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Revisiting the CSR and Financial Distress Nexus: Insights from Mediation of Agency Costs in an Emerging Market

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Abstract: *In a struggling and volatile economy like Pakistan, studying corporate financial distress (FD) is critically important. The current sustainability-oriented economic dynamics have made the connection between corporate social responsibility (CSR) and FD particularly relevant, as CSR can enhance business resilience, stakeholder trust, and risk management. Understanding this relationship helps determine whether socially responsible businesses are better equipped to handle financial crises. Therefore, this study aims to analyze the impact of CSR on FD while examining the mediating role of agency costs (AC). The sample includes 257 non-financial companies registered on the Pakistan Stock Exchange from 2008 to 2022. The generalized method of moments technique is used for hypothesis testing. The results reveal a significant link between CSR and FD, showing that investment in CSR reduces FD. Additionally, the study finds that CSR negatively influences AC, indicating that investment in CSR also lowers AC. The findings establish that AC mediates the relationship between CSR and FD.*

Keywords: Financial distress, corporate governance, agency costs, corporate social responsibility, Pakistan.

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1. Introduction

Given the recent occurrence of unusual climatic anomalies worldwide, sustainability has become a central concern in various areas of innovation and research. Stakeholders are increasingly aware of the broader social and environmental consequences of corporate activities (Tan et al., 2023). Traditionally, most studies on sustainability have focused on its environmental aspect; however, due to contemporary issues facing developing countries, economic sustainability has become equally important. Financial distress (FD) can harm the economic sustainability of corporations and, in turn, lead to significant consequences for society and the economy (Wang et al., 2018). Therefore, it is essential to understand how FD can be mitigated and what factors can significantly improve the financial condition of firms in developing countries.

Corporate social responsibility (CSR) initiatives have become vital for organizational survival. Corporations are making significant investments aimed at achieving a long-term, sustainable competitive advantage that extends beyond traditional profit maximization. Many companies worldwide are not only prioritizing CSR activities but also reporting their initiatives in annual statutory reports. Notably, Sun and Cui (2014) found that an estimated 90 percent of Fortune 500 companies disclose their CSR activities. Consequently, business communities, investors, practitioners, and researchers have shown considerable interest in exploring CSR (Du et al., 2010).

CSR has been extensively studied in relation to its effects on business performance (Shen et al., 2016), credit rating (Jiraporn et al., 2014), cost of equity (El Ghoul et al., 2011), shareholder wealth (Krüger, 2015), firm risk (Ameur et al., 2020), debt maturity (Benlemlih, 2017), and capital structure (Girerd-Potin et al., 2011). Overall, existing research indicates that investment in CSR-related activities reduces firm risks (Mishra & Suar, 2010) and improves firm performance (Lins et al., 2017). Although much has been said about the significance of CSR, the relationship between FD and CSR is often overlooked and typically studied in isolation (Deegan, 2002). CSR can be viewed as a means of managing risks and enhancing the firm's reputation while also mitigating risks associated with social, political, and governance changes (Godfrey, 2005; Minor & Morgan, 2011). The literature also suggests that CSR activities contribute positively to the economic growth of organizations (Moser & Martin, 2012) and society as a whole (Holme & Watts, 2006).

Thus, effective utilization of CSR can mitigate risks like FD, even when companies face funding shortages and underinvestment issues (Fazzari et al., 1987), by improving access to external financing through increased goodwill and enhanced corporate governance (Cheng et al., 2014; Stein, 2003). By making economic entities resilient to cash flow volatility (Attig et al., 2013), CSR can play a crucial role in firm survival. Research indicates that active engagement in CSR practices leads to financial gains and increased competitiveness, reducing the likelihood of FD (Al-Hadi et al., 2019).

Moreover, for CSR initiatives to yield meaningful outcomes, they require efficient management, making agency cost (AC) an important factor. AC can influence both a firm's engagement in CSR and its level of FD. Based on stakeholder theory (Freeman, 1984) and agency theory (Jensen & Meckling, 1976), inefficient governance mechanisms can lead to increased AC for stakeholders due to CSR activities, negatively impacting corporate performance (Nguyen et al., 2020). Similarly, signaling theory suggests that CSR can help a firm enhance its reputation and performance (Samuel, 2001). Therefore, the connection between CSR and FD is linked to the effectiveness of corporate governance mechanisms (Wu et al., 2020).

