

# Mediating Role Of Corporate Social Performance Between Ownership Structure And Investment Efficiency

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## Abstract

The corporate social performance (CSP) have become dynamic players in rising economies in recent years. This study investigates how CSP mediates between ownership structure and investment efficiency. This study uses a sample of 296 Pakistani non-financial firms listed on the Pakistan Stock Exchange from 2011 to 2020. The analysis was performed using panel data techniques and the estimated generalised least squares regression model. The study's analysis shows that family ownership and concentrated firm ownership have a positive and statistically significant association with investment efficiency. In contrast, institutional and managerial ownership of the firms have a negative and statistically significant effect on investment efficiency. In addition, mediation analysis results show that CSP positively mediates between concentrated and managerial ownership of the firm on investment efficiency and does not show a mediation effect on family and institutional ownership. The study findings are robust due to checks, alternate measures, and the specification of models.

**Keywords:** Ownership Structure, corporate social performance, investment efficiency

## I Introduction

The study of corporate social responsibility (CSR) has become a popular topic in academics. By examining the connection between CSR and corporate financial success, several studies seek to improve our knowledge of performance management (Kim et al., 2019). Several studies attempt to advance the understanding of performance management by looking at the relationship between CSR and company financial success (Cho et al., 2019; Kim et al., 2019; Y. Liu et al., 2020; Shahbaz et al., 2020). Additionally, ethical standards are higher and accounting information is of higher quality in socially responsible businesses (Timbate & Park, 2018), which reduces financial risk and makes it simpler to obtain financing. These findings suggest that high-CSR businesses may experience more

favourable market circumstances (Guo et al., 2020). Thus, according to Benlemlih & Bitar (2018), and Cook et al. (2019), substantial CSR involvement is linked to good investment efficiency.

CSR initiatives, however, may cause stakeholder conflicts of interest (Ongsakul et al., 2021). Managers' reasons for participating in CSR are rarely acknowledged as being their own interests since there is a lack of evidence about it that is trustworthy and accurate. An explanation for this result might be that management is more likely to use CSR to conceal their unlawful behaviour, which in turn causes agency problems, or conflicts of interest between shareholders and management. Because of this, McWilliams et al. (2006) and Barnett (2007) contend that adopting CSR will drive up operational expenses and exacerbate

shareholder-management agency issues. Without a doubt, engaging in CSR may result in the misguided use of a company's resources. CSR may therefore have a negative impact on investment efficiency and lower corporate value.

The additional perspective we provide in this study contributes to the debate over the extent of CSR activity's financial impact. Next, the connection between CSR and capital allocation for a business is examined. One of the major topics of discussion in the literature on finance is whether and how CSR influences investment efficiency. Theoretically, if the value-enhancing viewpoint on CSR is common, high-CSR firms ought to be connected to high investment efficiency. The agency view of CSR, on the other hand, is more likely to cause high levels of CSR engagement to diminish investment efficiency. For illustration, Erawati et al. (2022) find that the connection between family ownership and investment effectiveness may be moderated by CSR disclosure. Additionally, it demonstrates how family enterprises would minimise risk by exercising greater caution when making financial choices that might jeopardise the standing of the family. According to L. Liu & Tian (2021), state-owned companies, businesses with reduced institutional ownership, and businesses with a control-ownership wedge all experience this effect to a greater extent. The empirical research currently available shows that institutional ownership decreases information asymmetry and agency conflict, positively increasing investment effectiveness (Cao et al., 2020). Additionally, it proposed that family ownership, concentrated ownership, and the current generation preserve the heritage of the preceding generation, and that family ownership has a good correlation with investment efficiency (Jiang et al., 2018; Shahzad et al. 2018). Contrary to what was said above, concentrated ownership encourages excessive

investment (Lianhui & Yunyun, 2010). Additionally, studies have shown that institutional ownership, management ownership, and concentrated ownership all have beneficial relationships with CSP (Chen, Dong, and Lin, 2020; Elgergeni, Khan, and Kakabadse, 2018; Godos-Díez et al. 2014). According to empirical evidence, CSP lowers under-investment boosts investment efficiency, and mitigates information asymmetry. According to Samet and Jarboui (2017), a CSP that mitigates agency conflict lessens the overinvestment issue.

In earlier research, the direct impacts of ownership structure on CSP were examined (Ongsakul et al., 2021; Pucheta-Martínez et al., 2020; Sahasranamam et al., 2021). The effects of CSP on investment efficiency, including over- and under-investment were also investigated. However, it is imperative to address the CSP's inventive function in relation to ownership structure and investment efficiency concerns. This study explores the underlying mechanisms of ownership structure with CSP and investment efficiency in an effort to bridge a gap in the existing literature on CSP and investment effectiveness. The study's main goals are to: (1) examine the impact of ownership structure on investment efficiency. (2) to look at how ownership and investment efficiency are related using the CSP method. This study's main objective is to examine CSP as an intervening variable for enhancing company investment efficiency. Based on stakeholder theory, socio-emotional wealth (Shahzad et al., 2018), and resource-based perspective theory, the current study makes implications.

