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Does Corporate Governance and Earning Quality Mitigate Idiosyncratic Risk? Evidence from an Emerging Economy

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Abstract: This study investigates the evolving corporate governance mechanisms within the context of an emerging economy. Addressing a literature gap, we analyse the influence of corporate governance and earnings quality on idiosyncratic risk in an emerging economy. In particular, this research explores the impact of corporate governance practices and earnings quality on idiosyncratic risk. For this purpose, we utilise a sample of 75 non-financial firms listed on the Pakistani equity market over nine years from 2010 to 2018. Employing the generalised method of moments, the findings of our empirical analysis reveal that firms with robust governance mechanisms and higher earnings quality experience minimal idiosyncratic risk. These outcomes provide valuable insights for standard setters, regulatory authorities, policymakers, and other stakeholders, emphasising the importance of governance mechanisms and earnings management in mitigating idiosyncratic return volatility.

Keywords: Idiosyncratic risk; accrual quality; earning quality; corporate governance; board quality index

1. Introduction

Stock return volatility in corporations is influenced by two primary types of risk: idiosyncratic and market risks, both of which are integral to investment decisions (Irvine and Pontiff 2009). Idiosyncratic return volatility, related to specific attributes of a corporation, can be mitigated through diversification (Fonou-Dombeu et al. 2022). While investors typically prioritise undiversifiable risk in their investment decisions, the market's competitive nature also compels them to consider idiosyncratic risk (Domingues 2016). Further, the quality of accounting and the effectiveness of corporate governance are critical indicators of investors' perceptions of a firm's reputation, integrity, and trustworthiness (Silva 2019). However, there is a lack of studies examining the role of corporate governance mechanisms and earnings quality in risk management within emerging markets, such as Pakistan. Previous research in developed countries (Asker, Farre-Mensa, and Ljungqvist 2015; Chang, Yu, and Hung 2015; Li, Jahera, and Yost 2013; Nguyen 2011; Wamba, Braune, and Hikkerova 2018) has established that robust corporate governance practices reduce idiosyncratic return volatility.

Similarly, existing literature (Morck, Yeung, and Yu 2000; Aman 2011; and Chan and Hameed 2006) has shown that poor earnings quality increases idiosyncratic volatility. Despite these findings,

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the literature on the relationship between corporate governance, earnings quality, and idiosyncratic risk in developing markets remains underdeveloped. This study aims to provide empirical evidence on how effective corporate governance and poor earnings quality influence firm-specific risk in an emerging market like Pakistan. Firms in emerging markets exhibit unique governance attributes and ownership structures, making idiosyncratic risk particularly significant. Emerging stock markets attract global investors due to their dynamic nature. For instance, the Pakistan equity market has outperformed regional markets, becoming the best-performing market in Asia. However, weak governance and poor investor protection for minority shareholders in these markets increase firm-specific risk, making investors more cautious about investing in such stocks (Pathaka and Ranajee 2020; Chauhan, Pathak, and Kumar 2018; Gul, Kim, and Qiu 2010). Further, on these lines, insider trading is prevalent in emerging markets (Fareed et al. 2022), where insiders exploit private information for personal gain, further increasing idiosyncratic risk (Zhou, Xie, and Li 2017). Regulatory authorities in emerging markets, such as the China Securities Regulatory Commission (CSRC) and the Securities and Exchange Commission of Pakistan (SECP), impose various restrictions, including price limits and short-selling regulations, which can impact firm-specific volatility (Luo, Ren, and Wang, 2015).

This study analyses the impact of corporate governance attributes and earnings quality on idiosyncratic risk in Pakistani listed enterprises, using data from 75 non-financial firms from 2010 to 2018. Our contribution to the literature is twofold. First, we examine the impact of corporate governance attributes by constructing a Board Quality Index (BQI) encompassing a comprehensive set of governance features. We investigate how individual characteristics and the BQI influence idiosyncratic risk, focusing on five internal corporate governance mechanisms: (1) board independence, (2) board size, (3) institutional ownership, (4) gender diversity, and (5) board characteristics. Previous studies (Mathew, Ibrahim, and Archbold 2018; Pathaka and Ranajee 2020) suggest that robust earnings quality reporting provides consistent information to stakeholders about a firm's prospects, fostering trust in the reported earnings. Therefore, we also examine the relationship between earnings quality and firm-specific return volatility.