Considering these theoretical dynamics, this study examines the relationship between CSR and FD, with AC as a potential mediator, using data from non-financial firms listed on the Pakistan Stock Exchange. Specifically, we investigate whether engagement in CSR activities affects FD and whether AC mediates this relationship. By examining whether AC influences the relationship between CSR and FD, this research assesses the importance of corporate governance mechanisms in this context. Furthermore, the context of Pakistan is significant as it is not only experiencing economic decline but also facing an exponential rise in climate change trends, making it critical to focus on both economic and environmental sustainability. As an Asian country undergoing industrialization, Pakistan is grappling with issues like fluctuating exchange rates, business pressures following the pandemic, and other factors that increase the risk of FD, highlighting the importance of CSR as a strategic solution (Khan et al., 2023).

The remainder of the paper is structured as follows: Section 2 presents the literature review, Section 3 outlines the research methodology, Section 4 provides results and discussion, and Section 5 concludes.

2. Literature Review

FD refers to an economic entity's inability to generate enough resources to meet its financial obligations. FD significantly influences corporate decision-making, making it a crucial area of academic interest. A business goes through various phases during its lifecycle. While it strives to capture growth opportunities, it also faces significant risks, losses, and economic decline, which can lead to FD. During FD, firms cannot fulfill their obligations due to ongoing business losses, causing rising costs and declining profits that threaten long-term survival. Authors such as Marfou et al. (2024) emphasize that mitigating FD is essential for an organization's survival. In practice, the asset-to-debt ratio is commonly used to assess the level of FD (Mulatsih & Khasan, 2024).

Since the start of the 21st century, the global economy has experienced a series of financial and pandemic crises, indicating increased economic volatility and uncertainty worldwide. This heightened economic contagion can be attributed to technological advancements and globalization (Tan et al., 2024). Consequently, corporate profits have declined due to intensified competition from international entities, increasing the risk of FD. Moreover, the recent economic downturn in the post-pandemic world highlights the need to advance research on organizational FD. Given that unresolved FD can lead to corporate failure, it is essential to discuss its antecedents and their interaction with FD to detect and prevent corporate failure, especially in an economy like Pakistan, which has faced numerous financial crises and was recently on the brink of economic default. A sharp decline in the exchange rate has placed Pakistan's business environment under increased financial stress (Zahra et al., 2023), making FD a particularly relevant factor in this context.

2.1. Theoretical Framework

This study draws on several theoretical frameworks, including stakeholder theory, agency theory, and signaling theory. The concept of CSR is largely based on the idea of the societal wellbeing of businesses. This focus has gained prominence in corporate research, particularly with the rising concern for environmental and sustainability issues (Frerichs & Teichert, 2023). Researchers' attention to this area is growing, becoming increasingly popular in financial literature, including FD (Crane et al., 2018). CSR efforts have been shown to enhance the goodwill associated with a business's products. The implicit connection between CSR and FD can be inferred from stakeholder theory (Freeman, 1984), which offers a broader view of the relationship between firms and their shareholders, as well as various stakeholders, including customers, employees, society, and the environment.

Investments in CSR can be seen as efforts to manage these diverse relationships and reduce risks associated with stakeholder dissatisfaction. This long-term perspective may justify CSR investments to stabilize the firm's social image, indirectly contributing to lower FD. Similarly, signaling theory (Spence, 1978) posits that CSR activities signal firm quality and strong governance to external stakeholders, including investors and creditors. Therefore, this study establishes a theoretical link between these theories, suggesting that positive CSR engagement can reduce perceived risk, enhance reputation, and facilitate access to capital on favorable terms, thereby lowering the likelihood of FD (Cheng et al., 2014). Stakeholders, including customers, show increased loyalty to products linked to CSR, thereby improving performance and reducing the chances of FD.

The interdependence between stakeholders and management and its impact on organizational performance is well-established in financial literature through agency theory (Jensen & Meckling, 1976). FD is directly associated with AC arising from conflicts between principals and their agents. When agency problems stem from managers' opportunistic actions, lack of monitoring, or improper incentives, companies can destroy potential value and fail to uphold financial discipline, making FD more likely. Wu et al. (2020) note that poor governance quality may lead to higher AC that depletes firm resources and increases vulnerability to FD, raising the risk of FD. Moreover, this relationship can also work in reverse, where agency problems worsen in cases of FD. Managers may focus on short-term solutions to preserve their positions or redirect resources for consolidation, to the firm's detriment (Jensen, 1986). Additionally, firms in FD may reduce long-term investments, including CSR spending, which could harm stakeholder relationships and lead to further reputational and business risks. Together, agency, stakeholder, and signaling theories provide a robust conceptual foundation for understanding the relationships between CSR, AC, and FD.

