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Article

Structural corporate ownership links to corporate cash and financial earnings: New evidence from non-financial firms

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Abstract: Institutional and executive shares account for the majority of ownership and have a considerable impact on the firm's future financing, investment, earnings, and other corporate decision-making activities. This study aims to investigate the statistical links of institutional ownership and executive ownership on financial earnings and the corporate cash level of non-financial firms using a balanced dataset of 200 non-financial listed firms in PSX (Pakistan Stock Exchange) during the period 2013 to 2018. Among many advanced econometric methods, fixed effect models with pooled ordinary least square (OLS) estimation were found more appropriate to our investigation. Our main findings are twofold. The outcome of our analysis indicates that institutional ownership and executive ownership are significantly related to financial earnings. Further, our results suggest that there is a significant relationship between executive ownership and corporate cash level, as well as a positive and significant relationship between institutional ownership and finance. The cash level of firms can only be identified and predicted through executive ownership in a developing economy like Pakistan. This study provides insightful information for non-financial industry shareholders and policymakers in Pakistan.

Keywords: institutional ownership; executive ownership; financial earnings; corporate cash holding

1. Introduction

Strong corporate governance systems are becoming more and more necessary in businesses worldwide, especially in emerging economies, as a result of many financial crises and corporate scandals. Ownership has mainly affected the decisions of various companies as an important determinant in corporate governance [1–3]. The corporate ownership structure is a dynamic area of research that has attracted significant attention in corporate finance. While the ownership structure is crucial for understanding corporate accounting practices, existing literature provides limited evidence of how ownership structure affects actual earnings management within governance practices [3,4]. The present empirical literature related to the relation between ownership structure, corporate cash holding, and financial earnings has mostly come up with mixed outcomes. For instance, Attia et al. [5] have found weak or negative correlations between institutional ownership and firm financial performance. Further, Afifa et al. [6], Valent and Yanti [4] have found an insignificant association between institutional ownership and firm performance. These studies suggest that institutional investors are primarily focused on their short-term trading profits and not improving corporate governance or firm performance. However, Zhang

et al. [7] have found that institutional ownership has a significant and positive effect on firm performance. Prior researchers [1,2,8,9] confirm the relationship between the two main variables. The corporate ownership structure and corporate cash holding are the key factors that can influence the decisions of the management and investors [10]. There are countless purposes behind enterprises holding money, and unquestionably one of them is related to lessening exchange costs and avoiding loss of under-investment deficiency of assets [11]. Specialists argued that high current assets are as often as possible related to little returns of speculation [12].

Specifically, a study identifying links between a CEO's authority and ability of firm earnings found that managers' ability affects firm earnings, and managers' skill can increase returns [13]. Dinh et al. [14] found that family companies perform better than non-family companies unless non-family firm CEOs have political links and family firms have either improved non-family leadership or connected political boards of directors. Ngatno et al. [15] identify that ownership structure has not moderated the links between financing and firm returns. Board independence adversely influences cash holding, showing that governance has a functioning influence in privately owned companies, though board size emphatically impacts cash holding and exhibits wasteful governance [4,16,17]. Corporate governance fundamentally affects cash holdings, but corporate governance essentially affects firm execution [6]. Firms with great governance spend less abundance of cash on interior ventures, profits, and expansion in cutthroat enterprises. The purpose of this paper is to explore the effect of structural corporate ownership on the two most important strategic decisions concerning cash and financial earnings.

Corporate ownership structure plays a crucial role in determining the governance practices of firms, particularly in influencing decision-making processes. While existing literature has extensively explored the impact of ownership concentration on firm value, there is limited evidence on how ownership structure affects actual earnings management within governance practices. This research gap is significant, as the correlation between corporate ownership structure, cash reserves, and financial performance remains largely unexplored. Therefore, the primary aim of the present study is to investigate the impact of corporate ownership structure on financial earnings and cash holdings in non-financial firms in Pakistan. The current study investigates the effect of different ownership structures, i.e., institutional ownership and executive ownership, on financial earnings and the corporate cash level on a panel of 200 non-financial Pakistani firms from 2013 to 2018.

