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Female Directors on Audit Committees: Context Matters

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Abstract

The paper aims to assess whether gender-diverse audit committees (ACs) affect audit quality in gender unequal country, namely Pakistan, given that prior research is mainly concentrated on developed countries with higher gender equality and evidences that female directors on ACs are effective in terms of audit quality. Therefore, our research may identify whether the positive association between female directors on ACs and audit quality in the developed countries stems from their greater gender equality. Our study's sample includes non-financial listed Pakistani firms from 2009 to 2015. We determine audit quality through the likelihood of choosing industry specialist auditor (ISA) and audit fees. After incorporating missing information, our firm-year observations constitute 738 (780) for the ISA (audit fee) model. Further, we employ logistic regression for ISA model due to the dichotomous nature of the variable and utilize ordinary least squares regression for audit fee model. We find that gender-diverse ACs reduce the likelihood of hiring ISA and decrease audit fees. Our findings are robust to propensity-score matched regression and fixed effects model. Our result highlights that when there is high gender inequality, it may be beneficial for policy-makers to empower women and thereby help them raise their voice.

Keywords: *Audit Committees, Gender Diversity, Audit Quality, Gender Inequality, Pakistan.*

Introduction

Audit committee (AC) acts as an important mechanism for enhancing the reliability of financial reports, as it is responsible for monitoring the work of external auditors (Gerayli et al., 2021; Aldamen et al., 2012). It is argued that female directors improve the effectiveness of ACs, as relatively women are likely to show greater tendency towards avoiding risks and are also expected to depict higher ethical behavior (Krishnan

and Parsons, 2008; Zalata et al., 2018). Moreover, they are not considered to be members of 'old-boys' networks' (Adams and Ferreira, 2009; DeBoskey et al., 2018), demonstrating higher independence. Therefore, female directors on ACs may be more diligent and determined as compared to males (Adams and Ferreira, 2009).

Empirically, Abbasi et al. (2020), Aldamen et al. (2018) and Lai et al. (2017) found that female directors on ACs positively affect audit quality in the United Kingdom (UK), Australia and the United States (US) respectively. Interestingly, these studies are concentrated in gender-equal countries where the institutional support empowers women in expressing their opinions. On the other hand, weak institutions are likely to result in poor enforcement of regulations, thereby creating an unequal environment for females where women's voices are unheard and their work is devalued (Olarewaju and Fernando, 2020).

It is argued that institutional voids may lead to marginalization of powerless segments of the society (Mair et al., 2012; Narooz and Child, 2017) such as females in a gender unequal environment. These voids may, therefore, make it difficult to address gender inequality where a woman is perceived to be effective in a household setting rather than in a business environment (Ali and Syed, 2017; Chijoke-Mgbame et al., 2020; Samo et al., 2019). Thus, in such cases, male directors may consider their female counterparts to be not capable of contributing towards decision-making, thereby rendering their opinions/suggestions ineffective (Muttakin et al., 2015; Syed and Ali, 2019; Olarewaju and Fernando, 2020). As a result, female directors' effectiveness may depend on the contexts in which they operate (Abdullah et al., 2016). Hence, we assess how poor institutions may affect the effectiveness of including female directors on ACs.

We assess the relation between gender diverse ACs and audit quality in Pakistan, as it offers a unique and appropriate research setting to answer our research question. Although the Pakistani constitution provides equal rights to females and males (Ullah et al., 2019), weak enforcement mechanisms in Pakistan (Ashraf and Ghani, 2005; Javid and Iqbal, 2008; Shah et al., 2016) create institutional voids that make it difficult to address the poor gender equality in Pakistan (Sian et al., 2020; World Economic Forum (WEF), 2018). Indeed, Post and Byron (2015) reported that Pakistan has the lowest gender equality score among the countries sampled by their study. Consequently, in Pakistan, there is a deep-rooted belief that women are homemakers and subordinate to men (Association of Chartered Certified Accountants (ACCA), 2010; Ali, 2013; Ali and Syed, 2017; Moin et al. 2018). Gender Social Norms Index ranked Pakistan as the country with the highest gender bias (UNDP, 2020). Resultantly, Pakistani female directors may be perceived as incapable of contributing effectively, hence, their suggestions in ACs may not be given due consideration (Alam, 2012; Ali, 2013; Jamal, 2018).