2.2. Corporate Social Responsibility and Financial Distress

Deegan (2002) suggested that CSR and its link to FD are important research areas; however, there is limited exploration of this connection.

Existing literature on the relationship between CSR and performance has yielded mixed results. For instance, Ghosh et al. (2023) found a non-linear relationship between the environmental aspect of CSR and firm performance, while Lin and Dong (2018) reported that CSR builds social capital, mitigating business risks and enhancing performance. Bonsu et al. (2024) indicated that CSR significantly boosts ecological performance through green innovation, allowing businesses to strengthen their dynamic resources and innovation capabilities through sustainability orientation, leading to improved performance and reduced risks.

Zheng et al. (2019) examined the benefits of engaging in corporate social activities and found that investing in CSR lowers FD risks by strengthening stakeholder relations. Similarly, Wu et al. (2020) explored the relationship between CSR and firm performance, reporting a non-significant direct economic effect of CSR. Farooq and Noor (2021) analyzed the impact of CSR on FD among Pakistani firms, identifying a significant negative association. Choi et al. (2021) concluded that CSR positively correlates with corporate performance, risk reduction, and market response but is not significantly associated with FD or earnings management. These findings can be interpreted through the over-investment hypothesis of CSR, suggesting that management prioritizes personal benefits over corporate social investments. In contrast, Oware and Appiah (2022) examined the effect of CSR assurance practices on FD among listed firms in India, finding that while CSR assurance shows a weak and statistically insignificant association with FD, the involvement of auditing firms as assurance providers correlates with a lower likelihood of distress.

Recently, Ghosh et al. (2024) validated a U-shaped association between environmental and performance aspects, showing both positive and negative associations depending on CSR investment levels. The existence of such mixed, inconclusive, and contextual findings underscores the need for further study of these dynamics to establish reliable theoretical foundations. Similarly, Al-Hadi et al. (2019) noted that the literature on CSR and FD remains limited, emphasizing the need for more research to enhance understanding and generalizability. Authors have also suggested that current literature is unclear on whether CSR is consistently profitable (Bhardwaj et al., 2018; Boubaker et al., 2020). In light of these gaps, this study aims to investigate whether CSR is significantly associated with corporate FD in the Pakistani context. Therefore, we hypothesize that:

Hypothesis 1: CSR is significantly associated with corporate FD in Pakistan.

2.3. *Agency Cost and Financial Distress*

Sdiq and Abdullah (2022) established a link between AC and organizational outcomes, attributing this association to the deviation of interest between the agent and principal, which leads to AC and is a primary source of poor business performance. Altman and Hotchkiss (2010) suggest that management incompetence is a major reason for FD in firms. Wang and Deng (2006) examined the relationship between corporate governance and FD using a sample of distressed and healthy firms from China's transitional economy. Their findings revealed a significant negative association between corporate governance measures and the likelihood of FD, indicating that stronger governance reduces the chances of distress. The study also highlighted that poor managerial decisions can severely harm a firm's financial health.

Overall, the Altman model (Altman & Hotchkiss, 2010), which measures a firm's FD, establishes a link between effective corporate governance and AC. The existing literature points to a varied and inconclusive relationship between effective corporate governance/reduced AC and organizational performance/FD, but there is consensus on the connection between effective corporate governance through reduced AC and FD. Handriani et al. (2021) explored the most significant factors of FD in the Indonesian manufacturing sector using multiple regression models and found that effective corporate governance tools, such as institutional ownership, company size, profitability, and board autonomy, positively mitigate FD.

Similarly, Abdullah (2024) states that the audit committee significantly influences organizational outcomes, while Pareek et al. (2025) found that group association and CSR are negatively and nonlinearly related to organizational performance. The board size variable also showed an insignificant positive association. Farooq et al. (2023) reported that CSR has a noteworthy inverse association with the probability of FD. Indriastuti et al. (2021) found that institutional ownership is significantly linked to FD, while other dimensions of corporate governance have no significant influence. The study by Eskandari and Kordestani (2024) found an association but did not identify significance in these relationships. Hunjra et al. (2024) reported that good corporate governance practices protect firms from future FD.

