



# Advance Journal of Econometrics and Finance

## Vol-4, Issue-2, 2026

### Advance Journal of Econometrics and Finance

Online ISSN

2959-8990

Print ISSN

2959-8982

<https://ajeaf.com/index.php/Journal/About>

Name of Publisher: SCHOLAR CRAFT EDUCATION & RESEARCH HUB

Review Type: Double Blind Peer Review

Journal Frequency: Quarterly Research Journal



### OWNERSHIP STRUCTURE, AUDIT QUALITY, AND THE GOVERNANCE–PERFORMANCE NEXUS: DYNAMIC PANEL EVIDENCE

Asim Khan<sup>1</sup>, Aniq Arslan<sup>2</sup>, Arslan Qayyum<sup>3</sup>

	<b>Abstract</b>
<p><b>Asim Khan</b> Institute of Business Management, Karachi, Pakistan <a href="mailto:Asim.khan@iobm.edu.pk">Asim.khan@iobm.edu.pk</a></p> <p><b>Aniq Arslan</b> Institute of Business Management, Karachi, Pakistan <a href="mailto:aniqa.arslan@iobm.edu.pk">aniqa.arslan@iobm.edu.pk</a></p> <p><b>Arslan Qayyum</b> Institute of Business Management, Karachi, Pakistan <a href="mailto:Arslan.qayyum@iobm.edu.pk">Arslan.qayyum@iobm.edu.pk</a></p>	<p>The study explores how corporate governance systems and quality of audit affect firm performance in an emerging market using a non-financial listed company in the Pakistan Stock Exchange (PSX). The article, based on the agency theory and complementary governance frameworks, investigates the impact of board properties, ownership structure, audit committee properties, and composite governance indices on firm performance in terms of Return on Assets (ROA), Return on Equity (ROE), and Tobin, Q (TQ). It uses an unbalanced panel sample over a series of years and uses a Fixed Effects (FE) regression and dynamic two-step System Generalized Method of Moments (System GMM) estimator to overcome the advantages of unobserved heterogeneity, endogeneity, and dynamic persistence of firm performance. Pre-estimation diagnostics verify the stationarity, absence of extreme multicollinearity and endogeneity thus justifying the use of System GMM. Empirical evidence has shown that the independent board, board diversity, ownership concentration, audit committee independence and expertise, audit quality, and the overall corporate governance quality has a positive and statistically significant effect on the performance of the firm. On the other hand, CEO duality is significantly and persistently negatively linked to all performance measures, indicating the negative impact of managerial concentration. The findings of dynamic GMM also support performance persistence and support the soundness of the findings with standard post-estimation tests, such as Arellano-Bond and Hansen tests. Moreover, interaction studies indicate that strong corporate governance enhances the performance advantages of ownership structure and audit quality. The findings provide comprehensible evidence that good governance and good quality auditing are critical determinants of firm performance in Pakistan. The research, therefore, provides germane implications to regulators, policymakers, and corporate executives seeking to strengthen governance systems and increase the value of firms in emerging economies.</p>
<b>Keywords:</b>	<p>Algorithmic Corporate governance; Ownership structure; Audit quality; Firm performance</p> <p>JEL Classification: G34; M42; G32; C23</p>



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### INTRODUCTION

Corporate governance (CG) is based on the Agency Theory in which CG practices mediate the opposing interests of managers and shareholders (Srivastava et al., 2018). Supervision is improved by good governance (Ashfaq, Amin, & Sharif, 2025) which is independence of boards, transparency, and accountability, lessening managerial bias, including overconfidence, and eliminating information asymmetry (Dao, 2020; Oliver, 2023). In the process of establishing an organized internal environment, CG supports strategic planning and hedges firms against economic shocks in the external environment (Zuckweiler et al., 2016). Nevertheless, there is contradictory empirical data on the direct influence of CG on performance, which gives reason to believe that the interdependence is contingent on multiple moderating variables (Affes & Jarboui, 2023).

A very important moderating variable is ownership structure. The concentrated ownership has the potential to enhance monitoring and reduce the agency costs, but can also introduce entrenchment effect; in particular, in emerging markets, strong shareholders might prefer the advantages of private stakeholders over the interests of the minority (Mat Husin & Jos, 2023; Nguyen & Nguyen, 2024). Higher transparency is typically demanded by institutional investors, and family ownership can present the problem of altruism or entrenchment, making governance performance more difficult (Mansour, 2022).

Audit quality is an external assurance tool. Good quality audits minimize the uncertainty in reporting and create investor confidence, aiding the governance characteristics to convert into plausible financial performance (El-Deeb, 2023). Internal audit gaps can also be addressed with the help of independent audits as an essential positive substitute (In low-enforcement legal environments) (Nguyen & Nguyen, 2024).

These factors are essential as they are supported by the pressure to remain conservative in accounting and reduce earnings management. The independent audits assist in maintaining the fact that short-term managerial incentives do not negatively affect the long-term organizational health (Saeed & Saeed, 2018). Although there is an evolution of governance standards on a global scale, the study usually focuses on generalized debates of governance or stable economies, as in the case of Malaysia, which creates a major gap in respect to specialized business sectors in unstable emerging markets (Abdullah, 2021).

Empirical data on the joint moderating effect of ownership structure and quality of auditing on CG performance relationship is not available in the manufacturing industry of Pakistan, which is dominated by the concentrated family-owned businesses.

This paper fills such a gap by assessing the combined effect of these factors on the performance of organizations in Pakistan. Based on the most sophisticated econometric methodology, Fixed Effects, Random Effects (chosen through Hausman tests) and the System-GMM model as a robustness measure, this study seeks to deliver a holistic view of governance dynamics. The main goals are: (1) to deliver the answer to whether CG has a direct effect on performance; (2) to investigate the specific role of audit quality and ownership structure in revealing the relationship between the two. The research provides a comprehensive model explaining the internal power systems and external assurance systems and provides practical information to policy-makers and investors in emerging markets.

### Literature Review

The CG-performance relationship originates with the Principal-Agency Theory that lays emphasis on the basic conflict between managers (agents) and shareholders (principals). CG is the guidebook according to which this relationship is conducted so that profit motive is not the main factor in the relationship between stakeholders (Srivastava et al., 2018). It is not just a system of constraints but a strategic framework that introduces order to the internal processes, lowers information asymmetry, and aligns managerial decisions with the long-term value of the firm (Dao, 2020).