We employ a panel unit root test to determine the stationarity properties of the variables, following Chang, Huang, and Yang (2011), who noted the importance of stationarity testing in dynamic panel data models. Given that all variables are significant at the first difference, we use the Generalized Method of Moments (GMM) framework proposed by Arellano and Bond (1991) to test our hypotheses. Our findings reveal a significant correlation between earnings quality and idiosyncratic return volatility, indicating that poor earnings quality increases firm-specific return volatility. Furthermore, corporate governance mechanisms generally show a negative relationship with idiosyncratic risk, suggesting that Pakistani firms' unique governance features and ownership characteristics help reduce firm-specific risk.

The structure of this study is as follows: Section 2 covers the literature review, Section 3 details the research methodology, Section 4 presents the findings, analysis, and discussion, followed by Section 5, which provides the conclusion and implications.

2. Theoretical Background and Hypothesis Development

In 1952, Markowitz introduced the portfolio theory, which suggests that investors can minimise risk by diversifying their portfolios. Building on this, Lintner (1965) and Sharpe (1964) developed the Capital Asset Pricing Model (CAPM), using Markowitz's theory as its foundation. According to CAPM, investment risk is categorised into unsystematic and systematic. Systematic risk, associated with market factors, cannot be diversified. In contrast, unsystematic risk, specific to individual stocks, can be mitigated through diversification, exemplifying idiosyncratic risk (L. Nguyen et al. 2021). Jensen and Meckling (2019) proposed the agency theory, which explains the relationship between agents (executives) and principals (owners). This theory explains the connection between stock return volatility and ownership (Vo 2016). According to agency theory, information asymmetry can lead to adverse selection and moral hazard issues, resulting in poor financial reporting quality and encouraging dysfunctional executive behavior. It might be relevant to note that the information

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asymmetry among stakeholders results in over or under-investment, which directly impacts the firm's earning quality (see Jensen and Meckling 2019).

2.1. Earning Quality (EQ) and Idiosyncratic Return Volatility (IDR)

Earning quality has been popular in the finance literature over the last two decades, and several studies have attempted to explore the association between earning quality and idiosyncratic volatility. On these lines, one strand of literature (Campbell et al. 2001; Fonou-Dombeu et al. 2022; and Persakis and Iatridis 2015) attempted to explore the theoretical linkages of the association between the earning quality and idiosyncratic volatility. Healy, Hutton, and Palepu (1999), along with Diamond and Verrecchia (1991), argued that enhancing the quality of financial reporting and disclosures reduces information asymmetries, thereby mitigating stock price volatility. Similarly, Leuz and Verrecchia (2000) assert that information asymmetry is directly related to stock return volatility. Scholars such as Easley and O'Hara (2004) have demonstrated that a corporation's disclosure policy, earnings accounting treatment, and financial reporting quality significantly impact its information environment, influencing the idiosyncratic volatility of the firm. Another stream of research utilised proxies like Dechow and Dichev's (2002) accrual quality and Jones' (1991) absolute abnormal accruals to measure earnings quality, yielding mixed findings. For instance, Aboody, Hughes, and Liu (2005) and Francis et al. (2005) analysed EQ as a measure of information risk, emphasising that EQ affects the expected return.

Further studies by Hutton, Marcus, and Tehranian (2009), Jin and Myers (2006), Piotroski and Roulstone (2004), Durnev et al. (2003), Ferreira and Laux (2007), Rajgopal and Venkatachalam (2011), and Mitra (2016) documented a significant positive correlation between firm-specific return volatility (FSRV) and EQ, concluding that poor EQ is associated with low idiosyncratic volatility. Conversely, researchers such as Li, Rajgopal, and Venkatachalam (2014), Bartram, Brown, and Stulz (2012), and Zhou, Xie, and Li (2017) found an inverse correlation between EQ and IDR, suggesting that higher earning quality mitigates FSRV. Moreover, scholars argue that stock price behaviour varies between emerging and developed markets. They conclude that poor earning quality in emerging markets enhances idiosyncratic volatility (Morck, Yeung, and Yu 2000; Aman 2011; Chan and Hameed 2006). On these theoretical grounds, we propose the following empirical conjecture.

H1. *Earning quality positively influences the idiosyncratic return volatility.*

2.2. Corporate Governance (Hereafter, CG) and Idiosyncratic Return Volatility (IDR)

The existing literature presents mixed empirical findings regarding investment in local equity markets (Bekaert and Harvey 1997; Vo 2016; Bai et al. 2004; Fareed et al. 2022). Cronqvist and Fahlenbrach (2008) and Umutlu, Akdeniz, and Altay-Salih (2010) state that a higher investment tendency in emerging markets enhances the quality of information CG practices, thereby reducing information and transaction costs. Drawing on agency theory and CAPM, studies have found that good CG mechanisms help enterprises mitigate idiosyncratic risk (Ferreira and Laux 2007; Chang, Yu, and Hung 2015; Asghar et al. 2020; Muhammad, Migliori, and Mohsni 2022).