Our study offers contribution in three ways. Firstly, this study adds to the existing debate on the merits of female directors on ACs. Studies (Abbasi et al., 2020; Aldamen et al., 2018) showing a positive link between gender-diverse ACs and audit quality are concentrated in gender-equal settings. We argue that their positive impact may stem from the supporting systems in place for females, as we substantiate that women directors on AC are negatively linked with audit quality when there are deep-rooted gender biases. Although Post and Byron (2015) substantiated that female directors reduce firm performance when there is poor gender equality, there is scarce research in the audit quality setting. Scandals such as Enron and WorldCom have made policy-makers concerned about the quality of audit (Boiral et al., 2020; Garcia-Blandon et al., 2019). Moreover, the current complexity in accounting issues (DeFond and Zhang, 2014) may make financial statements prone to errors, suggesting a greater need for a high-quality audit.

Secondly, our study contributes to institutional theory by examining how this framework could be utilized for assessing the effectiveness of female directors on ACs. Institutional theory has been utilized in the context of gender quotas (Terjesen et al., 2015) and in explaining the appointment of female directors (Gregoric et al., 2017). Yet, prior research fails to examine how the institutional theory helps explain the effectiveness of gender-diverse ACs. Lastly, this study extends the recent literature (Bhuiyan et al., 2020) by identifying the specific contexts in which women directors on ACs negatively influence the reliability of

financial statements. Bhuiyan et al. (2020) report that tainted female directors (who have been previously linked with financial irregularities) on ACs reduce financial reporting monitoring. Our findings show that gender inequality may also curtail the monitoring of gender-diverse ACs.

The following is the structure of this study. Second section develops our hypothesis, while section three presents the methods adopted. Section four presents the study's results while the last section discusses the conclusion.

Literature Review and Hypothesis Development

Institutions may play a part in the relationship between gender diverse ACs and quality of audit, as institutions encompass widely accepted social practices (Alon and Dwyer, 2016). Institutional theory suggests that organization policies are affected by the society in which they operate (Rotting, 2016; Strange et al., 2009). This includes regulations set by legislators and informal rules such as values or beliefs (Adomako et al., 2020; Fung et al., 2015; Rotting, 2016). Hence, this paradigm encompasses "humanly devised constraints that shape human interaction" (Jouber, 2019, p. 83).

Informal institutions are expected to guide business practices when weak enforcement mechanisms create institutional voids (Burki, 2012). Such informal traits may lead businesses to follow practices that are devoid of any benefit to organizations (Ntim and Soobarayen, 2013). Due to such poor corporate governance, directors may be influenced by the prevalent gender biases in the society whereby they may devalue the work of female directors even if it may hamper the organization. Hence, the "nature of institutions in a given society or country could either be a curse or blessings" (Abdullah et al., 2016; Rahman et al., 2020, p. 18). As a result, unique characteristics of a country may make female directors undesirable (Ghafran and O'Sullivan, 2013; Haniffa and Hudaib, 2006) and thus the effectiveness of gender diverse ACs is likely to be context-specific (Bhuiyan et al., 2020).

Patriarchal beliefs are deeply ingrained in Pakistan, as "masculinity is a predominant aspect of this society and is manifested in the way society functions" (Asian Development Bank, 2000; Samo et al., 2019, p. 3). Pakistani society regards women as second-class citizens (Ali and Syed, 2017; Haq et al., 2019; Naureen and Awan, 2011). The male-dominated society of Pakistan considers that females are only effective in performing household duties (Ali and Kramar, 2015; Sadaquat and Sheikh, 2011) and are incapable of handling authoritative positions such as managers (Ali and Syed, 2017; Hussain et al., 2016; Samo et al., 2019). This can be deduced from the contention of a Pakistani CEO that "a woman is a homemaker not a business or empire maker" (ACCA, 2010, p. 12). The existence of such gender stereotypes in the board is affirmed by a woman CEO of a listed Pakistani firm, as she argues that "behavioural change will have to be ushered [in] by top management for gender diversity to become embedded into the DNA of board culture. The behavioural challenges or stereotypes need to be managed, addressed and resisted" (ACCA, 2010, p. 16).

