_7 BS_{i,t} + \beta_8 Age_{i,t} + \varepsilon_{i,t}$$

$DV_{i,t}$ = Measures Dependent Variables
β_0 = Slope intercept of regression
$b_1 GD_{i,t}$= Coefficient of Gender Diversity
$b_2 SG_{i,t}$ = Coefficient of Sales growth
$b_3 CR_{i,t}$ = Coefficient of Current Ratio
$b_4 Size_{i,t}$ = Coefficient of Size
$b_5 ROA_{i,t}$ = Coefficient of Return on Assets
b_6 $Lev_{i,t}$ = Coefficient of Leverage
$b_7 BS_{i,t}$= Coefficient of Board Size
$b_9 Age_{i,t}$= Coefficient of Firm Age

Validation of Statistical Model

Various statistical estimators in this research study have been employed to ascertain the relationship between gender diversity attributes, trade credits, and firm performance. These include methods such as classical regression like pooled OLS, random and fixed effects models, two stage least squares (2SLS), and Generalized Method of Moments (GMM)

In addition to this, there are some issues in panel data which need to be addressed through statistical procedures in order to assess the validity of assumptions and the overall quality of a panel data regression models. Panel data models involve both cross-sectional (individual or entity-specific) and time-series (temporal) dimensions, making them susceptible to a variety of issues and assumptions that need to be checked. Diagnostic tests help researchers identify problems and potential sources of bias or inefficiency in models. (Baltagi, Econometric analysis of panel data, 2013).

Descriptive Statistics:

Descriptive statistics gives us complete information about data with a clear description about the construction of dataset. It provides us with its clear picture including total number of observations for each variable independently, its mean, and standard deviation along with minimum and maximum values, which are mentioned below in table II.

Table I

Descriptive Statistics

Column 1 suggests list of variables and other columns enlist observations, its mean, standard deviations (Std. Dev.),and minimum (Min) and maximum (Max) values.

Variables	Obs	Mean/Average	Standard Deviation	Minimum	Maximum
Dependent Variables					
RASales	708	0.17	0.32	0.00	2.51
RATurn	702	456.92	3583.22	0.00	47358.93
ROE	724	0.20	0.48	-4.36	7.40
Independent Variables					
GDB	724	0.07	0.10	0.00	1.00
Control Variables					
SG	700	0.12	0.31	-0.75	3.08
ROA	724	0.08	0.10	-0.57	0.93
FS	724	7.47	0.59	5.12	8.94
Lev	724	0.54	0.26	0.00	2.47
CR	724	2.17	6.21	0.02	150.15
BS	724	0.93	0.10	0.00	1.23
FA	690	1.53	0.30	0.00	2.20

The dataset contains variables with varying observation counts, indicating missing values. To ensure consistency, firms lacking data for three consecutive years were excluded.

Dependent variables—RA to Sales, RA Turnover, and ROE—have 708, 702, and 724 observations, respectively. While RA to Sales (mean: 0.017) and

ROE (0.20) show minor variation, RA Turnover has a much higher mean (456.92) and standard deviation (3583.33), with extreme values up to 47,358.93, suggesting outliers and financial constraint differences.

The independent variable, Gender Diverse Board, has 724 observations, with a mean of 0.07 and values ranging from 0 to 1. Among seven control variables, five have full data, while Sales Growth (700) and Firm Age (690) show gaps due to unavailability across years. Control variables such as CR (range:

0.02 to 150.15), SG, and ROA show high variability, further indicating the presence of outliers.

Outliers, defined as extreme values that differ significantly from others, can distort statistical results (Smiti, 2020). They may arise from genuine observations (Teruel & Solano, 2007) and can bias mean and standard deviation if left unaddressed. Hence, variables with extreme dispersion are winsorized at the 1% level, as recommended by prior studies (Laghari & Chengang, 2019).

Before applying winsorization, diagnostic tests are implied to detect data issues in order to guide appropriate model selection (Baltagi, 2013). These steps ensure more accuracy and reliability of the econometric analysis.

Panel data Diagnostic Tests:

The diagnostic tests conducted on the dataset revealed several econometric issues that necessitate the use of a robust estimation method. Multicollinearity was assessed through correlation analysis and variance inflation factors (VIF), and the results indicated no significant multicollinearity among the independent variables, as all correlation and VIF values remained below critical thresholds (Shrestha, 2020; Olivia & Ilie, 2013). This suggests that the predictors are sufficiently independent, meeting the basic assumption required for regression analysis. However, the Ramsey RESET test identified the presence of omitted variable bias in all estimated models, indicating potential misspecification and suggesting that some relevant variables might be excluded from the regression. This bias can result in inaccurate coefficient estimates and misleading inferences (Kayani, 2018).