Thus, a firm's lower risk of FD depends on implementing effective governance and reducing AC. The varying dynamics in the existing literature suggest a need to explore the contextualized associations between these variables in an overlooked and struggling economy like Pakistan. Therefore, we hypothesize that:

Hypothesis 2: AC is significantly associated with corporate FD in Pakistan.

2.4. Corporate Social Responsibility and Agency Cost

Firm investment and reporting of CSR stem from legitimacy theory (Schiopoiu et al., 2013). This theory suggests that disclosed CSR information is crucial for organizational survival during volatile economic times. Failing to meet societal standards poses a significant risk of stakeholder sanctions, which can adversely affect firm performance and vice versa. Additionally, agency problems arise when stakeholder and management interests misalign, leading to AC.

The relationship between these factors is explained by agency theory (Jensen & Meckling, 1976), which asserts that conflicts occur between managers (agents) and shareholders (principals) due to divergent interests. Managers may pursue CSR initiatives that fulfill personal reputational or career goals rather than maximizing shareholder value, thereby increasing AC. Nguyen et al. (2020) suggest that excessive CSR spending, without effective governance, can lead to inefficient resource distribution, raising AC and potentially undermining firm value. However, strong governance structures can align CSR initiatives with stakeholder interests, reducing information asymmetry and monitoring costs, thereby lowering overall AC.

Li et al. (2017) examined corporate governance dynamics in Chinese firms and found that CSR engagement is perceived to reduce AC. The established link between CSR, effective corporate governance (mitigated AC), and firm performance is well-documented in the literature, including in emerging economies like Pakistan (Khan et al., 2023; Khan et al., 2020). However, existing studies often examine these variables in isolation, necessitating further exploration of their intricate interplay. The prevailing notion that CSR enhances firm performance implies that investing in CSR also improves corporate governance, resulting in reduced AC (Akram et al., 2020).

A study by Lin and Dong (2018) also indicated that CSR builds social capital, potentially mitigating business risks, including AC. Furthermore, Gangi et al. (2020) found that effective corporate governance increases CSR engagement, but the literature lacks consensus on this relationship, presenting mixed results. From an overinvestment perspective, CSR investments are seen as management efforts to enhance their image and reputation, leading to higher AC. In contrast, the conflict resolution perspective suggests that these investments drive firm value and performance (Harjoto & Jo, 2011). Regardless of the perspective, the literature indicates a significant statistical link between CSR and AC. Therefore, we hypothesize that:

Hypothesis 3: CSR is significantly associated with corporate AC in Pakistan.

2.5. Mediation through Agency Cost

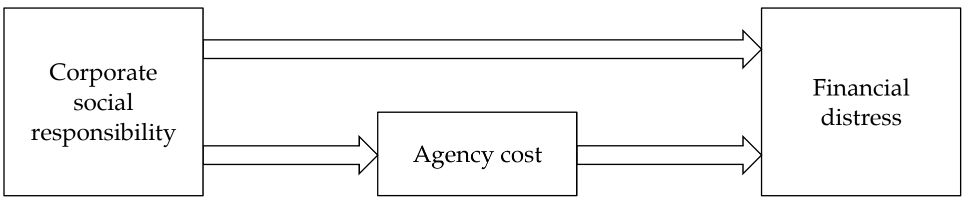
The CSR initiatives aim to enhance financial stability, foster an attractive company culture, and strengthen resilience to crises. Numerous studies have examined the link between CSR in corporate governance and FD in terms of financial or social performance (Chollet & Sandwidi, 2018; Oikonomou et al., 2012; Wu et al., 2020). A body of literature has also discussed the direct impact of various dimensions of CSR and corporate governance (including AC) on an organization's financial performance, including FD (Khan et al., 2022; Khan et al., 2020). However, this study is a pioneering effort to uncover the dynamics of the relationship between these variables, as none of the existing literature has addressed the mediating role of AC in the connection between CSR and firm FD.