By incorporating the CSP function as an intervening variable on ownership structure and investment efficiency, this study contributes to the amount of knowledge already available on CSP and business investment effectiveness. This analysis stands out since it connected three

factors, namely the effects of CSP, corporate governance, and investment efficiency. There is not much research on the CSP mediating effects on ownership structure (managerial, institutional, concentrated, and family ownership) and investment efficiency. There is a limited amount of research of this kind in underdeveloped nations. Using a substantial sample of 296P businesses listed at the Pakistan Stock Exchange (PSX) between 2011 and 2020, we test this hypothesis by providing persuasive evidence that strong CSR participation increases investment efficiency after correcting for antecedent drivers of investment efficiency as well as industry and year fixed effects.

Pakistan is a typical test case for our assumptions on the effectiveness of investments, CSP performance, and business strategy. A company that is mostly owned by Pakistanis has distinctive investing practises and has family ownership, concentrated ownership, and fewer management and institutional members. CSP is a totally new concept in Pakistan (Shahzad et al., 2018). Pakistan is a developing market, and both domestic and foreign forces encourage businesses to use CSP procedures and to disclose them in yearly reports. The Securities and Exchange Commission of Pakistan (SECP) responded to these influences by publishing a circular in 2009 requiring companies to provide CSP reports in their annual reports, and another circular in 2013 encouraging voluntary disclosure of CSP in annual reports (Ehsan, 2018). The motive of this guideline is to encourage the firms to adopt CSP activities because Pakistan's expenditure on CSP is deficient, and the social sector needs corporations to involve in CSP base activities to promote the society and firm financial performance (Shahzad et al., 2018). Subsequently, it would be captivating to investigate the CSP mechanisms with business strategy and ownership structure to influence investment efficiency in Pakistan.

## 2 Literature Review

Business opportunities are the primary determinant in a firm's investment, in accordance with the capital cost corporate finance, and

investment theory put forward by Modigliani and Miller in 1958. It is necessary to meet all positive net present values (NPV) should be completed. It implies that firms should acquire financing for all positive NPV projects and invest until there are trade-offs between cost and benefit. Practically, firms can face financing constraints that create a hurdle for managers to invest in all positive NPV projects. Prior literature showed that imperfection of markets causes a deviation for optimal investment in a firm. Furthermore, this refers to overinvestment or underinvestment. The overinvestment issue occurs when managers choose an inappropriate project for investment. The underinvestment issue also occurs when firms face financing constraints and cannot invest in positive NPV projects. The researcher finds two types of conditions for optimal investment: information asymmetry and agency conflict (Benlemlih & Bitar, 2018).

### 2.1 Institutional Ownership and Investment Efficiency

The existing research demonstrates that agency friction and information asymmetry are important contributors to organisations' investment inefficiency. It had explored by previous studies that the ownership structure of a firm influences investment and investment efficiency in the context of information asymmetry and agency conflict. However, different ownership has different friction of effects on investment efficiency. Institutional owner affects management's investment decisions in many ways like monitoring over management, extensive expertise and suggestions, risk-taking behaviour for long-term investment, and improving financial disclosure to mitigate agency friction and information asymmetry (Cao et al., 2020). Moreover, the market seeks information from institutional investors trading activities that improve the information environment and cause a reduction in information asymmetry (Cao et al., 2020). An empirical study of listed firms on the Chinese Stock Exchange using data from 2009 to 2014 finds that institutional ownership

positively relates to investment efficiency by reducing information asymmetry and agency friction (Cao et al., 2020). Based on the above literature review present study concludes and hypothesises that:

H<sub>1</sub>: Institutional ownership has a positive relationship with investment efficiency.

## 2.2 Efficiency In Investment And Concentrated Ownership

Chen, Sung, and Yang (2015) state that the small shareholder does not attend meetings or use voting powers in diffused ownership. While, in concentrated ownership, block holders mostly attend the firm's meetings and use their voting power in strategic decisions. In the approach of agency conflict block holders to minority shareholders, block holders confiscate the rights of minority shareholders, which lead to inefficiency of investment. In the context of agency conflict, an empirical investigation conducted in China over 5912 firms year observation using the data 2004-2012 finds that concentrated ownership has a negative relation to investment efficiency means investment efficiency is higher when ownership concentration is lower ((N. Chen et al., 2017). Contrary to the above, Jiang et al. (2018) argue that concentrated ownership affects investment efficiency by diminishing information asymmetry and agency conflict and intensifying management monitoring. In addition, research on the effects of concentrated ownership on investment efficiency in energy businesses was undertaken in China. It was discovered that investment efficiency is positively correlated with reduced information asymmetry and agency conflict (Wang et al., 2021). Based on literature review and prior findings, we hypothesised that:

H<sub>2</sub>: Concentrated ownership has a negative relationship with investment efficiency.

## 2.3 Efficiency in Investment and Family Ownership

Family owners use the socioemotional wealth approach in business decisions. They assert influence on investment decisions and the efficiency of investments. Moreover, they need to maintain a dynasty for the next generation. Family control over investment decisions results in overinvestment or underinvestment (Shahzad et al., 2018). Family business owners are loss averse and tend to select an underinvestment approach for effective use of resources to maximise profitability, quality of products, and process efficiency (Erawati et al., 2021). In all decisions, they prefer socio-emotional wealth, even when it has incredible economic benefits.