Additionally, heteroskedasticity was detected in the most models using the Breusch-Pagan, Cook-Weisberg, and Cameron-Trivedi tests, indicating non-constant variance in the error terms, which violates the OLS assumption of homoskedasticity and reduces estimation efficiency (Wooldridge, 2001). Autocorrelation was also found in one of the models using the Wooldridge-Drukker test, suggesting residuals are correlated over time, another violation of OLS assumptions that compromises the validity of standard errors (Drukker, Egger, & Prucha, 2013; Wooldridge, 2005). Furthermore, endogeneity was detected in all models through the Durbin-Wu-Hausman test, confirming that one or more explanatory variables are correlated with the error term (Adams & Ferreira, 2009; Davidson & MacKinnon, 1993; Nakamura & Nakamura, 1998). This issue, if unaddressed, leads to biased and inconsistent estimates under OLS and even under 2SLS.

Considering the combined presence of omitted variable bias, heteroskedasticity, autocorrelation, and endogeneity, it is appropriate to employ the Generalized Method of Moments (GMM) for the final regression analysis. GMM is well-suited for panel data settings with such violations, as it provides consistent and efficient parameter estimates by utilizing moment conditions and instrumental variables to correct for these econometric problems (Bukhari, Mahnoor, Munir, & Kashif, 2013; Chen, Rojniruttikul, Kun, & Sana Ullah, 2022).

Results.

System Generalized Method of Moments (GMM)

Model I

Table-II comprises of the result of coefficient one step system GMM. Its values included of around 605 observations 68 panels, and it also includes year dummies just to control its fixed effects with 24 no of instruments. The output discloses co-efficient of lagged dependent variables of one-step is 1.06 with t-value 34.78 along with its p-value 0.000 which is significant as proposed (Arellano & Bond, 1991). The threshold Probability value of variables should be less than 0.05 for significance with the t-value of 1.96 plus or minus for model fitness between variables. In order to estimate System GMM, the first order of correlation should be less than 0.05, whereas second order of autocorrelation should not be less than 0.05 and value of AR1 should be less than AR2. For this purpose, null hypothesis proposes no autocorrelation is existing. The value of first order autocorrelation (AR1) is 0.0000 which specifies that error term is correlated first lagged value of difference equation and second order autocorrelation is 0.1100 which shows no evidence of second order autocorelation. Hence, GMM for this study is reliable estimator.

The Gender Diverse Board (women on boards) has negative and significant impact on the Receivable to

Sales which is a proxy to measure risk aversive attribute of women on boards on trade credit (Banerjee, Dasgupta, & Kim, 2004) with coefficient value of -1.277 and the T value is -2.23. Furthermore, Coefficient indicate that 1% change in GDB has 1.277% decreases the trade credits to the customers. Hence inclusion of female participation in board room indicate their risk aversive attribute and they are reluctant to extend the trade on credits while in board rooms as compared to their opposite counterparts. This also support our hypothesis that Risk Aversive attribute of women in boardroom have negative relationship with trade credits which are in line with previous work on risk averse attribute of women (James P., David C., & William, 1999), (Gulamhussen & Santa, 2015) & (Dwyer, Gilkeson, & List, 2002).

Sales growth's coefficient is -0.65 with T value is -2.36 that illustrate that receivables to sales and control variable sales growth has negative and significant relationship. By evaluating the relationship between sales growth and trade credits we can infer that sales growth is reduced when female director avoid granting credits to the customers for avoiding the risk which is also reflected by Ogawa, Sterken, & Tokutsu (2013) and (Lenard M. J., Yu, York, & Wu, 2014)

Moreover, coefficient value for leverage is -1.04 with its T value 2.03 which demonstrates they have a significant and inverse relationship that the negative and significant relationship and it is in line with matching principle because firms use their long term funds for financing long term assets. They do not finance their current assets (account receivables) with long term liabilities because the cost of interest being paid on long term liabilities will exceed profit to be earned from credit sales This contradicts with the findings of Rind, Boubaker, & Dang (2021)

This model also considered some other control variables i.e Return on Assets, Firm Size, Current Ratio, Board Size and Firm age all have negative and insignificant impact on receivable to sales.