The relationship between structural corporate ownership and financial outcomes has been widely studied, yet findings are mixed regarding its impact on cash holdings and earnings management. This paper investigated the relationship between ownership structure—particularly institutional and executive ownership—and corporate cash holdings and financial earnings among non-financial firms. Using data from emerging markets, we explore whether specific ownership patterns can influence cash management and financial performance. Non-financial firms are chosen as they offer a unique perspective on cash flow management practices in sectors that do not rely heavily on financial services. Ownership structure is a critical factor here, as non-financial firms typically manage cash with different strategic objectives, balancing between operational liquidity and investment opportunities. This paper also focuses

on emerging markets, where corporate governance and ownership structure are evolving and may uniquely affect cash and earnings management. Given these factors, understanding the ownership structure's role in optimizing cash and enhancing earnings is essential for investors and policymakers aiming to progress corporate performance. We aim to provide new insights into how structural corporate ownership influences cash and earnings management within these firms, shedding light on the balance of institutional and executive ownership in driving optimal financial outcomes.

Our study contributes to existing literature in several ways. Firstly, the study contributes to the growing number of studies [2,4,9,16–21] on ownership structure, corporate cash holdings, and financial earnings by adding emerging market non-financial firms and their corporate structure effect on cash and financial earnings. However, our study also offers a further understanding of the contribution of governance to reducing the agency cost to boost value by assuring that firms' assets are implemented efficiently in the best interests of stakeholders based on agency theory. Secondly, this study is one of the few studies that scrutinizes the issue of institutional monitoring from the perspective of the quality of financial reporting, represented by financial earnings and cash holding in Asia, especially in Pakistan. Finally, this study links the empirical findings with them for a better understanding of the role of governance in determining the future performance and future cash holdings of the non-financial firms of Pakistan. Therefore, this study aims to explore the statistical relationship of corporate ownership structure with financial earnings and corporate cash holdings of the non-financial sector in Pakistan.

Our main results found that institutional ownership (IO) has a positive impact on financial earnings (FE), while executive ownership (EO) also positively affects financial earnings. However, institutional ownership (IO) has a negative effect but is statistically insignificant on corporate cash holdings (CCH), while executive ownership (EO) has a negative statistically significant effect on corporate cash holdings (CCH).

Significance of the study

Our findings indicate that a strategic balance of institutional and executive ownership can lead to optimal financial performance and cash management. Insightful for institutional investors to divert their expertise and skills to the non-financial sector for higher outcomes. Non-financial firms' management can utilize cash to generate positive cash flow through operating activities efficiently and design a diversified investment plan for a higher return with the help of this study.

This study provides valuable insights for stakeholders by revealing how institutional and executive ownership impact financial performance and cash holdings in non-financial firms. Supported by agency theory, the positive effect on financial earnings suggests that both ownership types prioritize profitability, potentially lowering agency costs. However, the negative impact of executive ownership on cash, in line with the Trade-Off Theory, indicates a preference to minimize idle funds for greater firm value. The insignificant influence of institutional ownership on cash holdings suggests a passive stance, guiding stakeholders in evaluating ownership

structures' effects on financial stability and liquidity management.

The rest of this paper unfolds as follows: Section 2 covers literature review and hypothesis development. Section 3 demonstrates data and methodology. Section 4 discusses the results. Lastly, section 5 presents the conclusion.

2. Theories and literature review

2.1. Relationship between institutional ownership and financial earnings

Previous research has shown mixed and inconclusive evidence on the relationship between institutional ownership and financial earnings. Numerous studies highlight the positive influence of institutional ownership on financial earnings through effective corporate governance mechanisms. According to agency theory, institutional investors play a crucial role as monitors of management, reducing agency conflicts and improving firm performance. For instance, Jensen and Meckling [22] documented that an increase in institutional stakeholders can lead to progress in the firm's performance by improving oversight and accountability. Institutional stockholders, through their monitoring and oversight abilities, can influence financial earnings positively by ensuring that management decisions align with stakeholder interests [9]. The efficient monitoring hypothesis shows that institutional investors have more abilities and incentives to effectively monitor managers and individual investors, leading to better financial results [23]. This increased level of oversight can lead to improved corporate governance practices and increased transparency, which in turn can result in higher financial earnings [2,8,24]. This notion is proposed by the work of Shleifer and Vishny [25], who argue that institutional investors, due to their significant holdings, have the ability to investigate information and monitor managers in a way that is not possible for smaller stakeholders. Using the data of the companies in Finland, Bhattacharya and Graham [26] examined the effect of institutional ownership on firm performance. The results documented a statistically significant and positive effect of institutional ownership on firm performance. By employing data from India, Kansil and Singh [27] reported a significant and positive correlation between institutional investors and firm performance. Institutional investors boost companies to adopt good governance practices and are responsible for protecting the interests of corporate principals, leading to enhanced firm performance [8,10]. Using data of Malaysian companies, Bhattacharya and Graham [26] investigated the connection between institutional ownership, firm performance, and capital structure. The findings reveal a positive effect of institutional stakeholders on the firm's performance.