Although Akram et al. (2020) examined the moderating role of AC in this relationship and confirmed a direct link between AC and FD, prior research also supports a significant association between these variables (Altman, 2013; Altman & Hotchkiss, 2010; Hussain et al., 2014). This strengthens the case for considering AC as a potential mediator. Similarly, Mondal and Sahu (2025) established the moderating role of governance mechanisms in the association between CSR and organizational outcomes. Meanwhile, Shakri et al. (2025) explored and established the mediating role of capital structure between CSR and firm outcomes, but the aspect of FD remained unexplored.

In this study, we investigate whether AC mediates the relationship between CSR and FD. The direction of the relationship depends on the effectiveness of corporate governance, as measured by the reduction of AC within the organization. An effective governance mechanism will lead to reduced AC and FD, while in a weak governance environment, corporate social investments will stem from management interests, resulting in increased AC and FD. Furthermore, during FD, managers tend to prioritize shareholders' interests, which leads to decreased investments in social activities. In Pakistan, this impact is expected to be direct and significant, thus potentially serving as a mediator. Therefore, this paper uses AC as a mediator to understand the connection between CSR and firm FD. We hypothesize that:

Hypothesis 4: AC mediates the relationship between CSR and corporate FD in Pakistan.

Figure 1: Theoretical framework



3. Research Methodology

The current study adopts philosophical assumptions about deductive scientific inquiry. It employs a quantitative approach, relying on secondary panel data for both descriptive and inferential analysis. The rigor and scientific approach of the study, which establish the research hypothesis, ensure the reliability, validity, and generalizability of its findings. The remainder of this section provides an overview of the underlying aspects of the model for the current study.

3.1. Data and Sample

The current study focuses on non-financial companies registered with the Pakistan Stock Exchange. Financial organizations are excluded from the sample due to their distinct reporting requirements. Data is gathered from annual reports covering the years 2008 to 2022. A panel of 2,383 observations is used to analyze the final data from 257 firms. The final sample includes 13 sectors, with their distribution reported in Table 1.

Table 1: Sample distribution

No.	Sector	N	%
1	Textile	68	26.46
2	Sugar	24	9.34
3	Food	15	5.84
4	Chemical and pharmaceutical	26	10.12
5	Cement	18	7.00
6	Motor vehicles, trailers, and auto parts	14	5.45
7	Information, communication, and transport	9	3.50
8	Fuel and energy	25	9.73
9	Paper, paperboard	8	3.11
10	Fertilizer, cable, and electric	13	5.06
11	Glass, leather, and jute	13	5.06
12	Refinery and tobacco	8	3.11
13	Miscellaneous	16	6.23
	Total	**257**	**100.00**

3.2. Operationalization of Variables

The study model includes FD as a key variable, with CSR and AC as independent variables. Firm size, firm age, and firm leverage are included as control variables. These variables are well-established in the literature due to their significant associations and to clarify the dynamics of the relationships being examined (Khan et al., 2022; Khan et al., 2020; Rasheed et al., 2022; Shakri et al., 2025). Table 2 below details the operationalization of the variables in the study's model, including their proxies and sources.

Table 2: Conceptualization of variables

Variable	Measurement	Reference
FD	1.2 × (working capital/total assets) + 1.4 × (retained earnings/total assets) + 3.3 × (earnings before interest and taxes/total assets) + 0.6 × (market value of equity/book value of total liabilities) + 0.99 × (sales/total assets)	Altman (1968) and Hussain et al. (2014)
CSR	(Donations + employees' welfare + research and development)/earnings after tax	Ehsan et al. (2018)
AC	[(Operating income − income taxes − interest expenses − common stock dividend − preferred stock dividend)/book value of total assets]	Samet and Jarboui (2017)
Firm size	Log of total assets	Yang and Baasandorj (2017)
Firm age	Age of the firm in years	
Firm leverage	Total liabilities/total assets	