Most previous studies have documented that firm-specific return volatility is linked to macroeconomic factors such as spillover effects, political affairs, and economic recessions. However, recent studies suggest that CG practices also influence idiosyncratic return volatility (Asker, Farre-Mensa, and Ljungqvist 2015; Rogers and Securato 2009). Brennan and Xia (2001) and Alti (2003) state that excess volatility arises from incomplete information, reducing monitoring effectiveness. Research has shown that CG practices, such as board composition and ownership structure, significantly determine a corporation's value (Wang 2016). Effective CG can prevent minority shareholder wealth expropriation, particularly in emerging markets lacking robust CG mechanisms (Gompers, Ishii, and Metrick 2003; Chen, Huang, and Jha 2012; Gul, Kim, and Qiu 2010; Abu-Ghunmi, Bino, and Tayeh 2015). Better CG practices are associated with lower exposure to idiosyncratic return volatility (Ghafoor et al. 2019).

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Key CG characteristics include board composition, board independence (BDI), board size (BSZ), ownership structure (ISO), and gender diversity (GDD). Literature suggests that board independence is crucial for good CG (Black and Kim 2012; Bebchuk and Weisbach 2010). Board independence creates both opportunities and risks for a business (Peng 2004). Minimal levels of BDI are linked with minimal levels of risk, whereas higher levels of information asymmetry pose challenges for independent directors overseeing risky firms (Brick and Chidambaran 2008). A higher ratio of independent directors effectively monitors firms' operations (Tricker 2010). Furthermore, board size influences decision-making mechanisms and affects the board's effectiveness, although larger board sizes are linked with higher total risk (Ho, Lai, and Lee 2013). Gender diversity plays a significant role in effective decision-making and improving board effectiveness (Benkraiem et al. 2017; Loukil, Yousfi, and Yerbanga 2019; Guizani and Abdalkrim 2023).

A parallel strand of research documents mixed findings concerning board composition's impact on idiosyncratic return volatility (Chong, Ong, and Tan 2018; Zhang, Cheong, and Rasiah 2018; Chakraborty, Gao, and Sheikh 2019). Chichernea, Petkevich, and Zykaj (2015) assert that institutional ownership's influence on idiosyncratic volatility varies by type, and Vo (2016) states that institutional ownership improves CG. Scholars present mixed results regarding the link between ISO and IDR (Xu and Malkiel 2003; Zhang 2010). Board attributes such as gender diversity, CEO duality, board size, ownership structure, and independent directors are negatively linked with idiosyncratic risk (Wu, Tong, and Wang 2020; Fareed et al. 2022; Haider and Fang 2016, 2018; Ali et al. 2024). Based on the above discussion, we propose the following hypotheses:

H2. *Board independence has an inverse relationship with idiosyncratic return volatility.*

H3. *Board size has an inverse relationship with idiosyncratic return volatility.*

H4. *Gender diversity has an inverse impact on idiosyncratic return volatility.*

H5. *Institutional ownership negatively affects idiosyncratic return volatility.*

3. Research Design

3.1. Sample Selection

The initial sample consisted of non-financial firms listed on the Pakistan equity market from 2009 to 2018. Idiosyncratic risk was calculated based on the returns of individual firms' stocks over the current and previous years, covering a total of 24 months. Therefore, data for other variables span 2009–2018, while the research period itself is 2010–2018. Firms in service industries, insurance companies, and financial institutions were excluded since the empirical models for earnings quality used in this study do not adequately reflect their activities.

We initially collected the data from 2003 onwards to estimate the parameters for Dechow and Dichev (2002) model since these parameters require lag and lead values of cash flows from operations and five annual residuals for earnings quality indicators. After restricting our sample to firms with complete data for all response, explanatory, and control variables and excluding firm years with missing information on any of these indicators, the final sample comprised 75 non-financial firms. All empirical analyses in this study are based on this final sample. The sample selection criteria are detailed in Table 1.

Table 1. Sample selection.

Selection Criteria	Observations
Observations during the period 2009–2018	122
Subtract: Observations with missing data of earning quality	-38
Subtract: Observations with missing data of other variables	-9
Final Sample	75

Note: The procedure followed for the sample selection is summarised in this panel.