Moreover, use the internal fund for investment that causes underinvestment in positive NPV projects. The empirical investigation conducted in an Indonesian 210 firm using 2016-2018 finds that family ownership negatively affects investment efficiency (Erawati et al., 2021). Contrary to this, an investigation in Pakistan explored that a family-controlled firm reducing information asymmetry and mitigating agency conflict improves CSP performance and investment efficiency (Shahzad et al., 2018). Based on existing literature, this study hypothesised that:

H<sub>3</sub>: Family ownership has a positive relationship with investment efficiency.

## 2.4 Efficiency in Investment and Managerial Ownership

According to agency cost theory, management of a corporation is in charge of making strategic decisions due to the separation of ownership and control. Management takes investment decisions that bring private benefits and little to shareholders and, in turn, lead to underinvestment (Vijayakumaran, 2021). Manager's

investment in the firm controls the firm as managers position referred to managerial ownership. In the pursuance of managerial ownership, reducing the agency conflict aligns the managers and shareholders' interests. Firms with higher managerial ownership perform better than lower managerial ownership (Li et al., 2007). Higher administrative ownership supports higher resource utilisation, leading to overinvestment ((Vijayakumaran, 2021; Rashid, (2016), Nor, Nawawi, and Salin, 2017). Li et al. (2007) investigated the managerial ownership impact on financial performance. He used data from 1992-2000 of Chinese firms. Found that in the context of agency theory, incentives in shares to managers align the interest of shareholders and managers as reports that higher managerial ownership has a significant positive relationship with financial performance. Vijayakumaran, (2021) researched in China using data from 2003 to 2010. He explored the direct and indirect association of managerial ownership with investment efficiency in the context of asymmetry information and agency theory. He posited that managerial ownership directly relates to investment efficiency by reducing information asymmetry and agency conflict (Vijayakumaran, 2021).

H<sub>4</sub>: Managerial ownership has a negative relationship with investment efficiency.

According to agency cost theory, a corporation's management is in charge of making strategic decisions since ownership and control are separated (Shahzad et al., 2018). Second, CSP upgrades implicit management contracts with internal and external stakeholders and enhances investment efficiency (Cook et al. 2019, Shahzad et al., 2018). Third, CSP mitigates agency conflict between shareholders and other stakeholders (Shahzad et al., 2018). Because cash flows in CSP performance activities reduce the free cash flow used by managers for their benefits (Lin et al. 2021, Samet & Jarboui, 2017). The family's participation in the company will affect corporate policies, particularly those relating to CSR disclosures (Lamb & Butler, 2018). One approach for businesses to appease

their corporate stakeholders is through CSR disclosures. External stakeholders as well as the environment as a whole have the potential to affect CSR disclosures, much like internal stakeholders may. Family businesses are more environmentally conscious, prioritise preventive, and employ conservative tactics (Berrone et al., 2010). Lamb & Butler (2018) looked at how family ownership affected CSR results. They discovered that family-owned businesses were better equipped to strengthen their CSR.

Alternative CSR measures are alternatives for investment efficiency, given that prior research on the relationship between family ownership and investment efficiency had produced mixed findings (Shahzad et al., 2018). According to Cook et al. (2019), businesses can pinpoint the CSR elements that are most crucial for enhancing their investment efficiency. CSR is therefore expected to mitigate the negative impacts of family ownership on investment effectiveness.

In light of the exaggerated agency view on the CSP, concentrated shareholders' behaviour becomes more entrenched after the CSP is implemented since the rule gives them a valid justification to pursue their own interests while disguising them as CSR-related goals. Controlling owners could pursue their own objectives and derive personal gains from excessive CSR investment. Thus, the inefficiency of investment is further accentuated. For enterprises with the concentrated ownership wedge, the agency viewpoint forecasts an increase in overinvestment (L. Liu & Tian, 2021).

According to current research, agencies in organisations with higher institutional ownership experience fewer agency difficulties than agencies with lesser institutional ownership (Aggarwal et al., 2011). According to the improved monitoring view, requiring CSR reports will be more beneficial for businesses with lower institutional ownership because it will reduce agency problems and monitoring expenses, which could reduce investment inefficiency for smaller businesses more than it

would for larger businesses (L. Liu & Tian, 2021).

Prior empirical findings reveal that higher performance has a significant positive relation to investment efficiency by reducing information asymmetry improving the information environment (Lin et al., 2021, Cook et al., 2019). Low financial constraints reduce free cash flow and enhance the quality of management (Samet & Jarboui, 2017). Furthermore, the extant literature reveals managerial ownership, institutional ownership (Soetedjo & Amu, 2019; Oh et al., 2017), concentrated ownership (Oh, Chang,

and Martynov 2011), and family ownership has a positive relation to CSP. In contrary to the above, managerial ownership (Oh et al., 2011a), family ownership (Rees and Rodionova, 2015), and concentrated ownership have a negative relation to CSP (Jia and Zhang, 2013). It was theorised that at higher and lower CSP, a reduction in information asymmetry and agency conflict and the creation of intangible resources for the firm would mediate the relationship between ownership structure and investment efficiency. The present study emphasises that:

H<sub>5</sub>: Corporate social performance mediates between ownership structure and investment efficiency.