3.3. Statistical Approach

The study examines the impact of CSR on FD while considering the role of AC. It also evaluates the mediating role of AC in the relationship between CSR and FD. This research utilizes panel data to explore the relationships among the variables. Endogeneity is a common issue in panel data estimations, which can lead to unreliable and biased results (Song et al., 2020). To address this issue, the research employs the generalized method of moments (GMM) technique, which is widely used in the literature for this purpose (Eskandari & Kordestani, 2024; Khan et al., 2022; Khan et al., 2020). Finally, EViews software is used for descriptive and inferential data analysis. Overall, the analysis follows a four-equation model to test the hypothesis. The regression equations are provided below:

$$\mathrm{FD}_{\mathrm{it}} = \alpha + \beta_1 \mathrm{CSR}_{\mathrm{it}} + \varepsilon \quad (1)$$

$$\mathrm{FD}_{\mathrm{it}} = \alpha + \beta_1 \mathrm{AC}_{\mathrm{it}} + \varepsilon \quad (2)$$

$$\mathrm{AC}_{\mathrm{it}} = \alpha + \beta_1 \mathrm{CSR}_{\mathrm{it}} + \varepsilon \quad (3)$$

$$\mathrm{FD}_{\mathrm{it}} = \alpha + \beta_1 \mathrm{AC}_{\mathrm{it}} + \beta_2 \mathrm{CSR}_{\mathrm{it}} + \varepsilon \quad (4)$$

4. Results and Discussion

4.1. Descriptive Statistics

Table 3 displays the descriptive statistics for the study, which include all the variables. These statistics are computed to provide an overall view of the data and identify any discrepancies. The results show that all variables' values are within acceptable ranges. Furthermore, CSR and AC have lower means and standard deviations but a wider range, indicating a significantly skewed distribution. It is evident that the tendency to invest in CSR remains low among non-financial firms in Pakistan. Similarly, the minimal values of AC suggest either insufficient corporate oversight or a lack of agency conflicts. Given that regulatory corporate governance and oversight in Pakistan are relatively weak, along with the prevalence of family-oriented businesses, both explanations are plausible, necessitating further exploration and validation through subsequent inferential analysis.

The dependent variable, FD, is derived from an Altman Z-score index. This score identifies financially distressed firms, with a score below 2.99 indicating operation in a gray area, while a score below 1.81 indicates significant FD. The mean, median, and standard deviation of FD reflect the diverse array of companies in the sample. Overall, the final sample, after adjusting for outliers and missing values, comprises 1,963 observations for the analysis.

Table 3: Descriptive statistics

	Mean	Median	Max	Min	S.D.
CSR	0.013	0.004	0.529	-0.379	0.052
AC	0.024	0.025	0.556	-0.867	0.086
FD	8.975	3.012	198.39	-17.319	21.769
Firm size	15.553	15.374	20.257	10.893	1.516
Firm age	34.100	30.000	157.00	1.000	17.653
Firm leverage	0.165	0.139	0.710	0.000	0.136

4.2. Correlation Matrix

Table 4 presents the results of the correlation statistics. The correlation values indicate the association between the variables, which can be positive, negative, or zero, along with the strength of that association. The findings demonstrate a significant association for inferential analysis and show that the values in the table are within acceptable limits, with no multicollinearity present among these variables.

Table 4: Correlation coefficients

	CSR	AC	FD	Firm size	Firm age	Firm leverage
CSR	1.000					
AC	-0.052	1.000				
FD	-0.084***	-0.448***	1.000			
Firm size	-0.046	0.133**	-0.044	1.000		
Firm age	-0.010	0.024	-0.147**	0.107***	1.000	
Firm leverage	-0.012	-0.219***	0.470***	0.070	-0.191**	1.000

4.3. Regression Results

This section conducts a quantitative validation of the proposed theoretical links. The results are derived from a GMM-based regression model, which helps researchers address panel data issues. Before applying GMM, sequential pretesting is performed using pooled, fixed, and random effects. The pretesting findings are reported in Table 5, indicating the presence of fixed effects in the dataset, as shown by the significant results of the redundant fixed test. Consequently, the Hausman test confirmed that fixed effects are the preferred estimation method over pooled and random effects models.

Table 5: Preassessment data testing

	Statistic	DF	Prob.
Redundant fixed effects test			
Cross-section F	004.364	-2551736.000	0.000
Cross-section Chi-square	989.152	0000255.000	0.000
Correlated random effects - Hausman test			
	Chi-sq. statistic	**Chi-sq. DF**	**Prob.**
Cross-section random	087.825	0000005.000	0.000
Panel cross-section heteroskedasticity LR test			
	Statistical value	**DF**	**Prob.**
Likelihood ratio	1975.45	000591.000	0.000

Despite the advantages of the fixed effects model, it did not address the issue of heteroskedasticity in the error terms, and the likelihood ratio findings confirmed predictability among these errors. Consequently, the study chose the GMM model, recognized for handling heteroskedasticity through model overidentification by incorporating instruments and a lagged dependent variable. The study's findings are presented in Table 6 and align with the proposed sequential flows essential for mediation assessments.