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3.2. Empirical Design

This study examined the effect of corporate governance and earning quality on idiosyncratic risk. To verify hypotheses, we estimate the following regressions.

$$\mathrm{IDR}_{it} = \beta_0 + \beta_1 \mathrm{IDR}_{t-1} + \beta_2 ABS_{it} + \beta_3 BDI_{it} + \beta_4 BSZ_{it} + \beta_5 ISO_{it} + \beta_6 GDD_{it} + \sum_n \beta_n X_{it}^n + \mu_{it} \quad (1)$$

$$\mathrm{IDR}_{it} = \beta_0 + \beta_1 \mathrm{IDR}_{t-1} + \beta_2 \mathrm{ACF}_{it} + \beta_3 BDI_{it} + \beta_4 BSZ_{it} + \beta_5 ISO_{it} + \beta_6 GDD_{it} + \sum_n \beta_n X_{it}^n + \mu_{it} \quad (2)$$

$$\mathrm{IDR}_{it} = \beta_0 + \beta_1 \mathrm{IDR}_{t-1} + \beta_2 \mathrm{ABS}_{it} + \beta_3 BDI_{it} + \sum_n \beta_n X_{it}^n + \mu_{it} \quad (3)$$

$$\mathrm{IDR}_{it} = \beta_0 + \beta_1 \mathrm{IDR}_{t-1} + \beta_2 \mathrm{ACF}_{it} + \beta_3 BDI_{it} + \sum_n \beta_n X_{it}^n + \mu_{it} \quad (4)$$

In the abovementioned models, the dependent variable is an idiosyncratic risk, which IDR denotes. Following Xu and Malkiel (2003), the measurement of idiosyncratic return volatility is as follows:

$$\gamma *_{i,j,t} = \varphi_1 + \beta_i \gamma_{j,t} + \mu_{i,j,t} \quad (5) \quad (5)$$

where, $\gamma *, \gamma,\ \beta_i,$ and $\mu_{i,j,t}$ represents the company's return, the industry return, the firm *i* exposure to its industry return, and the natural interpretation of idiosyncratic risk. We define idiosyncratic risk as VAR $(\mu_{i,j,t})$ and industry return volatility as $\sqrt{\mathrm{VAR}(\mu_{i,j,t})}$ for each period. The key independent variables are corporate governance and earning quality. Corporate governance is measured using four indicators: board size (BSZ), board independence (BDI), institutional ownership (ISO), and gender diversity (GDD). For robustness, we construct a board quality index using Principal Component Analysis (PCA) based on these four indicators. Earning management, the second exogenous variable is measured using two approaches. Following Mitra (2016), we employ two measures of earning quality: accrual quality (balance sheet approach) and absolute abnormal accruals (cash flow approach).

We also include firm-level characteristics as control variables, such as age, size, book-to-market ratio, and leverage. For further details on the explanation and measurement of variables, please refer to Appendix 1A.

4. Empirical Analysis

4.1. Descriptive Statistics

Table 2 presents the summary statistics for the 75 firms listed on the Pakistan Stock Exchange over nine years (2010-2018). The statistics include all variables' mean, standard deviation, maximum, minimum, and observations. The summary statistics are divided into three groups: the whole sample observation, between the firm's observation, and within the observation period. According to Alodat et al. (2022), these statistical findings provide detailed descriptive information, enabling a comprehensive understanding and explanation of the data. The findings indicate that, on average, the idiosyncratic return volatility is 0.0169%. Earning quality is measured using two approaches: the cash flow approach (Dechow and Dichev, 2002) and the balance sheet approach (Jones, 1991). The mean value for the balance sheet approach is -0.4811, while for the cash flow approach, it is -0.1003. These values align with Latif, Latif, and Abdullah (2017) study. The study suggests that, on average, abnormal accruals should approximate zero, as negative and positive accruals offset each other over time.

Table 2. Descriptive statistics.