The existence of such stereotypes exists in spite of the constitution of Pakistan providing equal rights to both men and women (Ullah et al., 2019). This stems from the weak institutional quality in Pakistan (Javid and Iqbal, 2008; Shah et al., 2016; Uddin et al., 2019) where the poor enforcement of rules makes it difficult to address gender inequality and thereby gender biases (Ashraf and Ghani, 2005; Samo et al., 2019; Uddin et al., 2019). Indeed, Pakistan is ranked very low for its institutional quality (Muhula, 2019; Shah et al., 2016). As a result, the persistence of such gender stereotypes is likely to negatively affect the effectiveness of female directors, as directors may not regard the contributions of Pakistani female directors to be worthy of consideration (Akhter and Akbar, 2016; Alam, 2012; Ali, 2013; Jamal, 2018). Indeed, Post and Byron (2015) substantiated a negative relation among female directors and firm performance in the context of low gender parity. Hence, we propose the following hypothesis:

H: Gender-diverse ACs have a negative association with audit quality in Pakistan.

Methodology

We target 357 firms in Pakistan, constituting all non-financial companies on the Pakistan Stock Exchange (PSX). This study does not include financial firms due to their distinct regulatory framework (Zaman et al., 2011). Our sample covers the period 2009-2015. We used quantitative research techniques to answer our research questions, given that most of the research in the context of AC characteristics follows quantitative analysis. We started our data collection from 2009 due to the limited availability of data before 2009. Moreover, in 2016, Pakistani legislators established the Audit Oversight Board with the view to enhance audit quality (Ghori, 2017; Khalid, 2018), therefore, we obtained the requisite data till 2015 in order to avoid any potential bias from such regulation. Financial characteristics are manually obtained from annual reports and firms' websites. Gender of the directors on ACs and other corporate governance data was also hand-collected from the annual reports of companies. We used PSX website for industrial classification of the companies. After omitting financial firms and incorporating missing information for our variables, the total firm-year observations constitute 738 (780) for the industry-specialist auditor (ISA) (audit fee) model.

We adopt the following model:

$$\text{Audit quality} = \beta_0 + \beta_1 \text{female} + \text{Controls} + \varepsilon \quad (1)$$

The above variables are explained in Table 1. Also, the standard errors are clustered at the firm level in all models (Zalata et al., 2018). Audit quality is the dependent variable in this study. We measured audit quality based on ISAs (*industry-specialist auditor*), following Lai et al. (2017) and Srinidhi et al. (2014) (we also utilize audit fees (*audit fee*) as another audit quality proxy). In line with Khan et al. (2015) and Reichelt and Wang (2010), we considered an audit firm to be an industry-specialist if it has the highest or the second-highest market share (based on audit fees) in an industry-year. It is theoretically appropriate to employ audit fees as a measure to determine an ISA, as this is in line with the literature pertaining to industrial organizations where industry output forms the basis for identifying the market share (Audousset-Coulier et al., 2016; DeFond et al., 2000). Therefore, Audousset-Coulier et al. (2016) and Basioudis and Francis (2007) recommend audit fees for ascertaining an ISA. Moreover, we utilized the website of PSX to ascertain the industries and the firms in each of these industries, which were then utilized to determine the market share of auditors.