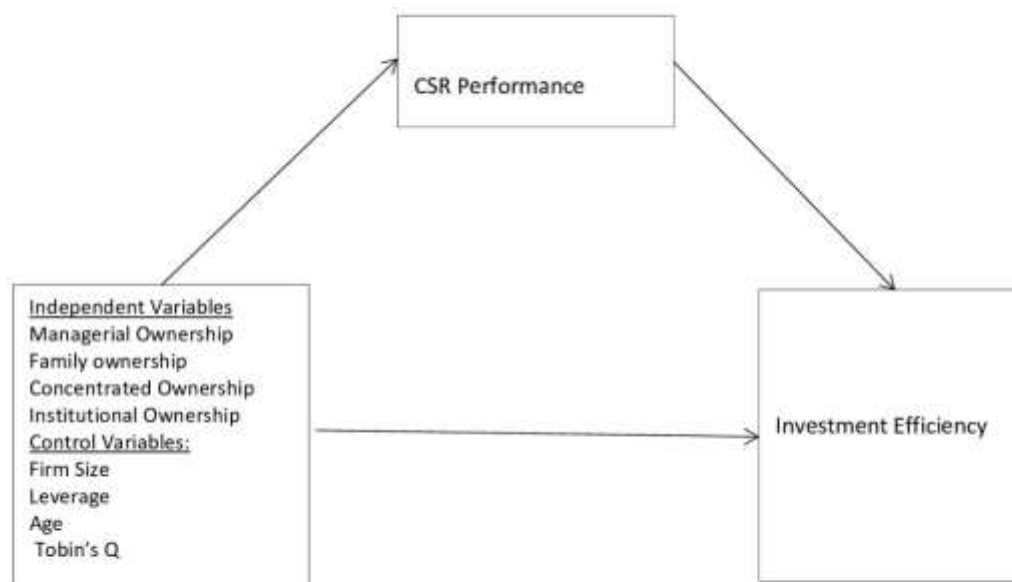


Figure 1 Conceptual Research Framework

### 3 Data and Sample Description

We establish the selection of firms listed on the PSX over 10 years from 2011 to 2020. The very first sample included 518 businesses. First, we excluded the selection of 97- financial sector firms as these institutions have separate rules

and regulations and differ in investment nature. Secondly, we removed 125 companies with missing data. Finally, 296 firms retain for analysis of the study. Analysis used panel data techniques. We collected the firm sample data from three sources: the PSX, State Bank of Pakistan (SBP), and annual reports of publicly available

companies. Data period 2011 to 2020 used in this investigation has vital importance as the Securities Exchange Commission of Pakistan (SECP) issued a circular for a listed firm to disclose the CSP activities and in 2013 issued guidelines for voluntary disclosure. We were choosing the pre and post reforms data as the study's starting point to foster the accuracy of results and findings of the study. This study used the panel data technique for empirical analysis.

### 3.1 Measurement of Variables

### 3.2 Outcome Variable: Investment Efficiency

$$\text{Investment}_{i,t} = \alpha_0 + \beta_1 \text{Sales Growth}_{i,t-1} + \varepsilon_{i,t} \quad (1.1)$$

$$\text{Investment}_{i,t} = \alpha + \beta_1 \text{Sales growth}_{i,t} + \beta_2 \text{Tobin's } Q_{i,t} + \varepsilon_{i,t} \quad (1.2)$$

$$\text{Sales Growth}_t = \frac{\text{Sales}_t - \text{Sales}_{-1}}{\text{Sales}_{-1}} * 100 \quad (2)$$

$$\text{Investment}_t = \frac{\text{Total Assets}_t - \text{Total Assets}_{-1}}{\text{Total Assets}_{-1}} * 100 \quad (3)$$

An investment is a total investment at time t. It is a net increase in total assets tangible and intangible (acquisition + capital expenditure - cash receipt from sales proceed of property, plant and equipment) scaled by lagged total assets. Sales Growth is the rate of the net change in sales of the firm I from t - 1 to year t, and it is examined by year and industry (Shahzad et al.,

Generally, two models are used to measure investment efficiency. By following Lin et al. (2021), Biddle et al. (2009), N. Chen et al., (2015), Investment efficiency determine by absolute residuals of equations 1.1 and 1.2. Regression on equations 1.1 and 1.2 generate two types of residuals, positive and negative. Positive residuals indicate overinvestment in negative NPV projects. Negative residuals indicate underinvestment in positive NPV. To simplify the depiction, the absolute value of residuals is multiplied by -1. Positive and negative residuals both demonstrate investment inefficiency (Erawati et al., 2021, Shahzad et al. 2018; Biddle et al. 2009, Navissi et al. 2017).

2018; Benlemlih and Bitar, 2018; Navissi et al., 2017; Chen et al., 2011).