It is the human aspect of leadership that tends to question the effectiveness of the governance model. Although CG seeks to reduce managerial bias like overconfidence, effective oversight of the board is necessary to avoid the bias causing risky and low-quality investment decisions (Oliver, 2023). The independence and diversity of the board turns to be a point of concern. Independent directors play the role of the eyes of shareholders and they are not paid by the management to maintain their allegiance with the providers of capital. This autonomy is particularly important when the situation has been focused on accounting conservatism, where CG supports cautious, validated financial reporting, which protects against earnings management in which managers seek short term bonuses (Saeed & Saeed, 2018; Omolaye and Jacob, 2017).

The situation gets even complicated in case of the external environment, which in this case is audit quality. Strategy is created by the board, and auditor tests it. The quality of audits (which is often perceived by the Big 10 audit companies) is a crucial moderator, as it confirms the reliability of the presented information. Where legal systems can be weak, high-quality external audit legally supplements internal control weaknesses, and the governance systems become effective to financial productivity (El-Deeb, 2023; Nguyen, 2024). Even the strong governance may be affected by the lack of trust among investors without such external assurance.



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Lastly, the internal and external forces are controlled by the ownership structure of a firm. Organizational power results in equity distribution, whether within a family or between institutional investors. In new economies, such as Pakistan, concentrated ownership can be a two-sided sword: it can either help enhance monitoring and lower agency costs or entrench an effect, in which a powerful group of owners favor their own benefits instead of the minority shareholder (Mansour, 2022; Mat Husin & Jos, 2023). This interaction suggests that the influence of CG on the performance is not a simple process and path but one that is constantly being remodeled by ownership and transparency verification.

The study indicates that corporate governance is the key driver of organizational success, yet its success is governed by two important variables; ownership structure, which determines the location of power and audit quality, which influences the credibility of report on performance. Internal mechanisms within the board are the pillars but cannot work in isolation and therefore require high quality audit and balanced ownership structure to address the emerging market and economic shocks.

In spite of the existing literature on ownership structure and its relationship to audit quality, little is known to determine the contribution of the two factors to governance and performance within the family-owned manufacturing industry of Pakistan. This research seeks to bridge that gap by providing a solid domestic policy framework to policy makers and investors.

### Conceptual Framework and Methodology

The research is anchored to the Agency Theory and also considers the relationship between the principal and the agency where the shareholders entrust their operational power to the managers. The theoretical framework states that corporate governance practices such as the size of the board, the age of the board members, the percentage of women on the board, the extent of board education and experience are critical towards making sure that the managers act in the best interests of the owners. The internal control environment is also influenced by other factors like the frequency of meetings, presence of insider directors, independence of the Board and good risk-management practices. The study hypothesizes that Ownership Structure (concentrated and diffused) and Audit Quality are important moderating variables that determine the managerial selection and oversight integrity.

The proposed hypotheses are the following:

As board supervision and good internal controls minimize the agency cost and makes the managers meet the stakeholder objectives. So,

H1: There is a strong positive influence of corporate governance on the performance of the firm.

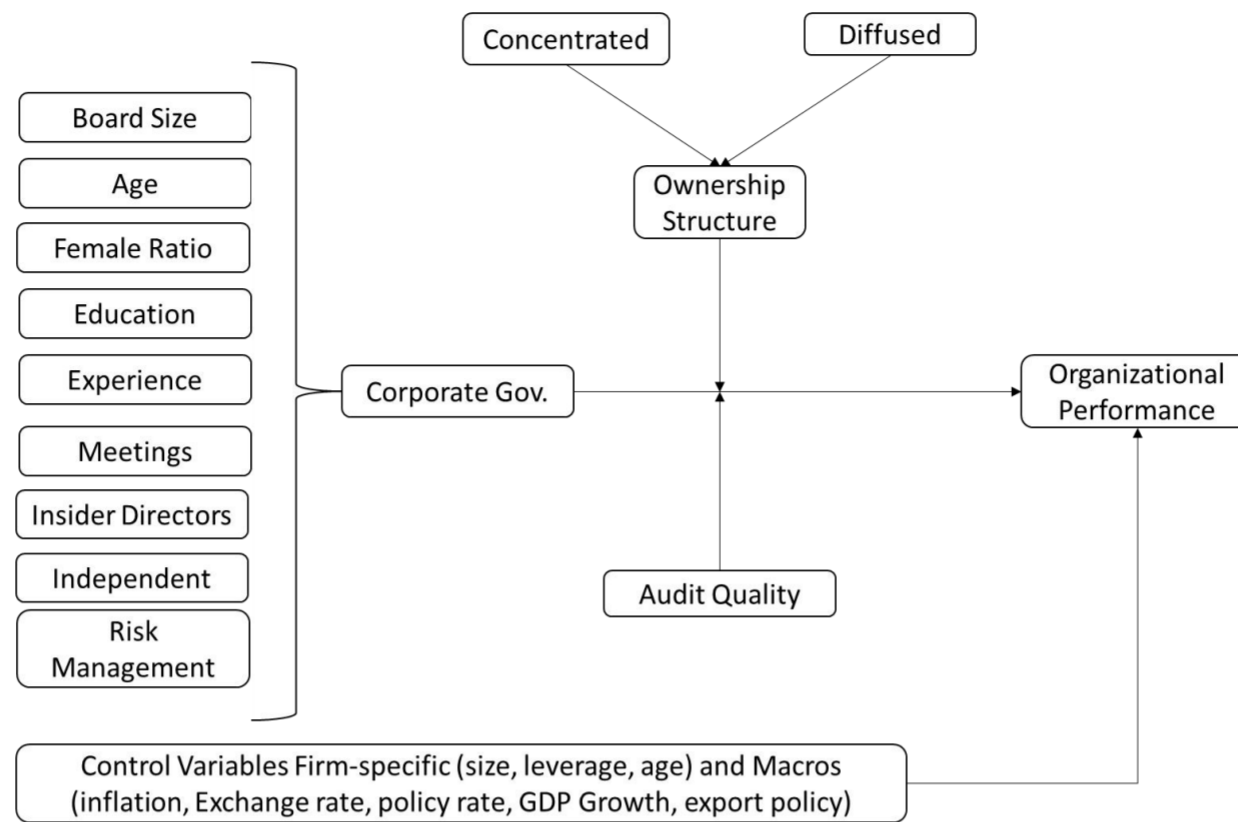
Moreover, good-quality external audits reduce information asymmetry and enhance the credibility of data, which enhances the board oversight impacts on results.

H2: Audit quality is a moderator in the relationship between corporate governance and firm performance.

In addition to that, the nature of power concentrated within blocks of families or diffused among institutional investors defines the power and weakness of the governance systems.