ISA are expected to possess greater industry knowledge (Lim and Tan, 2008; Lin and Hwang, 2010; Taylor, 2000), which enhances their ability to identify errors (Rusmin and Evans, 2017; Owhoso et al., 2002). Additionally, auditors who invest in developing industry-specific knowledge are likely to safeguard their reputational capital and avoid acceding to management demands (Krishnan, 2003; Lim and Tan, 2008). Prior studies showed that ISAs are less likely to contravene auditing standards (O'Keefe et al., 1994) and are negatively related to fraudulent financial reporting (Carcello and Nagy, 2004). We chose hiring an ISA, rather than the selection of a Big 4 auditor, as an auditor choice proxy because Big 4 auditors operate through local affiliates in Pakistan (Abid et al., 2018) and thereby may not be representative of higher audit quality.

This study's main independent variable is the proportion of female directors on AC (Zalata et al., 2018). We also included several control variables in our study. If the AC is greater in size then this may suggest better audit quality due to the variety in members' experiences (Zalata et al., 2018). Multiple directorships of ACs are also likely to improve audit quality because of the greater expertise stemming from serving in other ACs (Tanyi and Smith, 2015). Larger boards may benefit from having a greater number of monitors (Chan et al., 2013); hence, better audit quality is expected from large boards. Independent boards may also be associated with greater audit quality, given their lack of financial or personal link with firms (Rahman and Ali, 2006). Further, more board meetings suggest greater diligence (Zaman et al., 2011) and therefore higher audit quality. Moreover, if there is duality in the roles of Chairman and CEO, then this suggests the

greater influence of the CEO to demand lower audit quality to successfully manipulate financial reports (Zaman et al., 2011).

Higher managerial ownership may align the interests of owners and managers, which may motivate directors to demand enhanced monitoring (Vafeas, 2005), resulting in higher audit quality. Family firms are also expected to reduce audit quality, as they may cater to their personal interests by exercising their control (Khan et al., 2015; Srinidhi et al. 2014). Due to the greater pressure to present accurate financial reports (Zalata et al., 2018), large firms may demand higher audit quality. Firms with poor financial condition, in the form of lower firm performance, higher leverage and incurrence of loss, may have greater incentive to misstate earnings (Rahman and Ali, 2006; Zalata et al., 2018) and therefore demand lower audit quality. Furthermore, complex firms may possess poor internal controls (Zaman et al., 2011), suggesting demand for additional monitoring (and therefore higher audit quality). Following Khan et al. (2015), we also used ISA as a control variable in our audit fees model to control for the effect of a high-quality auditor.

Control variables were ascertained as follows: *audit committee size* (number of members in AC) (Zalata et al., 2018), *directorship* (average directorships by AC members) (Tanyi and Smith, 2015), *board size* (number of board members) (Zalata et al., 2018, *board independence* (proportion of independent directors to board members) (Chan et al., 2013), *ceo duality* (dummy variable of 1 if the CEO and the Chairman are same, otherwise 0) (Zaman et al., 2011), *director share* (proportion of shares held by directors) (Song and Windram, 2004), *board meetings* (number of board meetings) (Zaman et al., 2011), *family* (dummy variable of 1 if the family owns greater or equal to 20% of shares and at least one family member is represented on the board, otherwise 0) (Khan et al., 2015), *size* (log of total assets) (Bhuiyan and D'Costa, 2020), firm performance (return on assets (*roa*)), *leverage* (proportion of liabilities to assets), *loss* (dummy variable of 1 if the firm incurred loss otherwise 0) (Arun et al., 2015; Zalata et al., 2018), audit complexity (*stock receivable*) (proportion of inventory and debtors to assets) (Bhuiyan and D'Costa, 2020). Further, the measurement of ISA (which was included as a control variable in our audit fee model) has been defined above.

Results and Discussion

Descriptive statistics (Table 1) show that female representation on ACs is around 10% in Pakistan, which is similar to the percentage reported by Zalata et al. (2018) in the US. Table 2 (correlation matrix) indicates that gender diverse AC is negatively correlated with our audit quality proxies (ISA and audit fees). Further, if Variance Inflation Factor (VIF) is greater than 10 then it indicates multicollinearity concerns (Jackling and Johl, 2009). This is unlikely to be an issue in this study because our VIF values range from 1.12 to 1.79.