### 3.3 Independent Variables Measures

Following the Cheng, Su, and Zhu (2012), Bano et al. (2018; Jianhui & Yunyun, (2010). (Lianhui & Yunyun, 2010)

$$\text{Managerial Ownership} \quad (4)$$

$$= \frac{\text{Shares held by Managers}}{\text{Total Number of Shares}} \times 100$$

$$\text{Institutional Ownership} = \frac{\text{Shares held by Insitutions}}{\text{Total Number of Shares}} \times 100 \quad (5)$$

$$\text{Concentrated Ownership} = \frac{\text{Shares held by Top 5 Shareholders}}{\text{Total Number of Shares}} \times 100 \quad (6)$$

$$\text{Family Ownership} = \frac{\text{Shares held by Family Members(Working on board and Minors)}}{\text{Total Number of Shares}} \times 100 \quad (7)$$

### Mediating and Moderating Variable: CSP Measure

Following the Tang et al. (2021); Javee and Leven (2019); Carlos Noronha and Guan

(2018) mediating and moderating variable CSP measured with social contribution value (SCV), mathematical formula:

$$CSP = EPS + \left( \frac{INTERESTEXP. + TAXES + STAFF COST + DONATIONS}{TOTAL NUMBER OF SHARES} \right) \quad (8)$$

The equation defines CSP as a total sum of tax payment, salaries and benefits to staff, public welfare expenses, and social cost divided by the firm's total equity.

### 3.4 Control Variables Measures

Turning to control variable motivated by prior researchers Shahzad et al. (2018), N. Chen et al. (2015); Wang et al. (2021); and Lin et al. (2021), several variables are included in regression analysis to determine ownership, CSP and business strategy association with investment efficiency. These control variables facilitate a comparison of the results with previous empirical findings and reduce the possibility of omitted variables that cause endogeneity issues in analysis. Control variables are, firm size, age leverage growth opportunities, year and industry as dummy variables associated with investment efficiency. A proxy for firm size is the

$$\begin{aligned} INEFF_{I,T} = & \alpha + \beta_1 Mang\_Own_{I,T} + \beta_2 Inst\_Own_{I,T} + \beta_3 Con\_Own_{I,T} + \beta_4 Family\_Own_{I,T} \quad (1) \\ & + \beta_5 AGE_{I,T} + \beta_6 Leverage_{I,T} + \beta_7 Firm\ Size_{I,T} + \beta_8 \sum INDUSTRY \\ & + \beta_9 \sum Year + \varepsilon_{I,T} \end{aligned}$$

To examine the relationship of ownership structure variable with investment efficiency. To test the hypotheses H1, H2, H3, and H4, institutional, concentrated and managerial ownership positively affects investment efficiency, while family ownership negatively affects investment efficiency.

Equation 5 looks at how ownership structure parameters and investment effectiveness are affected by CSP in a moderating way. It tests the hypothesis H5 that corporate social

$$\begin{aligned} INEFF_{I,T} = & \alpha + \beta_1 Mang\_Own_{I,T} + \beta_2 Inst\_Own_{I,T} + \beta_3 Con\_Own_{I,T} + \beta_4 Family\_Own_{I,T} \quad (2) \\ & + \beta_5 AGE_{I,T} + \beta_6 Leverage_{I,T} + \beta_7 Firm\ Size_{I,T} \\ & + \varepsilon_{I,T} \end{aligned}$$

natural lag of the business's total assets, and age is determined by the number of years since the date of formation with the SECP. Leverage measured total debt to equity, and total debt to total assets (N. Chen et al., 2015), Tobin's Q is a potential market that is calculated as the market value of all assets divided by the book value of all assets (N. Chen et al., 2015). Finally, both are used as a fixed effect to address potential year and industry-specific effects (Benlemlih & Bitar, 2018; C. J. Chen et al., 2018).

### 3.5 Econometric Equations for Analysis

After setting the investment efficiency observation by equations, 1\_A and 1\_B following equation are constructed by following the previous Tran (2020); Jianhui and Yunyun (2010) to analyse the potential impact of ownership structure on investment efficiency.

performance moderates the relationship between ownership structure and investment efficiency at higher and lower level CSP. In equation 5 the interaction term Institutional Ownership \*Corporate social Following the Baron and Kenny (1986), Erawati et al. (2021); and He et al. (2019), mediating effect of CSP on ownership structure and investment efficiency (Overinvestment/Underinvestment) is analysed with under mentioned three equations:



$$\begin{aligned}
 \text{CSP}_{i,T} = & \alpha + \beta_1 \text{Mang\_Own}_{i,T} + \beta_2 \text{Inst\_Own}_{i,T} + \beta_3 \text{Con\_Own}_{i,T} + \beta_4 \text{Family\_Own}_{i,T} & (3) \\
 & + \beta_5 \text{AGE}_{i,T} + \beta_6 \text{Leverage}_{i,T} + \beta_7 \text{Firm Size}_{i,T} \\
 & + \varepsilon_{i,T}
 \end{aligned}$$

$$\begin{aligned}
 \text{INEFF}_{i,T} = & \alpha + \beta_1 \text{Mang\_Own}_{i,T} + \beta_2 \text{Inst\_Own}_{i,T} + \beta_3 \text{Con\_Own}_{i,T} + \beta_4 \text{Family\_Own}_{i,T} & (4) \\
 & + \beta_5 \text{AGE}_{i,T} + \beta_6 \text{Leverage}_{i,T} + \beta_7 \text{Firm Size}_{i,T} + \beta_8 \sum \text{INDUSTRY} \\
 & + \beta_9 \sum \text{Year} + \beta_{10} \text{CSP}_{i,T} + \varepsilon_{i,t}
 \end{aligned}$$

The above cited three equations 2, 3, and 4 were performed to test hypothesis H5, that corporate social performance mediates between ownership structure and investment efficiency.