H3: The corporate-governance and firm-performance connection is greatly moderated by ownership structure.

The study has a positivist paradigm and a deductive methodology, thus it has a quantitative design, which is secondary data collected on the KSE-100 index. The conceptual model incorporates control variables to isolate the effects of governance: firm size, leverage, age and the macroeconomic variables like inflation, exchange rates, policy rates, GDP growth and the policy of exportation. The analyses are done with the Fixed Effects (FE) or Random Effects (RE) models - selected due to Hausman test, and the Generalized Method of Moments (GMM) to protect against endogeneity and verify. The methodology sustains a strong evaluation procedure of causality and as such, the combination of particular traits of governance and audit quality has concurrent success in Pakistan manufacturing sector.



**Figure-1: Conceptual Model for the Study**



**For Fixed Effect Model:**

$$ROA_{i,t}/ROE_{i,t}/TQ_{i,t} = \alpha_{i,t} + \beta_1 BSIZE_{i,t} + \beta_2 BIND_{i,t} + \beta_3 OS_{i,t} + \beta_4 BDIV_{i,t} + \beta_5 CEOD_{i,t} + \beta_6 BMEET_{i,t} + \beta_7 BEXP_{i,t} + \beta_8 CEOEXP_{i,t} + \beta_9 ACIND_{i,t} + \beta_{10} ACEXP_{i,t} + \beta_{11} FAGE_{i,t} + \beta_{12} BIG10_{i,t} + \beta_{13} LEVE_{i,t} + \beta_{14} FSIZE_{i,t} + \varepsilon_{i,t} \text{ Eq. (5)}$$

**For System-GMM:**

$$ROA_{i,t} = \alpha_{i,t} + \alpha ROA_{i,t-1} + \beta_1 BSIZE_{i,t} + \beta_2 BIND_{i,t} + \beta_3 OS_{i,t} + \beta_4 BDIV_{i,t} + \beta_5 CEOD_{i,t} + \beta_6 BMEET_{i,t} + \beta_7 BEXP_{i,t} + \beta_8 CEOEXP_{i,t} + \beta_9 ACIND_{i,t} + \beta_{10} ACEXP_{i,t} + \beta_{11} FAGE_{i,t} + \beta_{12} BIG10_{i,t} + \beta_{13} LEVE_{i,t} + \beta_{14} FSIZE_{i,t} + \mu_i + \varepsilon_{i,t} \text{ Eq. (6)}$$

This study analyzes a balanced panel dataset consisting of 300 non-financial companies that are listed on the Pakistan Stock Exchange (PSX) from 2014 to 2023. Financial companies were left out of the sample because of their special set of rules and laws, which govern their structure and how they report their finances. Such rules and laws are different from those that govern the non-financial companies. Such sample selection criteria yields a total of about 3,000 firm-year observations, which is a good basis for the empirical analysis. The chosen time period is of particular importance because it includes some of the most important changes in Pakistan's policies and laws like the Companies' Act of 2017 and the revised Codes of Corporate Governance, which enables the research to obtain and analyze the effects of these changes on firms' performance over a sustained period of time. Table-2: Correlation Matrix

	ROA	BSIZE	BIND	OS	BDIV	CEOD	BMEET	BEXP	CEOEXP	ACIND	ACEXP	FAGE	BIG10	LEVE	FSIZE
ROA	1														
BSIZE	.751***	1													
BIND	.481**	.530*	1												
OS	-.429**	.326**	.504**	1											
BDIV	.393***	.252**	.451**	.583**	1										
CEOD	.310**	.179*	.581**	.269*	.741**	1									
BMEET	.401**	.384**	.811**	.587**	.558**	.583**	1								
BEXP	.758**	.841**	.520**	.398*	-.321**	.405**	0.518	1							
CEOEXP	.759**	-0.003	.508**	.576*	.416*	.797**	.270**	.526**	1						
ACIND	.086*	-0.803	-.467**	-.501*	.352**	0.749	0.683	.415**	.615**	1					
ACEXP	.688**	-.543**	.359**	-.265**	.404*	.345**	.739**	.219*	.734**	.295**	1				
FAGE	.534**	-.450**	-.207**	-.338*	.351**	.444**	.125**	0.146	.366*	0.142	.448**	1			
BIG10	.530*	.326**	.252**	.179*	.384**	.841**	-0.003	-0.803	-.543**	-.450**	.270**	0.683	1		
LEVE	-.504**	.451**	.581**	.811**	.520**	.508**	-.467**	.359**	-.207**	.252**	.751***	.481**	.429**	1	
FSIZE	.583**	.269*	.587**	.398*	.576*	-.501*	-.265**	-.338*	.179*	.811**	.384**	.841**	-0.003	-0.803	1

The table given uses Pearson correlation which studies the degree of correlation between the chosen explanatory variables and the dependent variable, Return of Assets (ROA). Significant relationships that are sufficient to theoretical expectations were found within the study of emerging markets with Pakistan. Reviewing the matrix, the strongest positive correlation with firm performance are Board Expertise ( $r = .758, p < .05$ ) and CEO Expertise ( $r = .759, p < .05$ ). This also supports the Human Capital Theory which states that due to the complexity of the economy and the regulatory guidelines in Pakistan, firms run by directors and CEOs with high expertise in finance and business operations are more likely to know how to manage the volatile markets, thus, better firm profitability. Board Size also shows a significant positive association with ROA ( $r = .751, p < .01$ ). For Pakistan, this supports the Resource Dependence Theory; bigger boards are likely to provide more important connections to external resources, state administrators, and sources of funding which are critical to sustaining the competitive edge of developing nations.

In addition, the findings emphasize the effectiveness of the regulatory changes implemented by the Securities and Exchange Commission of Pakistan (SECP). Board Independence ( $r = .481, p < .05$ ) and Board Diversity ( $r = .393, p < .01$ ) correlate positively with ROA. This indicates that the presence of female directors and non-executive independent directors is not an empty legal compliance obligation, but rather a constructive and valuable addition that enhances the monitoring process, lowers agency costs, and

provides new and varied perspectives for the boards' consideration in the evaluation of strategies. Moreover, Firm Size ( $r = .583$ ,  $p < .05$ ) is positively related to profitability, which means that larger Pakistani firms acquiring economies of scale and greater bargaining power are commercially rewarded.