Variable		Mean	Std. dev.	Min	Max	Observations	
IDR	Overall	0.02	0.01	0	0.11	N =	675

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	Between		0.01	0	0.04	n =	75
	Within		0.01	-0.02	0.09	T =	9
ABS	Overall	-0.48	0.7	-2.91	9.13	N =	675
	Between		0.51	-1.48	2.62	n =	75
	Within		0.48	-3.76	6.02	T =	9
ACF	Overall	-0.1	0.23	-0.96	3.47	N =	675
	Between		0.17	-0.47	1.11	n =	75
	Within		0.17	-1.39	2.26	T =	9
BDI	Overall	0.7	0.19	0	1.04	N =	750
	Between		0.16	0.18	0.94	n =	75
	Within		0.1	0.23	1.09	T =	10
BSZ	Overall	8.22	1.76	6	15	N =	750
	Between		1.72	6.7	15	n =	75
	Within		0.4	5.22	11.32	T =	10
ISO	Overall	0.67	0.21	0	1	N =	750
	Between		0.18	0.29	0.96	n =	75
	Within		0.11	0.11	1.02	T =	10
GDD	Overall	0.56	0.87	0	4	N =	750
	Between		0.78	0	3.2	n =	75
	Within		0.39	-0.64	3.76	T =	10
BQI	Overall	-0.78	0.99	-16.83	2.11	N =	750
	Between		0.75	-2.39	1.24	n =	75
	Within		0.65	-15.22	1.75	T =	10
LFS	Overall	16.18	1.49	11.81	20.32	N =	750
	Between		1.45	13.05	19.8	n =	75
	Within		0.4	14.9	17.5	T =	10
LFA	Overall	3.68	0.78	2.08	7.61	N =	750
	Between		0.75	2.5	7.25	n =	75
	Within		0.25	-1.3	4.23	T =	10
BTM	Overall	1.09	2.3	-18.46	21.14	N =	750
	Between		1.83	-8.57	4.55	n =	75
	Within		1.4	-10.12	17.68	T =	10
LVG	Overall	0.32	0.28	-0.8	0.99	N =	750
	Between		0.15	-0.15	0.71	n =	75
	Within		0.24	-0.47	1.21	T =	10

Note: The abbreviations used in the above table are as follows: IND denotes idiosyncratic risk volatility, ABS represents earning quality measured using the balance sheet approach, and ACF indicates earning quality measured using the cash flow approach. BDI stands for board independence, BSZ for board size, ISO for institutional ownership, and GDD for gender diversity. BQI refers to the board quality index, LFS to the natural log of firm size, LFA to the natural log of firm age, BTM to the book-to-market value, and LVG to leverage.

The mean value of board independence (BDI) is 0.69, indicating that all corporations meet Pakistan's corporate governance code, which recommends at least two or one-third of the board members be independent (Farooq, Noor, and Ali 2022). The average board size is 8.21, with a minimum of 6 and a maximum of 15, consistent with the Corporate Governance Guidelines 2012. The average institutional ownership is 0.66%, and the average gender diversity score is 0.5, with a maximum of 4, showing compliance with the board's recommendation to include at least one female director.

The board quality index has a mean value of -0.78, with the lowest and highest levels being -16.83 and 2.11, respectively. The control variables' average firm size, firm age, leverage, and book-to-market ratio are 16.17, 3.67, 0.32, and 1.09, respectively. The standard deviation, minimum, and maximum values vary based on the overall, between, and within observations for all variables.

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4.2. Correlation Matrix

This study conducted a correlation analysis to examine the dynamic relationships between the response and explanatory variables and check for multicollinearity's likelihood. The findings are presented in Table 3. Upon reviewing the correlation indices, it was found that the study does not suffer from significant multicollinearity issues, except for the correlations between ACF and ABS (0.88) and GDD and BQI (0.70). While perfect multicollinearity can indicate a serious issue or logical error, imperfect multicollinearity (where the correlation coefficient is nearly equal to 1) may be a data characteristic. Therefore, the study does not exclude ACF and GDD when performing the regression analysis.

Table 3. Correlation analysis.

	ABS	ACF	BDI	BQI	BSZ	BTM	GDD	ISO	LFA	LFS	LVG
ABS	1										
	--										
ACF	0.88	1									
	49.2	--									
BDI	0	0	1								
	-0.07	0.01	--								
BQI	0.02	0	-0.22	1							
	0.42	0.06	-5.93	--							
BSZ	0.04	0.04	0.45	-0.4	1						
	1.11	0.93	13.1	-11.4	--						
BTM	0.02	0	-0.13	0.05	-0.18	1					
	0.61	0.09	-3.43	1.28	-4.82	--					
GDD	0.01	-0	-0.26	0.7	-0.17	-0	1				
	0.24	-0.2	-6.97	25.45	-4.57	-0.2	--				
ISO	-0.04	-0	-0.09	-0.21	0.01	-0.2	-0.1	1			
	-1.07	-0.4	-2.4	-5.49	0.26	-4.2	-3.1	--			
LFA	-0.07	-0	0.24	-0.15	0.14	-0.1	-0.2	0.11	1		
	-1.77	-0.8	6.35	-3.95	3.71	-1.5	-4.8	2.91	--		
LFS	-0.23	-0.2	0.25	-0.16	0.43	-0.1	-0.1	-0	0	1	
	-6.22	-4.3	6.61	-4.25	12.5	-3.1	-1.9	-0.5	1.2	--	
LVG	0.02	0.06	-0.02	-0.02	-0.08	0.22	-0.1	0.08	0.1	-0.1	1
	0.56	1.46	-0.48	-0.6	-2.05	5.79	-2.4	2.03	1.6	-1.5	--