However, some studies offer opposing evidence, highlighting a negative or insignificant effect of high institutional ownership on firm performance. In the American context, Tsouknidis [28] found a negative connection between institutional ownership and firm performance, which appears mostly attributed to non-strategic rather than strategic institutional stockholders. Along the same lines, Widhiadnyana and Dwi Ratnadi [29] discovered that agency conflicts can increase with higher institutional ownership. The largest part of institutional stakeholders' holds a significant amount of shares in a company, leading them to strictly monitor and supervise the firm's performance to protect their interests and investment.

However, it is important to note that the relationship between institutional

ownership and financial earnings is not always straightforward. Some studies have found that a high level of institutional ownership can also lead to increased pressure on company management to meet short-term financial targets, potentially sacrificing long-term value creation in the process. Additionally, conflicts of interest between institutional investors and company management can also arise, potentially leading to suboptimal decision-making and negative impacts on financial earnings. Nevertheless, some works documented that institutional ownership does not significantly affect financial earnings. For instance, Loderer and Martin [30] do not find any significant relationship between the level of institutional ownership and firm performance.

The present study seeks to address this gap by exploring the impact of institutional ownership on financial earnings in the context of an emerging market, where institutional ownership and governance structures may differ significantly from those in developed markets. By focusing on non-financial firms, this research provides insights into whether institutional ownership serves as an effective governance mechanism in sectors less reliant on external financing. Thus, the first hypothesis is developed as follows:

H1: Institutional ownership significantly influences the financial earnings of non-financial firms.

2.2. Relationship between executive ownership and financial earnings

In terms of the linkages between executive ownership and firm financial earnings, the evidence is also mixed. The ownership stake can affect their decision-making processes and the overall firm financial performance. Jensen and Murphy [31] found that companies with higher levels of executive ownership tend to have higher stock returns and better financial performance. This is because when executives have a significant ownership stake in the company, they are more incentivized to make good decisions that will benefit the company in the long term, rather than focusing on short-term gains. Furthermore, Aggarwal and Samwick [32] showed that executive ownership has a positive connection with firm value. They found that CEOs who hold a larger percentage of company stock tend to make decisions that are in the best interest of shareholders, leading to higher firm value and financial performance. According to Elsayed and Elbardan [33], there is a positive correlation between corporate performance and the percentage of equity ownership and equity-based compensation of managers. However, other studies have documented a negative correlation between ownership held by managers or executives and firm performance [34]. For instance, Yermack [35] found that firms with high levels of executive ownership tend to have lower financial performance. This is explained by the reason how executives may focus on personal gain rather than the long-term success of the company, leading to making decisions contradictory to the interests of shareholders. Therefore, the relationship between executive ownership and financial earnings is complex and may depend on various factors, such as the level of ownership, the industry in which the company operates, and the specific behavior of individual executives. These mixed outcomes point to a complex association between executive ownership and financial earnings, which may be influenced by determinants such as market context, firm size, and sector of activity.

The present study intends to illuminate this relationship by examining how executive ownership affects financial earnings in emerging markets, such as Pakistan. By focusing on the non-financial sector, this study investigates whether executive ownership consistently aligns managerial decisions with shareholder interests. Hence, the second hypothesis is established as follows:

H2: Executive ownership has a statistically significant impact on enhancing financial earnings.

2.3. Relationship between institutional ownership and corporate cash holdings

Institutional ownership's effect on corporate cash holding is mixed. Agency theory suggests that institutional ownership mitigates agency costs by monitoring management's use of cash resources, as managers may prefer to hoard cash for personal gain rather than shareholder value [36]. Al-Najjar and Clark [37] examined the effect of institutional stakeholders on the cash holdings of companies in the MENA region. Their findings showed that institutional ownership has a significant and positive impact on cash holdings, implying that these shareholders intend to upsurge their private profits and receive high cash. According to the pecking order theory, internal funds are more preferred to finance the investment than external funds [38]. In the Egyptian context, Basiouny et al. [39] investigate the linkage between institutional ownership and corporate cash holdings. Their result showed that institutional ownership appeared to have a significant positive impact on corporate cash holdings. Similarly, Brown et al. [40] found that short-term institutional stockholders have a positive impact on cash reserves, while long-term institutional investors have an adverse effect on cash holdings. Jebran et al. [41] demonstrated a significant and positive correlation between institutional ownership and corporate cash holdings. Also, Harford et al. [42] found a positive but non-significant relationship between institutional ownership and corporate cash holdings and offer institutional monitoring as the explication.