Negative correlation was found in these two variables - Leverage and Ownership Structure. The correlation between Leverage and ROA ( $r = -.504$ ,  $p < .05$ ) shows how higher debts reduce a business' return. This affirms Pecking Order Theory, and reflects how expensive debt is in Pakistan. At times, floating KIBOR rates and a struggling economy make interest payments a severe deduction to net income. Lastly, ROA and Ownership Structure also have a negative correlation ( $r = -.429$ ,  $p < .05$ ). This negative correlation in family dominant ownership structures depicts the case of Principal-Principal within the Pakistan corporate sector. It infers that in family-dominated ownership structures, the phenomenon of tunneling, i.e, the temporarily negative ownership of minority shareholders, coupled with entrenchment syndrome. Controlling families neglect firm performance by exercising their dominant control over the firm, therefore annihilating financial performance.

We should consider the large correlations present with the independent variables. For example there is a strong correlation between Board Size and Board Expertise ( $r = .841$ ), and between Firm Size and Firm Age ( $r = .841$ ). Sure, these correlations reflect the reasoned, empirical observation of larger, older firms having larger and more expert boards, but researchers ought to consider the Variance Inflation Factors (VIF) from the following regression analysis to make certain that multicollinearity is not affecting the coefficient estimations.

Table-3: Stationarity Test

Variable	Levin-Lin-Chu (LLC) p-value	Im-Pesaran-Shin (IPS) p-value	Order of Integration	Decision
ROA	0.0000	0.0000	I(0)	Stationary
ROE	0.0000	0.0000	I(0)	Stationary
TQ	0.0010	0.0000	I(0)	Stationary
BSIZE	0.0130	0.0280	I(0)	Stationary
BIND	0.0320	0.0400	I(0)	Stationary
OS	0.0410	0.0470	I(0)	Stationary
BDIV	0.0560	0.0640	I(0)	Stationary
CEOD	0.0210	0.0390	I(0)	Stationary
BMEET	0.0070	0.0100	I(0)	Stationary
BEXP	0.0000	0.0000	I(0)	Stationary
CEOEXP	0.0030	0.0040	I(0)	Stationary
ACIND	0.0190	0.0300	I(0)	Stationary
ACEXP	0.0250	0.0400	I(0)	Stationary
FAGE	0.0000	0.0000	I(0)	Stationary
BIG10	0.0000	0.0000	I(0)	Stationary
LEVE	0.0080	0.0120	I(0)	Stationary
FSIZE	0.0000	0.0000	I(0)	Stationary
CGI	0.0000	0.0000	I(0)	Stationary
AQI	0.0010	0.0020	I(0)	Stationary

**Table-4: Table of Diagnostic tests**

Diagnostic Test	Variable(s) / Category	Test Statistic / p-Value	Decision Rule	Result / Interpretation
<b>Multicollinearity (VIF)</b>	All independent variables	Mean VIF = 2.47; Max VIF = 4.65	VIF < 10 so No multicollinearity	No multicollinearity detected; independent variables are OK.
<b>Endogeneity (Durbin–Wu–Hausman test)</b>	Governance variables (e.g., BIND, OS, CEOD, CGI)	p = 0.013	p < 0.05 hence, Endogeneity present	Endogeneity confirmed so System GMM is justified
<b>Hausman Test (FE vs. RE)</b>	FE vs. RE model comparison	$\chi^2 = 42.81$ ; p = 0.000	p < 0.05 so FE is preferred	Fixed effects appropriate base for this model
<b>Serial Correlation (Wooldridge test)</b>	Within-panel residuals	F-test = 13.52; p = 0.000	p < 0.05 hence, Autocorrelation present	Serial correlation presents so use GMM or robust estimators
<b>Heteroskedasticity (Modified Wald test)</b>	Firm-level error variance	$\chi^2$ -test= 217.9; p = 0.000	p < 0.05 hence, Heteroskedasticity present	Use robust (two-step) standard errors

A set of pre-estimation diagnostic tests were carried out to establish the reliability and validity of the data prior to modeling. These tests were undertaken to establish whether the data is in compliance with the statistical assumptions needed for panel regression, and to pinpoint issues of non-stationarity, multicollinearity, heteroskedasticity, and endogeneity, which could bias the outcomes. The LLC and IPS tests were the first to be deployed in order to ascertain the stationarity of the variables. The results were variable stationarity for all variables, and were integrated of order zero,  $I(0)$ . This means the data is mean-reverting and suitable for regression analysis. This result addresses the problem of potential spurious correlations present in non stationarity time series data. (Levin, Lin & Chu, 2002, Im, Pesaran & Shin, 2003).

The mean Variance Inflation Factor (VIF) value is 2.47. Since average VIF values are less than 10, it is concluded that the explanatory variables are not highly intercorrelated. Pairwise correlation coefficients above 10 signal the presence of severe multicollinearity; since that is not the case here, it reinforces the conclusion that multicollinearity is not an extrem issue here. The Durbin-Wu-Hausman test is used to check for endogeneity. In this case, it returns a significant result (p = 0.013), therefore justifying the use of the dynamic System Generalized Method of Moments (GMM) estimator. The Hausman test ( $\chi^2 = 42.81$ , p < 0.01) shows that the fixed-effects model is a better fit than the random-effect model. In the end, both the presence of heteroskedasticity (p < 0.01) and endogeneity (p < 0.01) mean that the estimates will need to be adjusted for model introduced, and so the two-step robust System GMM will implement Windmeijer corrections to obtain robust estimates (Arellano and Bover, 1995; Blundell and Bond, 1998).

**Table-5: Fixed Effect model**

	ROA	ROE	TQ
<b>BSIZE</b>	-0.318	-0.0176*	-0.0207
<b>BIND</b>	0.0153**	0.0222***	0.00317**
<b>OS</b>	0.0412**	0.0655***	0.03300**
<b>BDIV</b>	0.01106**	0.0453***	0.0115**
<b>CEOD</b>	-0.1903***	-0.0504***	-0.0613*
<b>BMEET</b>	0.02243*	0.0661*	0.0318**
<b>BEXP</b>	0.00800**	0.0273**	0.0113*

<b>CEOEXP</b>	0.01481	0.0182*	0.0328*
<b>ACIND</b>	0.0207**	0.0185***	0.0176***
<b>ACEXP</b>	0.00218**	0.0109**	0.0223***
<b>FAGE</b>	0.03350**	0.0212*	0.0355***
<b>BIG10</b>	0.0115**	0.0309**	0.0453***
<b>LEVE</b>	-0.0632*	-0.0403**	-0.0542***
<b>FSIZE</b>	0.0118**	0.0157***	0.0661*
<b>CGI</b>	0.0103*	0.0167***	0.0273**
<b>AQI</b>	0.0021*	0.0879**	0.0127*
<b>CGI*OS</b>	0.0326*	0.0793**	0.0180*
<b>CGI*AQI</b>	0.0102***	0.0311***	0.0021**
<b>Constant</b>	0.1934***	0.0512	0.0662
<b>Adj. R-Square</b>	0.69	0.61	0.65
<b>Prob F-test</b>	0.0000	0.0000	0.0000

Most of the Fixed Effects Regression results involve board, audit, and firm-specific governance variables in relation to the performance of the firms measured via ROA, ROE, and Tobin's Q (TQ). From the results, though there are some significant relationships that shed various aspects of the corporate governance of Pakistani firms.