Note: The values reported above are the correlation coefficients and t-statistics. The abbreviations are defined as follows: IND denotes idiosyncratic risk volatility, ABS represents earning quality using the balance sheet approach, ACF indicates earning quality using the cash flow approach, BDI stands for board independence, BSZ for board size, ISO for institutional ownership, GDD for gender diversity, BQI for the board quality index, LFS for the natural log of firm size, LFA for the natural log of firm age, BTM for the book-to-market value, and LVG for leverage. Correlations are significant at the 0.01 (**) and 0.05 (*) levels.

4.3. Panel Unit Root

The panel unit root test examines variables' stationarity properties to ensure the chosen methodology's appropriateness. Chang, Huang, and Yang (2011) noted that testing for stationarity is essential for estimating a dynamic panel data model. Buck, Liu, and Skovoroda (2008) argue that this test is crucial when the number of time-series observations is significantly lower than the number of cross-sectional units. Consequently, this study conducted a series of panel unit root tests to provide unbiased, valid, and reliable estimates. The panel unit root test was performed at both the level and first difference, based on four different criteria: (i) the Levin, Lin, and Chu (LLC) t-statistic, (ii) the IPS, (iii) the ADF-Fisher, and (iv) PP-Fisher $\chi 2$, following the methodology of Chen, Huang, and Jha (2012) and Olaniyi et al. (2017). It is important to note that LLC and Breitung assume a common unit

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root, while IPS, ADF-Fisher, and PP-Fisher $\chi 2$ assume individual unit root processes across cross-sectional units.

Table 4 presents the findings of the panel unit root test at both the level and first difference based on the mentioned criteria. The results indicate that all variables attain stationarity at the level, except for board and firm size. Conversely, all variables achieve stationarity at the first difference except for board size and firm age. Since most variables are significant at the first difference, the current study employs the generalised method of moments (GMM) framework proposed by Arellano and Bond (1991) to estimate the abovementioned four models.

Table 4. Panel unit root tests.

	At Level				At First Difference			
	LLC	IPS	ADF-Fisher	PP-Fisher	LLC	IPS	ADF-Fisher	PP-Fisher
IDR	-11.2	-2.71	212.43	306.5	-24.73	-7.74	336.79	664.74
	0	0	0	0	0	0	0	0
ABS	-14.95	-4.9	261.42	513.87	-17.53	-7.54	331.39	731.35
	0	0	0	0	0	0	0	0
ACF	-19.02	-6.07	288.19	530.66	-24.14	-9.06	366.98	759.89
	0	0	0	0	0	0	0	0
BDI	-7.22	-0.61	164.85	201.72	-23.03	-6.7	286.36	634.64
	0	0.27	0.09	0	0	0	0	0
BSZ	-2.02	-0.09	27.01	54.69	-1	-1.85	29.85	104.68
	0.02	0.47	0.52	0	0.16	0.03	0.02	0
ISO	-10.33	-4.45	254.64	311.95	-17.7	-8.45	347.51	633.27
	0	0	0	0	0	0	0	0
GDD	-5.58	-1.41	37.01	34.93	-4.2	-2.11	35.15	74.79
	0	0.08	0.04	0.07	0	0.02	0.01	0
BQI	-20.44	-3.41	198.83	296.52	-12.1	-5.06	268.75	669.91
	0	0	0	0	0	0	0	0
LFA	-101.94	-903.75	1344.71	1344.71	119376	-894.13	1344.71	1344.71
	0	0	0	0	1	0	0	0
LFS	-3.77	3.95	119.61	173.01	-9.43	-3.12	224.69	396.82
	0	1	0.97	0.1	0	0	0	0
LVG	-6.91	-2.37	200.97	294.95	-15.32	-6.47	311.24	704.63
	0	0.01	0	0	0	0	0	0
BTM	-8.17	-0.77	166.15	217.01	-12.68	-3.98	237.05	477.55
	0	0.22	0.17	0	0	0	0	0