Following Srinidhi et al. (2014), we performed logistic regression because the choice of hiring an ISA is dichotomous. Column 2 of Table 3 finds that female directors on ACs have a negative and significant relation with audit quality in Pakistan. It affirms our argument that contributions of Pakistani female directors are devalued and thereby given inadequate consideration (Alam, 2012; Ali, 2013; Jamal, 2018) due to the rampant biases against females that they are more suitable in household settings (UNDP, 2020).

Further, our control variables are significant and in expected directions. AC size is positively linked with audit quality, affirming that large ACs benefit from variety in members' experiences (Zalata et al., 2018). Further, board meetings have a positive link with audit quality, indicating that more board meetings enhance diligence (Zaman et al., 2011). Moreover, leverage has a significant and negative association with audit quality, suggesting that the poor financial condition of firms may lead them to manipulate earnings (Zalata et al., 2018) and demand lower audit quality.

Given that audit quality is a complex and unobservable construct, it is important to utilize multiple audit quality proxies (DeFond and Zhang, 2014; El-Dyasty and Elamer, 2020). Therefore, we used the natural log of audit fees as an additional proxy for audit quality (Saeed et al., 2020; Lai et al., 2017). Our choice of these audit quality measures follows Khan et al. (2015) and Srinidhi et al. (2014), who utilized ISA and audit fees as audit quality proxies.

High audit fees suggest greater effort and more investigations by auditors, thereby suggesting higher audit quality (Carcello et al., 2002; DeFond and Zhang, 2014). Lai et al. (2017) argued that ACs have a more direct impact on auditor choice and audit fees, which makes these audit quality proxies more suitable in the context of examining the effectiveness of AC mechanisms. As a result, industry-specialist audit firm and audit fees can be regarded as appropriate measures to depict greater monitoring through the provision of high-quality audit.

Our ordinary least squares regression, in Column 3 of Table 3, shows that gender-diverse ACs are significantly and negatively associated with audit fees. Therefore, we accept our hypothesis that female directors on ACs reduce audit quality in Pakistan, as our study reports that female directors decrease the likelihood of hiring ISAs and reduce audit fees. Our finding is in line with Post and Byron (2015), who evidenced that female directors negatively affect firm performance in the context of low gender equality. Overall, this result indicates the importance of considering the institutional context when assessing the benefit of gender-diverse ACs. Our results suggest that, in the gender unequal countries, gender biases lead directors to attach limited importance to arguments raised by female directors on ACs, resulting in a negative impact on audit quality.

Auditors may reduce audit risk because of higher monitoring of female directors, which results in lower audit fees (Ittonen et al., 2010), thereby offering an alternative view in relation to our negative link between gender diverse ACs and audit fees. However, this is unlikely to be the case in our setting. We attenuate the weakness of only using audit fees as an audit quality measure by adopting the choice of an ISA as an additional audit quality proxy (DeFond and Zhang, 2014). We find that female directors on ACs reduce the likelihood of hiring ISAs. Thus, we argue that our negative link between gender diverse ACs and audit fees is more likely to stem from the reduced demand for monitoring (and thereby lower audit fees), rather than due to the lower audit risk.

Following Sultana et al. (2020), we employed propensity score matched regression in order to mitigate the concerns originating from endogeneity bias. For this purpose, firstly, we ascertained the probability of female directors on ACs using all control variables except for our main variable (Habib et al., 2017; Shipman et al., 2017). Then, treated and control firms were matched based on the nearest probabilities identified in the first step, which generated matched pairs (Lai et al., 2017).

Further, we chose a no replacement option (where each firm is matched once) in order to follow the standard practice in accounting research (Shipman et al., 2017). The results in Table 4 (ISA) and 5 (audit fees) suggest success in our matching process, given that all observable firm characteristics of treated and control firms are insignificant (Habib et al., 2017). We then performed regression on the matched sample in Columns 2 (ISA) and 3 (audit fees) of Table 6. The findings are consistent with our original finding of a negative association between gender-diverse ACs and audit quality.