### 3.6 Regression Analysis

Our research data is balanced panel data. Initially, all necessary analyses are used to select the most feasible regression model. First, an estimate was carried out using the ordinary least square (OLS), and the Breusch-Paganse-Cook-Weisberg test for heteroskedasticity was

performed. Results describe  $\chi^2(1) = 13.81$ ,  $\text{prob.} > \chi^2 = 0.0002$ , which indicates the presence of heteroskedasticity. A cross-section dependence test performed using Pesaran L.M. result reports (21.53379,  $\text{prob.} 0.0000$ ) represents the absence of a cross-section dependence issue in the data. Using the VIF test to measure variance inflation factor was performed to determine the multicollinearity among the variables. Results indicate there is no multicollinearity as all values are up to 3.04 and the absence of multicollinearity is accepted (López Iturriaga & López-Millán, 2017); Shahzad et al. 2018).

**Table 1: Descriptive analysis**

Variables	N	Mean	Median	Max.	Min.	Std. Dev.
<b>Investment</b>	2960	10.13	6.36	319.63	-74.39	23.89
<b>Iinv_efficiency</b>	2960	0.00	3.41	75.79	-310.13	23.37
<b>Sales growth</b>	2960	4.52	6.59	299.93	-268.00	38.97
<b>Tobin’s Q</b>	2960	1.68	1.21	25.59	-4.51	1.66
<b>Mang_Own</b>	2960	28.70	20.64	98.85	0.00	29.27
<b>Con_Own</b>	2960	66.10	68.75	99.85	0.00	20.91
<b>Inst_Own</b>	2960	15.13	8.37	98.79	0.00	19.35
<b>Family_Own</b>	2960	0.52	1.00	1.00	0.00	0.50
<b>Leverage</b>	2960	0.63	0.57	6.89	0.00	0.48
<b>Age</b>	2960	38.31	35.00	108.00	5.00	16.01
<b>Firm Size</b>	2960	15.36	15.31	20.57	8.78	1.69
<b>CSP</b>	2960	76.95	31.45	3064.05	-13.97	170.00
<b>Industry</b>	2960	14.07	16.00	27.00	1.00	7.41

Note: Descriptive statistics are included in Table 1 together with the number of observations (N), mean, median, maximum, minimum, and

standard deviation. Descriptive statistics report that the average investment rate in sample firms is 10.13%, the sales growth rate is 4.52%, the

investment opportunity measured by Tobin's Q is 1.68, which means 68% of total assets, managerial ownership is 28.70%, and concentrated ownership is 66.10% of sample firms. The family-owned firm represents 53% of the sample firms; it reveals that, out of ownership concentration, 89% belong to family ownership, and

only 11% are owned by individuals, institutes, foreigners, or managers. Leverage is 63% of total assets; prospector statistics show that 74% of sample firms follow a prospector strategy and 26% follow a defender strategy; and industry statistics reveal there are 27 industries in the sample firms.

**Table 2: Correlation Analysis**

		1	2	3	4	5	6	7	8	9	10
1	IE	<b>1.00</b>									
2	FAWN	<b>0.01</b>	<b>1.00</b>								
3	MOWN	<b>-0.020</b>	<b>0.77***</b>	<b>1.00</b>							
4	CROWN	<b>-0.010</b>	<b>-0.018***</b>	<b>0.08***</b>	<b>1.00</b>						
5	TOWN	<b>-0.03*</b>	<b>-0.19***</b>	<b>-0.22***</b>	<b>-0.02</b>	<b>1.00</b>					
6	SIZE	<b>-0.07***</b>	<b>-0.33***</b>	<b>-0.27***</b>	<b>0.10***</b>	<b>0.08***</b>	<b>1.00</b>				
7	AGE	<b>-0.03</b>	<b>-0.08***</b>	<b>-0.12***</b>	<b>0.12***</b>	<b>0.04**</b>	<b>0.08***</b>	<b>1.00</b>			
8	LEVA	<b>0.09***</b>	<b>-0.07***</b>	<b>-0.06***</b>	<b>-0.02</b>	<b>0.01</b>	<b>-0.02</b>	<b>-0.07***</b>	<b>1.00</b>		
9	TQ	<b>0.00</b>	<b>-0.23***</b>	<b>-0.21***</b>	<b>0.11***</b>	<b>-0.06***</b>	<b>0.17***</b>	<b>0.07***</b>	<b>0.07***</b>	<b>1.00</b>	
10	CS	<b>-0.06***</b>	<b>-0.01</b>	<b>0.03*</b>	<b>0.11***</b>	<b>-0.03</b>	<b>0.13***</b>	<b>0.20***</b>	<b>-0.08***</b>	<b>0.19***</b>	<b>1.00</b>

The results in table 2 show the correlation between the control, independent, and dependent variables. 296 firms data used for 2011-2020. Analysis was performed on 2960 observations. This table used IEF for investment efficiency, FOWN for family ownership, MOWN for managerial ownership, COWN for concentrated ownership, IOWN for institutional ownership,

LEV for leverage, T.Q. for Tobin's Q, CSP for corporate social performance, Fsize for firm size, and Age for age.