Some studies found a negative effect of institutional ownership on cash holdings. By analyzing a sample of 61 Egyptian-listed companies on the Egyptian Stock Exchange, Elsayed and Elbardan [33] investigated the effect of institutional ownership on cash holdings. Their result revealed that institutional ownership has a significant negative influence on cash holdings level. Further, the firms with higher levels of institutional ownership prefer to receive more cash. Similarly, by analyzing a sample of 15 listed companies on the Pakistan stock exchange, Khalil et al. [43] investigate the impact of managerial ownership on cash holdings. Their results indicate that institutional ownership has a significant and negative correlation with cash holdings, which means that if institutional ownership goes up, the cash holdings level will drop as a result of institutional investors increase and vice versa.

According to agency theory, Brown et al. [40] suggest that there is a negative relationship between cash holdings and institutional ownership. Lee and Lee [44] found a negative and significant relationship between cash holdings level and firm performance. However, previous research confirms the idea that there is no significant relationship with corporate cash holding. For instance, Alghadi et al. [21] investigated

the impact of ownership structure on the cash holdings of 100 listed companies in the Saudi financial market (TADAWUL) between 2011 and 2019. Their main findings showed that institutional ownership appeared to have no direct effect on cash holdings. Thus, they indicated that institutional ownership is not a main indicator of cash holdings. Similarly, in the Jordanian context, Al-Najjar and Clark [37] demonstrated an insignificant correlation between institutional ownership and corporate cash holdings. Darma et al. [45] examined the effect of corporate governance on cash holdings of companies listed in the Indonesian stock exchange during 2015–2017. Their result revealed that institutional ownership does not have a significant relationship with corporate cash holding. A recent study conducted by Valent and Yanti [4] showed that institutional ownership has an insignificant positive effect on cash holding. A few investigations, giving evidence concerning dynamic firms of outer directors of the market response, are more emphatic than inside directors [46]. Wajid and Safi [20] reveal that institutional shareholders have no impact on cash holdings. This disagreement highlights the multifaceted role of institutional ownership in cash management, mainly in emerging markets where governance practices and investor aims may differ.

The current study adds to the literature by examining whether institutional ownership influences cash holdings in non-financial firms within an emerging market, where cash management and financing policies change from developed economies. Hence, the third hypothesis is developed as follows:

H3: Institutional ownership has a significant impact on corporate cash holdings.

2.4. Relationship between executive ownership and corporate cash holdings

The relationship between executive ownership and firm cash holdings is complex and multifaceted. Academic literature has extensively examined the relationship between executive equity ownership and corporate cash holdings, specifically through the implications of agency theory [16]. A lot of literature also described an insignificant [12,42] and significant connection between ownership executives and corporate cash holdings [16,17,47]. Ownership of executives is expected as a way to address diverging interests between owners and executives [25]. Prior research supports a positive relationship between firm performance and executive ownership [48]. This is because executives with a higher ownership stake in the company are likely to have a long-term vested interest in the firm's success. Thus, they may prefer to hold onto excess cash rather than pay dividends to shareholders or use it for investments in risky investments. Therefore, executive ownership would incentivize employees to report misconduct and serve as whistle-blowers, reducing the overall information asymmetry with outsiders [49]. Liu and Mauer [50] scrutinized the connection between CEO compensation, corporate cash holdings, and corporate firm value. They found a positive relationship between CEOs' risk-taking incentives and corporate cash holdings. Further, the theory of trade-off supports the idea that companies set their optimal level of cash holdings by weighting the marginal costs and marginal benefits of cash holdings [51].

One of the main advantages of holding cash is the ability to offer a safety net for

firms, allowing them to avoid the expenses related to obtaining outside financing or liquidating current assets. This can support companies in funding their expansion opportunities [52]. On the other hand, holding onto cash can also diminish the risk of financial difficulties and empower companies to continue with their investment policy despite financial restrictions [53]. One of the key costs linked with cash holdings is the director's ability to increase and create the stockholder's wealth. If the manager fails to serve the interests of shareholders, the growth in resources under their supervision will upsurge their managerial autonomy, leading to agency costs linked to managerial discretion. The conflict between proprietors and managers, mainly regarding payout policies, can create tensions within a firm, especially for those with high cash flow [53].