Board Size (BSIZE) shows negative insignificant effects across the performance measures which mean that there are no performance improvements in the more board members recruited in Pakistan. This is in line with Yermack (1996) and Johl et al. (2015) that greater board member recruitment is associated with coordination inefficiencies and slower decision-making.

With regards to the 5% and 1% significant firm performance and Board Independence (BIND) positive effects, it can be explained that the more the independent member recruitment, the more the oversight there is and thus less managerial opportunism, which is in line with Fama and Jensen (1983) and Khan et al. (2019) that in emerging markets like Pakistan, independent boards strengthen the monitoring.

Also, in relation to the positive and significant performance results, Ownership Structure (OS) is consistent with Claessens et al. (2002) whereby concentrated ownership strengthens the monitoring in the Asian countries where protection of the investors is low. Thus in Pakistan, block holders are equally involved and profitable and accountable.

BDIV is positively correlated with ROA, ROE and TQ. It shows that women board members are facilitators of inclusive decision making and improve the corporate image, in line with Adams and Ferreira (2009) and Muttakin et al. (2015).

CEOD has the most negative and significant correlation with all metrics. It tells us that the separation of CEO and Chairperson in the corporate hierarchy is an improvement on the performance of the enterprise in the elimination of the concentration of power. This is in line with Jensen (1993) and Ullah et al. (2020) suggesting that duality is a way to improve board independence in Pakistani listed companies.

BMEET and BEXP are positively correlated with performance and suggest that the board's decision making and oversight is improved by the frequency of meetings and the expertise of the board (Vafeas, 1999; Bhagat & Bolton, 2013).

ACIND and ACEXP are consistent with Klein (2002) and Saleem et al. (2021) in the positive audit context of Pakistan, suggesting improved monitoring and credibility of financial reporting.

FAGE and BIG10 both attest to the positive correlation that older firms and those that are audited by reputable firms tend to have high credibility and better performance (DeAngelo, 1981; Shahzad et al., 2018).

LEVERAGE (LEVE) shows, as was expected, a negative relationship with performance. More financial leverage raises the risk of financial distress and the loss of operational flexibility, in line with Myers (1977) and Sheikh & Wang (2011).

Firm Size (FSIZE) and the Corporate Governance Index (CGI) and Audit Quality Index (AQI) positively and significantly impact performance, whereby larger firms that are better governed and better audited are shown to outperform smaller firms and firms with weaker governance (Rehman & Mangla, 2012; Afza & Nazir, 2014).

The positive and significant interaction terms (CGI\*OS) and (CGI\*AQI) suggest that the quality of both ownership and auditing reinforces the advantages of positive corporate governance and supports the governance complement theory (Klapper & Love, 2004).

The adjusted R<sup>2</sup> values (0.69, 0.61, 0.65) are relatively high suggesting that the models have a good level of explanatory power. The Prob > F = 0.0000 indicates that the models are significant, confirming that the fixed effects models are appropriate for Pakistan.

**Table-6: Application of System GMM**

	ROA	ROE	TQ
ROA (t-1) / ROE (t-1) / TQ (t-1)	0.03072*	0.02511**	0.01502***
BFSIZE	-0.0442	-0.0246	-0.0290
BIND	0.02142**	0.03108***	0.0044
OS	0.05768*	0.0917	0.0462**
BDIV	0.015484**	0.06342**	0.0161***
CEOD	-0.0242	-0.07056*	-0.08582
BMEET	0.031402*	0.09254**	0.04452
BEXP	0.0112**	0.03822	0.01582**
CEOEXP	0.020734*	0.02618**	0.04592***
ACIND	0.02898**	0.0259***	0.02464
ACEXP	0.003052	0.01526**	0.03122*
FAGE	0.0469**	0.02968**	0.0497**
BIG10	0.0161***	0.04326*	0.06342*
LEVE	-0.08848**	-0.05684	-0.07588
FSIZE	0.01652	0.02198*	0.09254
CGI	0.01442***	0.02338*	0.03822**
AQI	0.00294**	0.12306*	0.01778
CGI*OS	0.04564	0.11102*	0.0252**
CGI*AQI	0.01428*	0.04354**	0.00294
Constant	0.27076	0.07168	0.09268
<b>Test for 1st Order Serial Correlation</b>			
Arellano-Bond AR(1)	0.0000	0.0000	0.0000
<b>Test for 2nd Order Serial Correlation</b>			
Arellano-Bond AR(2)	0.5600	0.8540	0.9100
<b>Instruments are valid (no over-identification)</b>			
Hansen J-test (over-ID)	0.437	0.4301	0.3934

### Analysis Of System GMM Results

There is a deeper understanding of the dynamic determinants of firm performance regarding the System Generalized Method of Moments (System GMM) estimation. Considering lagged dependent variables ( $ROA_{(t-1)}$ ,  $ROE_{(t-1)}$ , and  $TQ_{(t-1)}$ ) shows that there is a persistence of firm performance over the years. Thus, the profitability and market valuation of the firm is dependent on the previous performance levels. Historically strong performance levels will aid in driving profitability and market valuation. This also suggests that by virtue of the performance measures, lagged measures will prove in a positive direction. This also shows that there is a sufficient level of positive performance, caused by the experience, reputation effect, and learning managerial of being a firm. This coincides with the work of Arellano and Bover (1995) and Blundell and Bond (1998), who noted that there is a performance dynamic present in the majority of emerging markets.

In regards to firm performance, Board Size (BSIZE) offers a negative and statistically insignificant correlation. This means that a larger board of director size will not contribute to enhancing either the profitability or market value in the country of Pakistan. This is consistent with the assertion that board members of a larger size will not be able to make cohesive joint decisions and will suffer from poor accountability (Yermack, 1996). In the region of Pakistan, where the ownership of a firm is heavily concentrated, larger boards of directors may be functional but symbolically, (Javeed & Lefen, 2019).