We also adopt fixed effects model, which controls for time-invariant unobserved firm characteristics (Lai et al., 2017) and thereby expected to address omitted variables bias (Evans and Miguel, 2007; Handschumacer et al., 2019). The results for the fixed effects procedure, in Columns 2 (industry-specialist auditor) and 3 (audit fees) of Table 7, show that our findings are in line with the main results.

Table 1: Descriptive statistics

	Mean	Std. Dev.	Min.	Max.
Industry-specialist auditor	.462	.499	0.000	1.000
Audit fee	6.494	.686	3.219	8.230
Female	.098	.187	0.000	1.000
Audit committee size	3.302	.629	2.000	6.000
Directorship	.131	.241	0.000	1.000
Board size	7.813	1.225	5.000	13.000
Board independence	.198	.189	0.000	.857
Board meeting	5.375	2.463	3.000	35.000
Ceo duality	.169	.375	0.000	1.000
Director share	27.135	27.342	0.000	98.403
Family	.772	.420	0.000	1.000
Size	14.897	1.925	0.000	19.722
Leverage	.597	.348	.007	3.739
Stock receivable	30.288	17.34	0.000	84.875
Loss	.297	.457	0.000	1.000
Roa	.030	.161	-3.174	.463

Variables are defined in the methodology section

Table 2: Correlation matrix

	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)
1) Industry-specialist auditor	1.000															
2) Audit fee	0.458*	1.000														
3) Female	-0.176*	-0.154*	1.000													
4) Audit committee size	0.210*	0.275*	-0.115*	1.000												
5) Directorship	0.040*	0.079*	-0.154*	0.021	1.000											
6) Board size	0.212*	0.275*	-0.092*	0.447*	0.017	1.000										
7) Board independence	0.032	-0.041	-0.122*	0.047	-0.014	0.094*	1.000									
8) Board meeting	0.035	0.079*	0.040*	-0.036	-0.101*	-0.033	-0.054*	1.000								
9) Ceo duality	-0.104*	-0.125*	0.131*	-0.148*	-0.061*	-0.169*	-0.008	-0.014	1.000							
10) Director share	-0.149*	-0.114*	0.232*	-0.218*	-0.169*	-0.232*	-0.187*	0.056*	0.137*	1.000						
11) Family	-0.143*	-0.205*	0.191*	-0.221*	0.085*	-0.348*	-0.089*	0.007	0.086*	0.385*	1.000					
12) Size	0.155*	0.212*	0.012	0.187*	-0.001	0.191*	-0.007	-0.026	-0.049*	-0.130*	-0.059*	1.000				
13) Leverage	-0.038*	-0.223*	0.023	-0.074*	0.029	-0.024	-0.023	-0.033	0.180*	-0.008	0.023	-0.093*	1.000			
14) Stock receivable	0.125*	0.195*	-0.057*	-0.022	0.021	0.108*	-0.037	-0.090*	-0.110*	-0.026	-0.138*	-0.001	-0.067*	1.000		
15) Loss	-0.198*	-0.283*	0.030	-0.105*	0.013	-0.117*	-0.011	-0.004	0.173*	0.083*	0.039*	-0.087*	0.058*	-0.263*	1.000	
16) Roa	0.109*	0.122*	-0.062*	0.070*	-0.014	0.074*	-0.008	-0.019	-0.141*	-0.048*	-0.065*	0.074*	-0.463*	0.107*	-0.368*	1.000

* shows significance at the 0.1 level. Variables are defined in the methodology section