Some studies have also found a negative relationship between executive ownership and firm cash holdings [54]. This may be because executives with a large ownership stake may have a personal incentive to extract cash from the company for their own benefit, rather than reinvest it back into the firm. This can lead to a reduction in cash reserves and increase the firm's risk of financial distress in the long run. Moreover, the relationship between executive ownership and firm cash holdings may also be influenced by other factors, such as firm size, industry characteristics, and corporate governance mechanisms. For example, larger firms may have higher cash holdings regardless of executive ownership levels, as they may require more liquid assets to fund their operations and investments [54]. Similarly, firms operating in industries with high levels of uncertainty or volatility may also hold more cash as a precautionary measure. In terms of corporate governance, the presence of independent directors on the board and effective monitoring mechanisms may mitigate the potential agency conflicts that can arise from high executive ownership levels. This can lead to a more optimal level of cash holdings that stabilizes the interests of executives and shareholders in maximizing firm value. This relationship is further complicated by factors like firm size and industry volatility, which may alter executives' cash management preferences.

The present study develops the subsequent hypotheses founded on the assertion supported by agency theory and trade-off theory that large stockholders do not need more comprehensive information disclosure. Thus, we tested the following hypothesis:

H4: Executive ownership significantly affects the corporate cash levels of non-financial firms.

3. Data and methodology

3.1. Data and descriptive statistics

Our research issues evaluate whether ownership structure affects financial earnings and corporate cash holding in Pakistan stock exchange-listed firms. To achieve our goals, we use a sample of top companies (which account for approximately 90% of Pakistan's stock exchange market capitalization) and corporate non-financial firms' data listed in PSX (Pakistan stock exchange) for each of the six years from 2013–2018 (based on the availability of data). We exclude financial companies due to differences in disclosure requirements of financial and

non-financial sectors. Also, the choice of the sample period was driven by the availability of the dataset.

Therefore, we selected 200 companies (1200 firm-year observations). We investigate the effect of ownership structure on corporate cash and financial earnings of these 200 non-financial listed firms of PSX by using a linear regression model. Panel regression analysis, including random effect (REM) and fixed effect (FEM) models, was conducted, with the Hausman test indicating the better model for analysis. We performed a variance inflation factor test to check the multi-collinearity problem among the independent variables in our study. The multi-collinearity test checked if the independent variables of the study were highly correlated to one another. The validity of the models was verified with the help of the *F*-test and *P*-value.

Table 1 shows detailed variable measurements. Specifically, the dataset was obtained from two sources: we manually collected data from the firms' annual reports. We extracted the ownership structure data of companies by locating each firm's financial statements for each year of the sample period from their respective websites.

Table 1. Variables measurement.

Variables	**Measurements**
Dependent variables:	
Financial earnings (FE)	Measured by calculating the percentage of after-tax income generated by a company's investment in assets.
Corporate Cash Holdings (CCH)	Measured by calculating the proportion of cash and cash equivalent to total assets.
Independent variables:	
Institutional Ownership (IO)	Calculated as the number of shares held by institutional investors divided by the number of outstanding shares.
Executive Ownership (EO)	Measured by calculating the proportion of shares owned by company executives out of the total number of shares outstanding.
Control variables:	
Size (SZ)	Measured by the natural logarithm of total assets.
Sales Growth (SG)	Percentage increase in sales from the previous year.

Table 2 provides descriptive statistics and correlation analysis for all variables under study. The mean values show the average for each variable, with EO and CCH having negative averages, whereas EF, IO, SG, and SZ have higher positive averages. The median values are close to the means for most variables, indicating relatively symmetric distributions for some. However, the maximum and minimum values reveal substantial ranges, especially for IO and EO, indicating significant variability. Standard deviations confirm this, particularly for IO (2.002082) and EO (2.811241), which have high variability. Skewness values indicate asymmetry in the distributions, with FE, CCH, IO, and EO being negatively skewed and SG and SZ positively skewed. Kurtosis values indicate that CCH and SG have heavy tails (leptokurtic), especially SG (11.57615), while other variables are closer to a normal distribution.

Table 2 reports the pairwise correlation. The table shows that the coefficients of corporate cash holding (CCH) 0.323 and institutional ownership (IO) 0.1439 are positively associated with financial earnings. While executive ownership (EO) is

negatively correlated with financial earnings (EF) and corporate cash holding (CCH). With coefficients of −0.128 and −0.413, institutional ownership (IO) and executive ownership (EO) are negatively correlated with corporate cash holding (CCH). Size and sales growth positively correlate with Pakistani firms' cash holding levels and financial earnings. Besides, no correlation coefficient spreads the level of 0.6. Thus, the findings do not present any collinearity problem for multivariate analyses.