Note: IND, ABS, ACF, BDI, BSZ, ISO, GDD, BQI, LFS, LFA, BTM, and LVG represent idiosyncratic risk volatility, earning quality using the balance sheet approach, earning quality using the cash flow approach, board independence, board size, institutional ownership, gender diversity, board quality index, natural log of firm size, natural log of firm age, book-to-market value, and leverage, respectively. The reported values are the t-statistics and their corresponding p-values. LLC, IPS, ADF-F, and PP-F stand for the following tests: (1) Levin, Lin, and Chu, (2) Im, Pesaran, and Shin W-stat, (3) ADF—Fisher Chi-square, and (4) PP—Fisher Chi-square.

4.4. Regression Results

As shown in Table 5, four models are estimated using different independent variables. This study employs two approaches for measuring earning quality. These approaches are estimated separately alongside corporate governance (CG) attributes in the first two models. In models 3 and 4, the board quality index and two control variables—leverage and book-to-market ratio—are introduced into the regression equation instead of CG characteristics. All independent and firm-level control variables are included in models 3 and 4 (see Table 5). The findings in Table 5 support Hypothesis 1 (H1), indicating that earning quality significantly correlates with idiosyncratic return volatility. These outcomes are consistent with earlier studies (Aman 2011; Mitra 2016; Hutton,

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Marcus, and Tehranian 2009). Mitra (2016) also documented similar results, arguing that these findings align with the noise hypothesis, which suggests that higher earning quality leads to lower idiosyncratic return volatility. Further, Morck, Yeung, and Yu (2000) and Hutton, Marcus, and Tehranian (2009) stated that outside stakeholders have limited access to firm-specific information when a corporation's financial reporting quality is poor. As a result, they must make investment decisions based on industry or market-level public information, leading to lower idiosyncratic return volatility for such organisations.

Table 5. Impact of EQ and CG indicators on idiosyncratic risk volatility.

	Model_01		Model_02		Model_03		Model_04	
Variable	**Co-eff.**	**t-Stat**	**Co-eff.**	**t-Stat**	**Co-eff.**	**t-Stat**	**Co-eff.**	**t-Stat**
IDR Lag	-0.19***	-2.83	-0.20***	-3.15	-0.20***	-3.25	-0.20***	-3.36
ABS	0.01**	1.82			0	0.89		
ACF			0.06	1.52			0.02	0.53
BDI	-0.08**	-2.19	-0.07**	-2.04				
BSZ	0.02	1.14	0.02	1.39				
ISO	0	0.04	0.01	0.42				
GDD	0	-0.76	0	-0.7				
BQI					0	-0.88	0	-0.8
LFA	-0.09***	-2.86	-0.10***	-2.86	-0.06**	-2.4	-0.06*	-1.97
LFS	0.02**	2.51	0.02**	2.39	0.01**	2.05	0.01*	1.74
LVG					0	-0.88	0	-0.84
BTM					0	0.6	0	0.65
J-statistic		12.37		13.8		17.57		18.57
Prob(J-statistic)		0.82		0.74		0.55		0.48
Instrument rank		27		27		27		27
Arellano-Bond Serial Correlation Test								
AR (1)								
M-Statistic	-2.83		-2.57		-3.33		-2.91	
Prob.		0		0.01		0		0
AR (2)								
M-Statistic	-1.39		-0.39		-0.54		-0.28	
Prob.		0.16		0.69		0.58		0.77

Note: The second lag of IDR is reported. ***, **, and * indicate significance levels at 1%, 5%, and 10%, respectively. The first difference transformation is applied for the panel GMM, and if the innovations are i.i.d., the transformed innovations follow an integrated MA(1) process. Seventy-five cross-sections are included in all four models, with a total of 450 balanced panel observations. Two lags of the dependent variables are used, and the second lag is reported in all four models. The lagged dependent variables are specified as regressors, and period dummy variables (period fixed effects) are not included. We use 2-step (update weights once) GMM iterations with the White period.