Table 3: Gender diverse ACs and audit quality

	ISA	Audit fees
Female	-2.273***	-0.345**
	(-2.881)	(-1.994)
Audit committee size	0.446*	0.145***
	(1.674)	(2.801)
Directorship	-0.036	0.260*
	(-0.068)	(1.730)
Board size	0.085	-0.037
	(0.656)	(-1.161)
Board independence	0.438	0.036
	(0.628)	(0.203)
Board meeting	0.106**	0.008
	(2.395)	(0.823)
Ceo duality	0.222	0.046
	(0.700)	(0.453)
Director share	-0.005	0.001
	(-0.896)	(0.871)
Family	-0.205	-0.170*
	(-0.553)	(-1.741)
Size	0.021	0.012
	(0.250)	(0.620)
Leverage	-0.965**	-0.174
	(-2.140)	(-1.288)
Stock receivable	0.004	0.003
	(0.511)	(1.300)
Loss	-0.124	-0.095
	(-0.426)	(-1.154)
Roa	2.600	0.648***
	(1.490)	(3.554)
Industry-specialist auditor	-	0.451***
	-	(6.851)
Observations	738	780
Yearly controls	Included	Included
Industry controls	Included	Included
LR test/F test	147.18***	12.45***
Pseudo R^2/Adjusted R^2	0.145	0.403

Parentheses depict *z*-statistics (Column 2) and *t*-statistics (Column 3). Variables are defined in the methodology section. *** p<0.01, **p<0.05, *p<0.1

Table 4: Mean difference test (ISA)

	Treated	Control	p-value
Audit committee size	3.219	3.225	0.926
Directorship	0.084	0.117	0.116
Board size	7.847	7.776	0.554
Board independent	0.177	0.174	0.858
Board meeting	5.250	5.107	0.471
Ceo duality	0.224	0.204	0.624
Director share	34.067	34.675	0.833
Family	0.898	0.923	0.377
Size	15.206	15.144	0.711
Leverage	0.589	0.583	0.870
Stock receivable	28.129	27.615	0.756
Loss	0.327	0.296	0.514
Roa	0.011	0.023	0.559

Variables are defined in the methodology section. This table presents the p-values for the mean differences (between treated and control firms) after our matching process.

Table 5: Mean difference test (Audit fees)

	Treated	Control	*p*-value
Audit committee size	3.221	3.231	0.849
Directorship	0.085	0.104	0.299
Board size	7.841	7.887	0.722
Board independent	0.178	0.187	0.620
Board meeting	5.251	5.185	0.760
Ceo duality	0.226	0.231	0.904
Director share	34.219	32.450	0.540
Family	0.897	0.862	0.277
Size	15.196	15.107	0.579
Leverage	0.590	0.606	0.666
Stock receivable	28.258	26.331	0.253
Loss	0.328	0.364	0.458
Roa	0.011	0.013	0.913
Industry-specialist auditor	0.333	0.333	1.000

Variables are defined in the methodology section. This table presents the *p*-values for the mean differences (between treated and control firms) after our matching process.

Table 6: Endogeneity tests

	Propensity score matching	
	Industry-specialist auditor	Audit fees
Female	-2.573***	-0.351**
	(-3.241)	(-2.030)
Audit committee size	0.057	0.0598
	(0.163)	(0.905)
Directorship	0.331	0.327
	(0.427)	(1.361)
Board size	0.255*	-0.0528
	(1.712)	(-1.114)
Board independence	0.511	-0.0501
	(0.468)	(-0.188)
Board meeting	0.147**	0.0274
	(2.170)	(1.585)
Ceo duality	0.446	0.112
	(1.139)	(0.932)
Director share	-0.002	0.000574
	(-0.303)	(0.337)
Family	-1.724**	-0.381**
	(-2.248)	(-2.330)
Size	0.139	-0.0118
	(1.041)	(-0.434)
Leverage	-1.714**	0.0210
	(-2.501)	(0.140)
Stock receivable	0.022*	0.010**
	(1.691)	(2.282)
Loss	-0.177	-0.234**
	(-0.531)	(-2.478)
Roa	0.415	0.565***
	(0.486)	(4.078)
Industry-specialist auditor	-	0.498***
	-	(5.147)
Observations	375	382
Yearly controls	Included	Included
Industry controls	Included	Included
LR test/F test	114.88***	8.68***
Pseudo r^2/adjusted r^2	0.229	0.447