### **3.7 Mediation analysis: ownership structure, CSP, and investment efficiency**

Equation 6 regression results are presented in Table 3. Models 5, 6, and 7 represent ownership structure variables regressed on investment efficiency and CSP. Model 5 indicates the regression result of ownership structure variables on the CSP. Table 4 model 5 reports managerial ownership (Mang\_Own) has a positive coefficient of 0.037 and a t-value of 4.740 on CSP significance at the 1% level. Model 5 reveals that concentrated ownership has a negative coefficient of -0.011 and a negative t-value of -1.974 on the CSP at a 5% significant level. Model 6 and Model 7 results demonstrate that

with the inclusion of CSP as independent variables, both managerial and concentrated ownership have become insignificant in terms of investment efficiency. Baron & Kenny (1986) concluded that CSP has entirely mediated between managerial and concentrated ownership on investment efficiency. Moreover, results are consistent with study hypotheses H7 and agree with (Erawati et al. 2021). CSP mediation between family ownership and institutional ownership on investment efficiency is absent in study findings.

**Table 3: Pooled OLS Regression Analysis for CSP Mediation between Ownership structure and Investment Efficiency**

Variables	MODEL 4 INEFF(1.2)	MODEL 5 CSP	MODEL 6 INEFF(1.2)	MODEL 7 INEFF(1.1)
<b>Intercept</b>	22.207*** (8.149)	28.308*** (3.109)	12.539*** (3.095)	10.207*** (3.336)
<b>Mang_Own</b>	-0.055*** (-5.002)	0.037*** (4.740)	-0.004 (-1.076)	-0.001 (-0.267)
<b>Con_Own</b>	0.023** (2.018)	-0.011** (-1.974)	0.004 (0.438)	0.005 (0.408)
<b>Inst_Own</b>	-0.034** (-2.472)	-0.002 (-0.154)	-0.001 (-0.172)	-0.001 (-0.159)
<b>Family_Own</b>	1.876*** (2.759)	2.734 (1.279)	1.315 (1.007)	1.172 (1.140)
<b>Leverage</b>	2.711*** (7.823)	-0.189 (-0.513)	-2.425*** (-7.935)	-2.269*** (-9.252)
<b>Firm size</b>	-1.535*** (-8.179)	8.239*** (7.616)	-0.995*** (-9.188)	-0.991*88 (-9.990)
<b>AGE</b>	0.008 (0.384)	0.267 (1.336)	-0.135 (-1.300)	-0.095 (-1.207)
<b>CSP</b>			0.008*** (6.026)	0.007*** (5.908)
<b>AR(1)</b>		0.088	-0.112***	-0.205***

<b>Year fixed</b>	YES	-	YES	YES
<b>Industry effect</b>	YES	YES	YES	YES
<b>R-Square</b>	0.087	0.941	0.951	0.952
<b>F-Value</b>	6.4418***	107.063***	132.085***	135.262***
<b>Observation</b>	2960	2664	2664	2664

## 4.2 Checks for Robustness

To verify the accuracy of the study's conclusions, we conducted an extra robustness test. Investment efficiency is measured by two equations, as previously used by (Cook et al. 2019; Tran 2020, Erawati et al., 2021, Shahzad et al. 2018; Biddle et al. 2009, Navissi et al. 2017).

1.  $Investment_{i,t} = \alpha + \beta_1 Sales\ growth_{i,t} + \beta_2 Tobin's\ Q_{i,t} + \epsilon_{i,t}$
2.  $Investment_{i,t} = \alpha + \beta_1 Sales\ Growth_{i,t-1} + \epsilon_{i,t}$

Absolute residuals obtained separately by these two equations indicate investment inefficiency with a positive and negative sign. Positive residuals reveal overinvestment in negative NPV, and negative residuals show underinvestment in positive NPV. Absolute residuals are multiplied by -1 to make a straightforward interpretation of results as investment efficiency. The CSP intervening effect between ownership structure and investment efficiency is the same for both equations (1.1 and 1.2) of investment efficiency residuals. Results according to Table 3 show that CSP is favourably correlated with investment effectiveness, with a coefficient of 0.008 at the 1% significance level in Model 6 for Equation 1.1 and a coefficient of 0.007 at the 1% significance level in Model 7 for Equation 1.2. Furthermore, CSP indicates complete mediation between ownership structure (managerial ownership, concentrated ownership) and investment efficiency for both equations of investment efficiency in Model 6 and Model 7.

## 3.8 Alternative Measure of CSP

We take one step forward to cross-validate the CSP interaction with ownership structure on investment efficiency and to ensure the intervening effect of CSP between ownership structure and investment efficiency by the alternative measure of CSP as previously used by Lin, Yang, and Liou (2009). They used the donation ratio to EBIT as a proxy for CSP. Firms use these donations for public welfare to target and focus on charitable work, education, and health activities. We used only donations given by firms for public wellbeing. The tabulated results were identical in all models as to the CSP measurement mentioned in equation 4 and the regression results.