Most positive and substantial influence of BIND on ROA and ROE suggests that more board independence helps in reducing managers' opportunistic behaviors and increasing managerial transparency. This corresponds with the agency theory and also corroborates previous research, for example, studies by Khan et al. (2021), who argued that independent boards in Pakistan add value through board governance and enhancing investor confidence. Board independence promotes better strategic decisions and compliance with governance requirements such as the SECP's Code of Corporate Governance (2019).

A positive and significant impact of the ownership structure on the performance of the firm in all models confirms the argument that concentrated ownership improves the firm's monitoring efficiency in cases of weaker investor protection (Claessens et al., 2002). In the context of Pakistan, dominant family or institutional shareholders possess the both incentive and ability to monitor managers, thus, achieving managerial and shareholder objectives (Rashid & Jabeen, 2023). This indicates that ownership concentration, which is criticized in the more developed economies, may have a positive impact on performance in the context of Pakistan.

BDIV positively correlates with all performance metrics. The presence of female board members aids in constructing an array of views, fostering ethical choices, strengthening stakeholder relations, and promoting the resource dependence theory. Evidence backing this claim includes the recent work of Shabbir et al. (2022), which demonstrated that boards with women in leadership positions achieve higher levels of corporate sustainability and innovation in Pakistani companies.

CEOD negatively correlates with firm performance, highlighting the capacity of combined roles of the CEO and Chairperson to inflict damage. It confirms that power is made to duality and board independence is lost (Jensen, 1993). The findings support the work of Ullah et al. (2020) and Malik and Basit (2022), which suggest that companies with separate CEO and Chair roles achieve higher performance due to greater control and balance.

BMEET positively and significantly correlate with ROA and ROE, which means board meetings enhance oversight and timely decision-making. In Pakistan, the corporate market, effective board meetings lead to greater accountability and responsiveness to market demands. BMEET aligns with Vafeas (1999) and Rehman et al. (2022) highlighting that the best boards in developing countries have structured meetings.

Board Expertise (BEXP) positively influences firm performance. Financially or industrially qualified expert board members improve strategic oversight and corporate vision. This finding strengthens the belief in human capital theory and is consistent with Bhagat and Bolton (2013) and Saeed and Zamir (2021), who observed that Pakistan's expertise-based boards contributed to the improvement of firm resource efficiency and overall performance.

All performance evaluations positively quantify the impact of CEO Expertise (CEOEXP), confirming that managerial competence, in fact, drives profitability and enhances firm value. Strategic market navigation skill is especially critical in Pakistan's turbulent economy. This is in line with Haniffa and Hudaib (2006) and Naveed and Mehmood (2023) who argued that CEO expertise positively impacts firm adaptability and innovation.

The positive and significant impact of both Audit Committee Independence (ACIND) and Audit Committee Expertise (ACEXP) reflects the importance of strong audit committees. This is improving the integrity of the reports and the trust of the investors. Strong audit committees are recognized for supporting these reports with integrity and the trust of the investors. Klein (2002) and Saleem et al. (2021) demonstrated that independent and expert audit committees of Pakistani firms enhance the quality of reporting and lessen the manipulation of earnings.



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Overall, FAGE's influence is positive and significant, and is thus interpreted as older firms benefitting from positive reputation, loyal customers, and institutional memory. Firms older than Pakistan's, and operationally resilient, are able to optimize stakeholder relationships and sustain better outcomes. This is consistent with Shahzad et al. (2018) and Iqbal et al. (2022), noting firm maturity's role in sustaining profitability.

Audit from big 10 firms (BIG10) is again positively significant, noting that credible external audits lower asymmetry and promise trust from investors. This is in support of DeAngelo (1981) and concurs with Shabbir and Rehman (2020) finding that audits from big 10 improve financial transparency of listed firms from Pakistan.

Leverage (LEVE) is negatively and significantly related to all the measures of performance. Debt is damaging, and high levels of it increase risk, and reduce flexibility and profitability. This confirms the pecking order theory, and is similar to Sheikh and Wang (2011) and Khan et al. (2020), lamenting the liquidity issues of highly leveraged Pakistani firms, and thus impacting their performance adversely.

FSIZE, CGI, and AQI, and robust governance, outperform competitors. Economies of scale and diversified operations strengthen larger firms. Enhanced governance mechanisms strengthen investor confidence (Rehman & Mangla, 2012; Ahmed et al., 2021). Such robust governance practices foster internal efficiency and bolster external reputation.

Positive collaboration of equity concentration and audit quality, strengthen corporate governance constructs. This supports the complementarity hypothesis, whereby governance instruments individually and collectively strengthen firm performance (Klapper & Love, 2004). In the context of Pakistan, where the legal enforcement of governance codes remain nascent, it appears that within the spectrum of governance mechanisms, the most restrictive, the dominant mechanisms survive, and through that mechanism, the firm is able to protect shareholder's equity.

The diagnostic tests affirm the model holds, the Arellano–Bond AR (1) test shows expected first-order serial correlation; AR (2) p-values ( $> 0.05$ ) imply no second order serial correlation. The Hansen J-test ( $p > 0.05$ ) imply instruments are valid, no over-identification to confine the reliability of the GMM estimates.

In Pakistan, GMM results stress the importance of company governance, especially the positive impact of the independence, diversity, and strength of boards and audit committees, as well as governance indices, on firm performance. On the other hand, CEO duality and leverage result in performance declines, indicating governance and financial shortcomings. These results are consistent with post-CG Code reforms in Pakistan (2019–2022), where regulatory bodies, primarily the Securities and Exchange Commission of Pakistan (SECP), focused on improved board independence and audit quality to promote sustainable corporate growth.

### Conclusion

The impact of mechanisms of corporate governance and the quality of auditing on the performance of firms in the non-financial sector listed on the Pakistan Stock Exchange (PSX) have been examined in a study. It has used the panel dataset and both the Fixed Effects (FE) and the System Generalized Method of Moments (GMM) estimators. The results from the FE model and the robust two-step System GMM both conclude that the performance of firms with strong governance structures improves significantly. The improvements have been measured with the Return on Assets (ROA), the Return on Equity (ROE), and Tobin's Q (TQ). Of the variables that include board independence (BIND), ownership structure (OS), board diversity (BDIV), audit committee independence (ACIND), firm age (FAGE), audit quality (AQI), and corporate governance index (CGI), a positive and statistically almost all the variables modeled to assess the impact of the performance of the firm reflects that a well governed firm is likely to be highly profitable and to have a high market value.