Table 6: Hypothesis testing

	Hypothesis 1			Hypothesis 2			Hypothesis 3		
Variables	**β**	**t-stat**	**Prob**	**Β**	**t-stat**	**Prob**	**β**	**t-stat**	**Prob**
CSR	0.009	3.197	0.001				-0.001	-3.440	0.001
AC				-0.005	-4.842	0.000			
Firm size	-0.050	-1.423	0.155	-0.042	-2.116	0.035	-0.004	-2.601	0.009
Firm age	0.100	2.264	0.024	0.165	2.925	0.004	0.000	0.030	0.976
Firm leverage	-7.342	-28.56	0.000	-4.824	-11.839	0.000	-0.105	-6.445	0.000
Adj. R^2	0.248			0.378			0.089		
J-stat	1.938			1.191			1.760		
Prob J-stat	0.164			0.275			0.185		

CSR is treated as an independent variable, FD as the dependent variable, and AC as a mediating variable. Control variables include firm size, firm age, and firm leverage. The findings of Hypothesis 1 indicate that CSR significantly and positively impacts FD ($p < 0.05$). A higher FD proxy value represents a lower FD level, meaning that investments in CSR activities will reduce firms' FD. These findings align with Al-Hadi et al. (2019) and fully support the first hypothesis of the study.

Furthermore, the results for Hypothesis 2 show that AC significantly and negatively impacts FD proxy ($p < 0.05$). This indicates that higher free cash flows lead to increased FD. Firms with excessive free cash flows may invest in non-profitable projects at management's discretion, which might not be the highest NPV projects but rather those aligned with their interests (Richardson, 2006). Free cash flows create conflicts between shareholders and managers, negatively affecting firm performance (Waithaka et al., 2012). Similar patterns have been observed in previous research (Al-Hadi et al., 2019). Additionally, behavioral factors, such as managerial overconfidence, may contribute to increased FD (Rasheed et al., 2020; Tan et al., 2024).

The results of the third hypothesis reveal that CSR significantly and negatively impacts AC ($p < 0.05$). This suggests that investment in CSR will reduce AC and limit the availability of free cash flow, which managers might otherwise use for less value-adding projects (Jensen, 1986). Thus, CSR performance alleviates AC issues. These findings are consistent with previous research (Samet & Jarboui, 2017), statistically validating the third hypothesis of the study.

Additionally, the study applied the Arellano-Bond serial correlation test (Table 7) to assess whether the GMM model adequately addressed autocorrelation among the error terms. The method tests the first- and second-order lags of the dependent variable for serial correlation. The findings indicate significant serial correlation at the first lag but no significant correlation among the error terms. The first-order serial correlation is expected due to the transformation of the first difference; therefore, the primary focus of validation is on the presence of serial autocorrelation at the second lag. This test confirms the overall robustness of the GMM findings of the study.

Table 7: Arellano-Bond serial correlation test

Test order	m-statistic	rho	SE (rho)	Prob.
AR (1)	-6.861	-112.462	16.391	0.000
AR (2)	-1.374	-10.097	7.347	0.169

4.4. Mediation Analysis

The significance of the first three hypotheses establishes the groundwork for mediation analysis, as outlined by Baron and Kenny (1986). Table 8 displays the impact of CSR and AC on FD. According to Baron and Kenny's (1986) framework, full mediation occurs when the direct effect of CSR on FD becomes insignificant after considering the mediating variable, AC, while the indirect path through AC remains significant. Results indicate that the impact of CSR on FD is insignificant, whereas the impact of AC on FD is significant ($p < 0.05$) and negative.

Additionally, firm size has a significant ($p < 0.05$) and negative impact on FD, showing that as firm size increases, the risk of distress also rises. The impact of firm age on FD is significant ($p < 0.05$) and positive. Leverage has a significant ($p < 0.05$) and negative impact on FD, indicating that firms with more debt financing experience lower FD. The adjusted R-squared value is 0.380, suggesting that the independent variable explains 38 percent of the variance in the dependent variable. The J-stat value is 1.117, with a probability of 0.291, which is insignificant, indicating that the instruments are valid. Thus, the fourth condition of Baron and Kenny's (1986) mediation framework is satisfied, supporting the criteria for establishing full mediation.