Parentheses depict *z*-statistics (Column 2) and *t*-statistics (Column 3). Variables are defined in the methodology section. *** p<0.01, **p<0.05, *p<0.1

Table 7: Robustness test (Fixed effects)

	ISA	Audit fees
Female	-5.006*	-0.265**
	(-1.684)	(-2.351)
Audit committee size	1.497**	0.013
	(2.532)	(0.905)
Directorship	-3.894**	-0.078
	(-2.129)	(-1.201)
Board size	-0.359	0.021
	(-0.648)	(0.876)
Board independence	-3.330**	0.048
	(-2.081)	(0.514)
Board meeting	0.408*	0.003
	(1.850)	(0.676)
Ceo duality	5.010***	0.020
	(3.020)	(0.615)
Director share	-0.022	-0.000
	(-0.265)	(-0.446)
Family	-	0.249
	-	(1.021)
Size	-1.322	0.010
	(-1.415)	(0.267)
Leverage	-0.960	-0.137
	(-0.433)	(-1.063)
Stock receivable	0.013	0.003*
	(0.401)	(1.765)
Loss	-1.351*	0.0441
	(-1.799)	(1.439)
Roa	-8.284*	0.384***
	(-1.725)	(3.934)
Industry-specialist auditor	-	0.035
	-	(1.276)
Observations	217	780
Yearly controls	Included	Included
Industry controls	Included	Included
LR test/F test	0.259	0.475
Pseudo R^2/Adjusted R^2	43.38***	16.43***

In the fixed effects regression for industry-specialist auditor model (Column 2), our statistical software (Stata) only utilizes firms with variation in the industry-specialist auditor variable. Hence, family firm indicator variable is dropped by Stata because the final sample of 217 observations encompass no variance in the variable. Parentheses depict z-statistics (Column 2) and t-statistics (Column 3). Variables are defined in the methodology section. *** p<0.01, **p<0.05, *p<0.1

Conclusion

Previous studies identifying a positive link between female directors on ACs and audit quality are concentrated in gender-equal countries. Gender equality entails that females are more empowered and therefore their voices are heard. This suggests that the positive impact of gender-diverse ACs may be

driven by greater gender equality. As a result, we examine the relationship between gender diverse AC and audit quality in Pakistan, as it is characterized by extremely low gender equality (Post and Byron, 2015; Sian et al., 2020; WEF, 2018). Such gender inequality has led to extreme prejudices against females wherein they are thought of being ineffective in managerial positions and thereby their work is given limited attention (Alam, 2012; Ali and Syed, 2017; Jamal, 2018; Olarewaju and Fernando, 2020).

We find that female directors on ACs have a negative association with choosing a high-quality auditor. We also evidence a negative association between gender-diverse ACs and audit fees. This suggests that female directors on ACs reduce audit quality in the context of high gender inequality.

Our evidence suggests ineffectiveness of female directors on ACs in the context of high gender inequality. Our results suggest that firms are unlikely to attain high audit quality if their gender-diverse ACs operate in a gender-unequal environment. Hence, managers may have to employ other methods to improve the audit quality of firms. Moreover, it is inadvisable for the policy-makers to implement policies targeting greater female directors when there are gender biases that restrict the contributions of female directors. Additionally, our evidence shows that the regulators in gender-unequal countries may need to introduce policies that attempt to address gender biases against females to ensure their work is given importance.

We also describe a few limitations of our study and present directions for future researchers. First, due to the unavailability of data, we were unable to assess the characteristics of female directors on ACs. Future research may study certain attributes of female directors on ACs to examine whether certain characteristics can make them effective in the case of high gender inequality. Second, this study fails to assess whether board attributes moderate the link between female directors on ACs and audit quality. Studying this aspect may be fruitful for future researchers to examine whether certain board attributes mitigate gender biases and thereby improve the effectiveness of gender diverse ACs. Third, our results may be driven by omitted variable bias stemming from some time-varying omitted variables being correlated with the error term, thus, future research could focus on qualitative research like interviews and surveys to corroborate and strengthen our research findings.

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