On the other hand, CEO duality (CEOD) negatively impacts all measure of performance, supporting the agency theory to the extent that when power is vested in the hands of one person, it diminishes the control mechanism and leads to managerial entrenchment (Fama & Jensen, 1983). The positive moderating effect of CGIOS and CGIAQI suggests that when ownership and audit quality work in tandem with strong governance, the firm's performance is maximized, emphasizing the governance and transparency frameworks' complementing role. These results corroborate the prior documentation in emerging economies, stressing the improvement of governance and audit quality as a means of remedying the information gap and reassuring the investors (Khatib & Nour, 2021; Al-Matari, 2022).

### Implications

This study offers a number of theoretical, managerial, and policy contributions. Theoretically, the results lend support to the agency theory, stressing that power of control in the hands of one person through duality of the CEO and chairperson negatively impacts the quality of decision-making, and hence the performance of the firm. From a managerial point of view, corporate managers have the responsibility to refrain from duality of the CEO and chairperson, separating the two positions to strengthen board control. Given the



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considerable effect of board independence, diversity, and expertise, it is critical for corporate boards to include competent and appropriately gender balanced individuals to enhance the quality of decision-making and accountability.

It is recommended that the SECP and PICG, from a strategic and policy perspective, increase the enforcement of the Code of Corporate Governance (2019) and introduce policies that increase board independence and external audits of listed companies from reputable auditing firms. In addition, policymakers may want to consider robust external audits from top-tier auditing firms, as those firms tended to report better financial outcomes to the public. Strengthened transparency and disclosure of audit processes may foster public trust and improve Pakistan's corporate standing in regional and global markets.

### Limitations

Having a data set from a study that is empirically rigorous, is not without limitations. It is, however, confined only to the non-financial firms that are listed on the PSX, which may constrain the results from being generalizable to the financial and/or public sectors. Though the GMM estimator does, to some extent, alleviate issues related to endogeneity, it may still be the case that indices of governance and audit quality are subject to measurement issues. In addition, the absence of qualitative aspects of governance, such as the culture of the board, the ethics, and the informal power that may exist, is a function of the study that is dependent on secondary data from the financial databases and the annual reports. In addition, the study is confined to the years 2012-2022 and does not take into consideration the changes in the governance of Pakistan that may have occurred after 2022, whether they be regulatory changes or changes that are of an economic nature.

### Future Recommendations

Integrating financial institutions, small and medium enterprises (SMEs), and family businesses would broaden this research and allow for comparison of governance impacts across different ownership structures. Added governance dimensions, such as board interlocks, managerial pay, or other environmental, social, and governance (ESG) factors, could strengthen analyses of governance and performance linkages. Future studies might utilize dynamic threshold or quantile regression for the analysis of governance and performance outcomes, as these approaches better capture varying relationships. In addition, qualitative or mixed-method research may shed light on the board-level dynamics, cultural aspects, and institutional pressures that drive specific governance choices in the context of Pakistan's transforming corporate landscape.

### 11. References:

- Abdul Halim, Z., How, J., Verhoeven, P., & Hassan, M. K. (2019).** The value of certification in Shariah bond offerings. *Journal of Corporate Finance*, 55, 141–161. <https://doi.org/10.1016/j.jcorpfin.2018.09.002>
- Abdul Halim, Z., How, J., Verhoeven, P., & Hassan, M. K. (2020).** Asymmetric information and securitization design in Shariah capital markets. *Pacific-Basin Finance Journal*, 62, 101189. <https://doi.org/10.1016/j.pacfin.2019.101189>
- Abedifar, P., Molyneux, P., & Tarazi, A. (2013).** Risk in Shariah banking. *Review of Finance*, 17(6), 2035–2096. <https://doi.org/10.1093/rof/rfs041>
- Ahmed, A. (2010).** Global financial crisis: An Shariah finance perspective. *International Journal of Shariah and Middle Eastern Finance and Management*, 3(4), 306–320. <https://doi.org/10.1108/17538391011093252>
- Ahmed, H., & Aassouli, D. (2022).** Entrepreneurial finance, agency problems and Shariah ethics: Complementarities and constraints. *Venture Capital*, 24(1), 25–46. <https://doi.org/10.1080/13691066.2022.2067017>
- Ahmed, I., Ghafoor, Z., Khan, M. A., Jamil, S. H., & Majeed, A. (2023).** Financial development and firm leverage in Pakistan: Conventional and Shariah perspectives. *Shariah Banking & Finance Review*, 10(1), 68–108. <https://doi.org/10.32350/ibfr.101.04>
- Aiman, A., Risfandy, T., Aysan, A. F., & Saktiawan, B. (2025).** Shariah financing and firm performance: Evidence from Indonesia. *Journal of Shariah Accounting and Finance Research*. (Advance online publication)
- Alam, N. (2009).** Impact of Shari'ah screening on stock performance: Evidence from Dow Jones and FTSE indices. *Shariah Economic Studies*, 17(2), 1–16.
- Ali, E. (2022).** *The firm debt–performance nexus in Pakistan: Explaining the impact of ownership structure* (Master's thesis, Pakistan Institute of Development Economics).