Table II

One-step System GMM (Model-I)

Variables	Coefficients	t-value	P-value		
RASales-w L1.	**1.061106**	**34.78**	**0.000**	F Statistics	172.91
GDB-w	**-1.277257**	**-2.23**	**0.026**	P-Value	0.000
ROA-w	-.07869	-0.83	0.406	Year Dummies	Yes
SG-w	**-.0657858**	**-2.36**	**0.019**	No of Observation	605
FS-w	-.0263409	-1.27	0.206	**No of Groups in Panel**	**68**
Lev-w	**-.1043755**	**-2.03**	**0.042**	**No of Instrument**	**24**
CR-w	-.0023763	-0.35	0.726	**1st Order (AR1) (p-value)**	**0.000**
BS-w	-.0848935	-0.93	0.355	**2nd Order (AR2) (p-value)**	**0.110**
FA-w	-.0298523	-1.17	0.243		

Model II

Table-III, predicts the results of the onestep System GMM. Its estimators are comprised of 598 number of observations with 68 panels with year dummies in order to control time FE with 67 no of instruments. The coefficients of lagged dependent variables is -0.837 with t-value -3.23 along with p value 0.001 which is significant. The value of first order autocorrelation (AR-1) is 0.000 which suggests error term is serialy correlated with its error term of

difference equation while the second order autocorrelation is 0.322 which again observes no evidence of autocoreation. Hence, GMM for this study is reliable estimator.

Gender Diverse Board has positive and significant impact on the Receivable Turnover which is a proxy to measure better and strict monitoring control attribute of women on boards on trade credits with coefficient value of 1.756323 and the T value is 3.49. Furthermore, Coefficient indicate that one percent change in GDB has 1.756 times increase in receivable turnover. If the receivable turnover demonstrates high values then it is presumed to have a strict lending and conversion policy and it is collecting rapid payments from customers, which is generally considered favorable. (Adams & Ferreira, 2009). Hence inclusion of female participation in board room indicate their strict monitoring control and the results are in line with Sila, Gonzalez, & Hagendorff (2016)

Sales growth's coefficient is 1.2486 with T value of 2.23 that illustrate the positive and significant relationship between sales growth and receivable turnover which is in contrast with Petersen & Rajan (1997) and Ghoul & Zheng (2016) and similar to Ahern & Dittmar (2012) which says that that firms choose diverse boards to maximize value.

This model also considered some other control variables i.e Return on Assets, Leverage, Board Size and firm age has positive and insignificant relationship with dependent variable while firm size and Current Ratio are negatively and insignificantly associated with receivable turnover.

Table III
One-step System GMM (Model-II)

Variables	Coefficients	t-value	P-value		
RATurn-w L1.	**-.0837825**	**-3.23**	**0.001**	F Statistics	547.99
GDB-w	**1.756323**	**3.49**	**0.001**	P-Value	0.000
ROA-w	.2204086	0.96	0.338	Year Dummies	Yes
SG-w	**.1248687**	**2.23**	**0.026**	No of Observation	598
FS-w	-.4094032	-1.02	0.308	**No of Groups in Panel**	**68**
Lev-w	.470448	0.47	0.638	**No of Instrument**	**67**
CR-w	-24.23405	-1.51	0.132	**1st Order (AR1) (p-value)**	**0.000**
BS-w	214.5441	0.98	0.329	**2nd Order (AR2) (p-value)**	**0.322**
FA-w	2.063919	0.03	0.972		

Model III

Table IV comprises of the results of coefficient one step system GMM. Its values included of around 608 observations 69 panels, and it also includes year dummies just to control its fixed effects with 45 no of instruments. The output discloses coefficcients of lagged dependent variables of onestep is 0.416 with t-value 4.38 along with its p-value 0.0000 which is significant as proposed (Arellano & Bond, 1991). The thresh hold Probability value of variables should be less than 0.05 for significance with the t-value of

1.96 plus or minus for model fitness between variables. In order to estimate System GMM, the first order of correlation should be less than 0.05, whereas second order of autocorrelation should not be less than 0.05 and value of AR1 should be less than AR2. For this purpose, null hypothesis proposes no autocorrelation is existing. The value of first order autocorrelation (AR1) is 0.0000 which specifies that error term is correlated first lagged value of difference equation and second order autocorrelation is 1.07 which shows no evidence of second order autocorelation. Hence, GMM for this study is reliable estimator.