Furthermore, this study also examines the influence of corporate governance (CG) attributes and the board quality index on idiosyncratic return volatility. The results indicate that only board independence has a negative and statistically significant impact on idiosyncratic return volatility, supporting Hypothesis 2 (H2). These findings are consistent with existing literature (Hussain and Shah 2017). Jiraporn and Lee (2018) argue that board independence helps develop an efficient governance system that discourages executives from making highly risky decisions. Similarly, Fareed et al. (2022) found that improved board independence reduces the likelihood of violations and connected transactions, such as illegal insider trading. Based on these studies, it is evident that board independence plays a critical role in governance mechanisms. Consequently, regulatory authorities

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worldwide have recognised its necessity and implemented regulations requiring a higher ratio of outside directors, such as the Sarbanes-Oxley Act of 2002 (SOX). Additionally, Anderson, Mansi, and Ree (2004) documented that the presence of independent directors improves the validity of financial information and reduces financing costs, thereby decreasing stock price volatility.

The results indicate that board size, institutional ownership, and gender diversity do not have statistically significant impact on idiosyncratic return volatility. As a result, H3, H4, and H5 are not supported by the findings. The results of the study suggest that corporate governance mechanisms in emerging countries like Pakistan have inconsistent influence on financial outcomes, and these findings are in line with the extant literature (see, Swan and Forsberg 2014; John and Senbet 1998; Asghar et al. 2020; Patrick et al. 2015; Arya et al. 2003; Ghafoor et al. 2019; Akbar et al. 2017).

The study also includes four firm-level characteristics as control variables: size, age, book-to-market ratio, and leverage, drawn from previous studies (Zhou, Xie, and Li 2017; Chen, Huang, and Jha 2012; Mitra 2016). The empirical outcomes in Table 5 reveal that only two control variables, firm size and age, are significantly aligned with the literature (Mitra 2016; Chen, Huang, and Jha 2012; Zhou, Xie, and Li 2017). Firm size has an inverse and significant relationship with idiosyncratic return volatility, suggesting that smaller corporations have limited capacity to manage risks, while larger corporations have more pre-disclosure information available before earnings announcements (Rajgopal and Venkatachalam 2011; Brandt et al. 2010). Similarly, firm age also has an inverse and statistically significant correlation with idiosyncratic return volatility, indicating that younger corporations tend to have higher earnings uncertainty and, thus, greater idiosyncratic risk (Chen, Huang, and Jha 2012; Fareed et al. 2022).

5. Conclusion

The influence of corporate governance and earnings quality on idiosyncratic risk is a crucial finance study area. Idiosyncratic risk refers to the hazard inherent to a specific firm, independent of broader market movements. Existing literature (Cardoso, Carr, and Rogers 2019; Fareed et al. 2022; Hussain and Shah 2017; Mitra 2016; Wu, Tong, and Wang 2020) reveals that corporate governance practices and earning quality can impact idiosyncratic risk through different channels. We identified a gap in this empirical literature since these studies have not addressed this issue collectively. To fill this gap, our study explores the impact of corporate governance and earnings quality on idiosyncratic risk within the context of developing countries, using data from 75 non-financial sector firms listed on the Pakistan equity market from 2010 to 2018. Our empirical estimation reveals that some corporate governance practices influence idiosyncratic risk.

Further, our empirical analysis reveals that higher earning quality mitigates the idiosyncratic risk. These results support the noise hypothesis, demonstrating that better earning quality leads to lower idiosyncratic risk. The outcomes of this study highlight the crucial role of some strong corporate governance mechanisms in emerging countries in risk management and contribute to a deeper understanding of idiosyncratic risk in corporate finance. Recognising and managing these interdependencies as corporations navigate an increasingly complex financial landscape is critical for informed decision-making and effective risk mitigation.

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Appendix A

Table A1. Variables, abbreviation and their definitions. Definition.

Variable	Abbreviation	Definition
Idiosyncratic Risk	IDR	See Equation (5) in section 3
Earning Quality		
Accrual Quality	ABS	See (Mitra 2016)
Absolute Abnormal Accruals	ACF	See (Dechow and Dichev 2002)
Corporate Governance		
Board Independence	BDI	The ratio of non-executive directors to total directors on board
Board Size	BSZ	Total members on the board
Institutional Ownership	ISO	The proportion of shares held by the institution to the total shares outstanding
Gender Diversity	GDD	Ratio female director to total director
Board Quality Index	BQI	It is measured through PCA by using corporate governance indicators e.g., BDI, BSZ, ISO, and GDD.
Control Variables		
Firm Age	LFA	Total number of years since the business established
Firm Size	LFS	Ln (Total asset)
Leverage	LVG	The proportion of debt to equity
Book-to-market ratio	BTM	The proportion of book value of equity to market value of equity

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