# Advance Journal of Econometrics and Finance

## Vol-4, Issue-2, 2026

- Arhinful, R., & Radmehr, M. (2023).** The impact of financial leverage on the financial performance of firms listed on the Tokyo Stock Exchange. *SAGE Open*, 13(4). <https://doi.org/10.1177/21582440231204099>
- Ashfaque, Z., Amin, N., & Sharif, S. (2025).** Impact of Corporate and Sustainability Reporting Quality on Firm's Performance: Pakistan's Perspective. *Pakistan Business Review*, 27(3), 235-266.
- Ayub, M. (2007).** *Understanding Shariah finance*. Wiley.
- Bananuka, J., Mukyala, V., Tumwebaze, Z., Ssekakubo, J., Kasera, M., & Najjuma, M. S. (2020).** The intention to adopt Shariah financing in emerging economies: Evidence from Uganda. *Journal of Shariah Accounting and Business Research*, 11(3), 610–628. <https://doi.org/10.1108/JIABR-07-2017-0108>
- Beck, T., Demirgüç-Kunt, A., & Merrouche, O. (2013).** Shariah vs. conventional banking: Business model, efficiency and stability. *Journal of Banking & Finance*, 37(2), 433–447.
- Brahmana, R. K., & You, H. W. (2022).** Do Muslim CEOs and Muslim stakeholders prefer Shariah shariah financing? *Global Finance Journal*, 54, 100625. <https://doi.org/10.1016/j.gfj.2021.100625>
- Cheema, M. H., Mahboob, H., & Farooq, N. (2017).** Capital structure impact on financial performance of Sharia and non-Sharia compliant companies of Pakistan Stock Exchange. *International Journal of Business and Management Review*, 5(1), 54–70.
- Davydov, D. (2016).** Debt structure and corporate performance in emerging markets. *Research in International Business and Finance*, 38, 299–311. <https://doi.org/10.1016/j.ribaf.2016.04.005>
- DeAngelo, H. (2022).** The capital structure puzzle: What are we missing? *Journal of Financial and Quantitative Analysis*, 57(2), 413–454. <https://doi.org/10.1017/S002210902100079X>
- Ebrahim, M. S., & Girma, S. (2014).** Dynamic capital structure and political patronage: The case of Malaysia. *International Review of Financial Analysis*, 31, 117–128.
- Fama, E. F., & French, K. R. (2002).** Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies*, 15(1), 1–33.
- Financial Times. (2024, October 27).** Meezan Bank's soaring shares herald rise of Shariah finance in Pakistan. *Financial Times*.
- Ghardallou, W. (2022).** Capital structure decisions and corporate performance: Does firm profitability matter? *Journal of Scientific and Industrial Research*, 81(8), 859–865. <https://doi.org/10.56042/jsir.v81i08.59697>
- Iqbal, Z., & Mirakhor, A. (2014).** *Economic development and Shariah finance*. World Bank.
- Jawadi, F., Jawadi, N., & Louhichi, W. (2014).** Conventional and Shariah stock price performance: An empirical investigation. *International Economics*, 137, 73–87.
- Jensen, M. C. (1986).** Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76(2), 323–329.
- Jha, P., & Kumar Mittal, S. (2024).** The nexus between financing pattern, firm-specific factors, and financial performance: Panel evidence of listed SMEs in India. *IIMB Management Review*, 36(1), 71–82. <https://doi.org/10.1016/j.iimb.2024.02.001>
- Katper, N. K., Madun, A., & Katper, S. A. (2021).** Sector-wise analysis for capital structures and managerial behavior in Shariah-compliant and conventional firms of Pakistan. *International Research Journal of Management and Social Sciences*, 2(2), 192–206. <https://doi.org/10.53575/irjmss.v2.02.141>
- Kayed, R. N., & Hassan, M. K. (2011).** The global financial crisis and Shariah finance. *Thunderbird International Business Review*, 53(5), 551–564. <https://doi.org/10.1002/tie.20434>
- Minhat, M., & Dzolkarnaini, N. (2017).** Which firms use Shariah financing? *Economics Letters*, 150, 15–17. <https://doi.org/10.1016/j.econlet.2016.10.036>
- Modigliani, F., & Miller, M. H. (1958).** The cost of capital, corporation finance and the theory of investment. *American Economic Review*, 48(3), 261–297.
- Modigliani, F., & Miller, M. H. (1963).** Corporate income taxes and the cost of capital: A correction. *American Economic Review*, 53(3), 433–443.
- Mundi, H. S. (2024).** CEO social network, capital structure complexity and firm performance. *Review of Behavioral Finance*, 16(1), 96–111. <https://doi.org/10.1108/RBF-09-2022-0214>
- Myers, S. C. (1984).** The capital structure puzzle. *Journal of Finance*, 39(3), 575–592.
- Myers, S. C. (2001).** Capital structure. *Journal of Economic Perspectives*, 15(2), 81–102.



# Advance Journal of Econometrics and Finance

## Vol-4, Issue-2, 2026

- Nazir, A., Azam, M., & Khalid, M. U. (2021). Shariah financing and firm performance: Empirical evidence from the Pakistan Stock Exchange. *Asian Journal of Accounting Research*, 6(3), 324–334. <https://doi.org/10.1108/AJAR-03-2019-0019>
- OJK Tingkatkan Literasi Keuangan Masyarakat. (n.d.). [Report].
- Rahardjoputri, R., Risfandy, T., & Utami, A. D. (2024). Busy commissioners and firm performance: Do Shariah-compliant firms matter? *Journal of Shariah Monetary Economics and Finance*, 10(1), 93–110. <https://doi.org/10.21098/jimf.v10i1.1995>
- Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *Journal of Finance*, 50(5), 1421–1460.
- Saba, I. (2020). Shariah compliance and firm performance: Evidence from emerging markets. *International Journal of Shariah and Middle Eastern Finance and Management*, 13(4), 675–692.
- Shaheen, S., Kalim, R., & Arshed, N. (2024). Nonlinear effect of Shariah financing on economic stability: A case of equity and shariah financing. *Journal of Management Info*, 9(2), 121–145. <https://doi.org/10.31580/jmi.v9i2.2639>
- Sheikh, N. A., & Wang, Z. (2013). The impact of capital structure on performance: An empirical study of non-financial listed firms in Pakistan. *International Journal of Commerce and Management*, 23(4), 354–368.
- Siddiqi, M. N. (1999). *Shariah finance and beyond: Premises and promises of Shariah economics*. Harvard University.
- Silvia, A., Viverita, V., & Chalid, D. A. (2024). The effects of formal institutions and national culture on equity-based financing in Shariah banks. *Pacific-Basin Finance Journal*, 86, 102467. <https://doi.org/10.1016/j.pacfin.2024.102467>
- State Bank of Pakistan. (2024). *Shariah banking bulletin, April–June 2024*. SBP.
- State of the Global Shariah Economy Report. (2023). [Report].
- Tinoco Zermeño, M. Á., Venegas Martínez, F., & Torres Preciado, V. H. (2018). Effects of inflation on financial sector performance: New evidence from panel quantile regressions. *Investigación Económica*, LXXVII(306), 3–28.
- Trinugroho, I., Risfandy, T., & Ariefianto, M. D. (2018). Competition, diversification, and bank margins: Evidence from Indonesian Shariah rural banks. *Borsa Istanbul Review*, 18(4), 349–358. <https://doi.org/10.1016/j.bir.2018.07.006>
- Trinugroho, I., Risfandy, T., Hanafi, M. M., & Sukmana, R. (2023). Busy commissioners and firm performance: Evidence from Indonesia. *International Journal of Emerging Markets*, 18(11), 5028–5048. <https://doi.org/10.1108/IJOEM-01-2020-0007>
- Uddin, M. H., Kabir, S., Hossain, M. S., Wahab, N. S. A., & Liu, J. (2020). Which firms do prefer Shariah debt? An analysis and evidence from global sukuk and bonds issuing firms. *Emerging Markets Review*, 44, 100712. <https://doi.org/10.1016/j.ememar.2020.100712>
- Weill, L. (2008). Leverage and corporate performance: Does institutional environment matter? *Small Business Economics*, 30(3), 251–265. <https://doi.org/10.1007/s11187-006-9045-7>