Overall, the results suggest that AC fully mediates the relationship between CSR and FD. The findings align with existing literature on the mediated relationship between CSR and organizational outcomes (Abdullah, 2024; Mondal & Sahu, 2025; Pareek et al., 2025; Sdiq & Abdullah, 2022) and open the door for new factors to be considered as mechanisms between CSR investments and other organizational outcomes. Furthermore, the findings highlight the need to move beyond traditional CSR investment amounts and focus on the intervening role of AC and effective corporate governance to ensure survival during economic downturns and FD.

Table 8: Mediation analysis

Variables	β	t-stat	Prob
CSR	0.007	0.541	0.589
AC	-0.004	-5.74	0.000
Firm size	-0.048	-2.15	0.031
Firm age	0.168	2.970	0.003
Firm leverage	-4.823	-11.87	0.000
Adj. R^2	0.380		
J-stat	1.117		
Prob J-stat	0.291		

4.5. Robustness Test

In financial literature, subsequent studies typically use different proxies or methods to validate the analysis findings and establish the credibility and generalizability of the initial results. This study also employed GMM with orthogonal deviations to ensure the robustness of the conclusions, as reported in Table 9. The analysis shows similar trends of association among endogenous, exogenous, and control variables, supporting the initial findings of the study. The association between CSR and FD is insignificant, while AC, firm size, and firm leverage are negatively significant. Lastly, firm age was found to be positively associated with the likelihood of FD among non-financial firms in Pakistan.

Table 9: Robustness analysis

Variables	β	t-stat	Prob
CSR	0.006	0.525	0.600
AC	-0.004	-5.60	0.000
Firm size	-0.045	-2.10	0.039
Firm age	0.162	2.89	0.005
Firm leverage	-4.753	-11.03	0.000
Adj. R^2	0.375		
J-stat	1.098		
Prob J-stat	0.298		

5. Conclusion

This study examines the relationship between CSR and FD, investigating AC as a potential mediating mechanism. Focusing on non-financial firms listed on the Pakistan Stock Exchange, our findings reveal that AC fully mediates the relationship between CSR and FD. Specifically, CSR reduces agency costs, which in turn lowers FD, indicating that CSR's effect on FD operates entirely through its influence on AC. These findings align with stakeholder theory, which suggests that firms engaging in socially responsible practices cultivate stronger stakeholder relationships, enhancing firm stability and resilience. This study contributes to the limited literature on the CSR-FD linkage and, to the best of the authors' knowledge, represents the first empirical investigation of the mediating role of AC in this context within Pakistan.

This research offers several practical implications for regulators, corporate boards, and shareholders, particularly in emerging markets like Pakistan. Regulators and policymakers should encourage firms to improve their governance structures through independent audit committees, board diversity, and strict governance practices, eliminating agency dynamics that undermine CSR investments. Corporate planners should integrate CSR into their primary strategic goals to align such investments with long-term value creation, rather than relying on management discretion, thereby enhancing their capacity to reduce FD. Information asymmetry can be minimized through comprehensive disclosure practices, such as full CSR and sustainability reporting, which enhance investor confidence and reduce AC. Regulators might consider enforcing improvements in non-financial reporting to strengthen market discipline.

While this study enhances the understanding of the CSR-AC-FD nexus in Pakistan, it has some limitations. First, CSR is measured as a financial proxy (via donations, welfare costs, and R&D expenditures relative to earnings) that may not fully capture other CSR aspects, such as environmental stewardship or governance practices. This approach was chosen for data availability and consistency across firms; however, future researchers are encouraged to use alternative measures, such as ESG (environmental, social, and governance) ratings or specific sustainability disclosures, for a more comprehensive assessment of CSR.

Additionally, although the study's data extends to 2022, updating the dataset to a more recent period (e.g., 2024) might confirm the persistence of these associations in the evolving economy. Researchers are also encouraged to evaluate this model in the financial industry context and explore other mediators, such as information asymmetry or corporate reputation. The generalizability of these findings could be tested further through comparative studies in other emerging economies, providing additional evidence in the global debate regarding CSR and AC on firm stability.

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