The Gender Diverse Board has significant and positive effect on the Return on equity (firm performance) along with coefficient of 1.385425 and its T value is 2.31. Furthermore, Coefficient indicate that one percent change in GDB has improved return on equity at the rate of 1.38%. Hence inclusion of female participation in board room improves the firm financial performance significantly, which is in line with the previous studies of (Shrader,, Blackburn, & Iles, 1997), (Adams & Ferreira, 2009), and (Julizaerma & Sori, 2012).

ROA coefficient is 1.776881 with T value is 9.36 that illustrates the positive and significant relations between ROE return on equity and ROA return on assets which are also consistent with previous work (Gulamhussen & Santa, 2015).

Furthermore, coefficient of leverage (LEV) is 0.5583919 along with its T value 7.04 which proposes that there is a significant and positive effect on control variable and predictor which is in line with Rind, Boubaker, & Dang (2021).

This model also considered some other control variables i.e Sales Growth, Firm Size, Current RATIO, Board Size and Firm age all have positve and insignificant impact on return on equity.

Table IV
One-step System GMM (Model-III)

Variables	Coefficients	t-value	P-value		
ROE-w L1.	**.4165595**	**4.38**	**0.000**	F Statistics	54.15
GDB-w	**1.385425**	**2.31**	**0.021**	P-Value	0.000
ROA-w	**1.776881**	**9.36**	**0.000**	Year Dummies	Yes
SG-w	.0756727	1.82	0.070	No of Observation	608
FS-w	.0086784	0.34	0.732	**No of Groups in Panel**	**69**
Lev-w	**.5583919**	**7.04**	**0.000**	**No of Instrument**	**45**
CR-w	.0139732	1.44	0.150	**1st Order (AR1) (p-value)**	**0.000**
BS-w	.0254584	0.20	0.845	**2nd Order (AR2) (P-value)**	**0.107**
FA-w	.0356978	0.99	0.321		

Conclusion:

This study focuses on the causal relationship between attributes of women on board on trade credits and firm performance. A sample is collected of non-financial companies of KSE-100 index of Pakistan stock exchange for the period of ten years

along with 724 observations has been employed in this study.

This study postulates that risk averse attributes of women on board have negative and significant impact on trade credit to the customers, and results are reported using GMM for addressing endogeneity issues in the data. These results are in line with previous studies of risk averseness of women (Khan, Sarfaraz, & Hussnain, 2021) (Cole, Mehran, & Giombini, 2018).

Women on board cause decrease in trade for being risk aversive and improve receivable turnover which is proxy to measure better and strict monitoring control of women in boardrooms and it has not only significant but also positive impact on trade credits which results in improved cash holding, (Manello, Falavigna, Isaia, & Rossi, 2023) inventory conversion ratio and reduced working capital finance requirement which has ultimately impact on financial performance (Palvia, Vähämaa, & Emilia, 2015).

To know the robustness of the financial performance specifically with the gender diverse board. We used a proxy of return on equity with percentage of women on board, we found significant and positive impact on organizational performance similar to the results of Nigerian (Maikano & Julius, 2022) and Roman studies (TANASUICA, 2023)

Thus, this study reflects that women on board reduce/refuse trade credit to the customers and speed up receivable turnover, hold more cash in hand and avoid complete reliance on external financing which improves financial performance at this level.

From our research we have also deduced that recent corporate law amended by the government aimed at reducing gender in equality have also impact on firm financial performances and formulate risk related policies.

This study finds that women on boards significantly reduce trade credit extension due to their risk-averse and strict monitoring behavior, leading to improved cash holdings and overall firm performance, particularly in financially constrained firms. Increasing female representation may enhance board effectiveness, strengthen governance, reduce agency problems, and improve communication and decision-making quality. The results also indicate faster receivables recovery, reducing the need for external borrowing and lowering operating costs. While current corporate law mandates at least one female director, the critical mass theory suggests that 30% female participation is necessary for meaningful impact. Therefore, a stronger policy push toward gender balance is recommended to enhance firm outcomes.

Future research could explore industry-specific variations in the effects of board gender diversity and further investigate women's roles in key governance positions like CEOs and CFOs. Including additional variables such as payables-to-sales could offer a more comprehensive view of monitoring behavior. Comparative studies before and after the mandatory inclusion of female directors would also provide deeper insights into the effectiveness of such reforms.

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