## 3.9 Controlling for Lagged Dependent Variable

Prior research stated that ownership structure as well as financial concerns might involve reverse causality issues (Tran, 2020). Therefore, controlling for lagged dependent variables facilitates reverse causality and autocorrelation among the variables. We include the first lagged investment efficiency as a control variable to estimate all models previously used (Tran, 2020). All equations are tested by EGLS regression model with first lagged of the dependent variable and found similar results with inclusion of autoregressive term AR(1). Therefore, we prefer to report the results of AR(1) only.

### 3.10 Controlling for Year and Industry Fixed Effect

The firm time (year) and industry fixed effect to mitigate the time and industry invariant characteristics that may affect the investment efficiency. Followed by Navissi et al. (2017), we perform this test to cross-validate the results of models. We run EGLS regression using the White cross-section covariance technique and cross-section weighting, the autoregressive term AR(1) to overcome the heteroskedasticity, serial correlation, and cross-section dependence issues. By fixing industry as dummy variable and time fixed effect. Results are reported in tables 3–6 for all models.

### 3.11 Confirmation of Independent Variables Association with Investment Efficiency

Regression residuals obtained from equation 1 are positive and negative to cross-validate the ownership type association with investment efficiency. Higher residuals indicate overinvestment, and lower residuals indicate underinvestment. Next, 1 is assigned to positive residuals and 0 to negative residuals. used the binary PROBIT model to distinguish the relationship of ownership structure with overinvestment or underinvestment. In the case of underinvestment as a dependent variable, untabulated results show a coefficient on managerial ownership of -0.002, a z-value of -1.76, and a significance level of 10%. Coefficient on institutional ownership is -0.003, z-value 2.69 significance at a 1% level at 1% level. The probit model results confirm that managerial and institutional ownership's negative association with investment efficiency is not due to underinvestment. Similarly, the probit model reports coefficient 2.021, z-value 0.250 on family-owned farms and coefficient 0.0003, z-value 0.579 on concentrated ownership due to underinvestment. It confirmed that family-owned businesses and ownership concentration have no association with underinvestment.

imilarly, a probit model exercised overinvestment as the dependent variable, and untabulated

results reported a coefficient of 0.002, a z-value of 1.76, and a significant 10% on managerial ownership. Coefficient 0.003, z-value 2.69, is significant at the 1% level on institutional ownership. These probit model results confirm that their negative relationship with investment efficiency was overinvestment. At the same time, the coefficient on family ownership is -0.020, a z-value of -0.250, which is not significant. Furthermore, the coefficient on concentrated ownership is -0.0007; the z-value of -0.579 is not significant. Thus, the probit model confirmed that the results reported in Table 3 and Model 1 are valid where family ownership and concentrated ownership have a significant positive relationship with investment efficiency.

## 4 Conclusion and Implications

This paper systematically examines the CSP influences on ownership structure and investment efficiency in a sample of 296 firms listed on PSX. Empirical results report that ownership concentration and family ownership positively affect investment efficiency. Investment efficiency is negatively correlated with institutional ownership and management ownership. CSP initiatives are more likely to be initiated by families and concentrated firms in order to maximise investment returns. On the other hand, businesses run by managers are unwilling to invest in CSP and are not receiving the best possible results. Furthermore, findings demonstrate that the spending of managers owned and concentrated owned firms on CSP get optimum investment efficiency. In the case of business strategy and concentration, institutional and managerially owned firms are more pleased to engage in prospector strategy to increase investment effectiveness. These outcomes match what we expected but except concentrated ownership. It implies that family ownership, concentrated ownership, and CSP reduce asymmetric information, effectively monitor the management, and enhance transparency, and that these collectively enhance the firm's investment efficiency.

According to Cook et al. (2019), CSP improves investment efficiency through three business

strategies. First, CSP enhances business stakeholders, to whom management is answerable. More stakeholders explicitly enhance management monitoring behaviour. Second, management improves the decision-making process and makes cognitive decisions to meet stakeholders' needs. Thirdly, CSP improves the informational environment, and reduction in information asymmetry, enhances management decision and innovation process. Consistent with these arguments, we find that a higher CSP level positively influences the behaviour of families and concentrates ownership toward effective investment and optimal investment in positive NPV projects; consequently, investment efficiency improves. Results imply that CSP's interaction with institutional ownership on investment efficiency is neutral. The reason is that investor thoroughly assesses cost and benefits analysis to engage in CSR activities and to result in insignificant association with investment performance. Secondly, institutions have different investment motives in CSR as they are intermediaries who manage risk and money on behalf of others.

The study findings are helpful to regulatory authorities, policymakers, and practitioners. The results answer the question, "How do business strategies work in divergent ownership?" Study findings showed that CSP and business strategies should be aligned with equity holding mechanisms to achieve investment efficiency. Family-owned firms can improve investment efficiency with a higher level of CSP investment. Ownership concentration should adopt a higher CSP investment. Moreover, CSP improves investment efficiency by intervening between managerial and concentrated ownership. This study has several restrictions; its focus is on looking at CSP's ability to mediate between ownership and investment effectiveness. The results of the study are primarily applicable to

Pakistani businesses. The function of CSP may change with both national cultural changes and foreign market monitoring. Future studies should thus take into account these restrictions in various legal and national cultural contexts. Additionally, for future studies, researchers might take into account various commercial techniques.

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