Table 2. Descriptive statistics and correlation matrix.

	FE	**CCH**	**IO**	**EO**	**SG**	**SZ**
Mean	0.025187	−1.052424	0.247741	−1.944603	4.630373	6.951394
Median	0.028517	−0.97355	0.727549	−2.302585	4.63837	6.952347
Maximum	0.199046	−0.231214	2.870169	2.709915	6.402686	8.158862
Minimum	−0.21018	−3.223554	−4.60517	−9.21034	3.006331	5.654631
Std. Dev.	0.073403	0.478	2.002082	2.811241	0.39152	0.550968
Skewness	−0.601267	−1.201907	−0.801977	−0.208029	0.679947	0.171378
Kurtosis	3.686081	5.526516	2.927552	2.663328	11.57615	2.287019
Correlation Matrix						
	FE	CCH	IO	EO	SG	SZ
FE	1					
CCH	0.323027206	1				
IO	0.143981769	−0.128167392	1			
EO	−0.243226948	−0.413176236	−0.118290105	1		
SG	0.267006763	0.084056066	0.07349192	−0.104233623	1	
SZ	0.39667527	0.161492955	0.04721428	−0.130131188	0.143061501	1

Table 3. Collinearity statistics.

	Tolerance-FE	**VIF**	**Tolerance-CCH**	**VIF**
Institutional Ownership	.991	1.010	.991	1.010
Executive Ownership	.995	1.005	.995	1.005
Size	.905	1.106	.905	1.106
Sales Growth	.905	1.106	.905	1.106

Table 4. Heteroskedasticity test: Breusch-Pagan-Godfrey: FE.

F-statistic	1.355173	Prob. *F* (4,118)	0.2537
Obs**R*-squared	5.402214	Prob. Chi-square (4)	0.2485
Scaled explained SS	8.577065	Prob. Chi-square (4)	0.0726
Heteroskedasticity test: Breusch-Pagan-Godfrey: CHH			
F-statistic	1.9434	Prob. *F* (4,118)	0.1077
Obs**R*-squared	7.602174	Prob. Chi-square (4)	0.1073
Scaled explained SS	19.5902	Prob. Chi-square (4)	0.0006

Tables 3 and **4** report collinearity statistics to check for any collinearity among the independent variables of the study. Further, according to Ringle and Sarstedt [55], the tolerance and VIF (less than 10) values of independent variables are normal, indicating that these variables have no collinearity issue and statistics are consistent.

The (p-values > 0.05) suggests that we fail to reject the null hypothesis of homoscedasticity at the 5% significance level. This implies that there is no significant evidence of heteroscedasticity based on the R-square and F-statistic.

3.2. Ordinary least square (OLS) estimation regression

In this study, we used the Hausman test to select a random or fixed effect model. Its null hypothesis is that the preferred model is a random effect. Ordinary Least Squares (OLS) estimation for Fixed Effects Model (FEM), and Random Effects Model (REM) has been utilized in numerous recent studies. These methods implied a model with a varying interception in each cross-section, whereas the slope remains constant over time [56]. However, some recent studies show that the OLS estimations, fixed, and random effect models outperform cross-sectional time series and other models and gained popularity in numerous recent studies as effective tools for analyzing panel datasets [2,3,17]. The random effect model, in particular, is useful for panel data analysis as it accounts for correlated residual variables between subjects and time points, overcoming the limitations of fixed effects models by incorporating dummy variables [57]. In the context of panel data regression, OLS and fixed effects models use the standard least squares method for estimation, whereas the random effects model utilizes the generalized least squares (GLS) method. Recent research [2,3,17] has shown that OLS, fixed effects, and random effects models outperform cross-sectional time series and other GARCH family models [42] in terms of statistical significance and accuracy.

The OLS estimations (estimated common effect) framework used in our study provides a comprehensive analysis of ownership structure links to corporate cash and financial earnings. This highlights the importance of using OLS estimations, fixed effects, and random effects models in panel data analysis to draw robust and efficient conclusions from complex datasets. OLS estimation analysis has been utilized for investigation while the firm has assigned numbers from 01 to 200, both big and small firms, and regression results are obtained with the help of the given equations:

$$FE_{it} = \beta_0 + \beta_1 IO_{it} + \beta_2 EO_{it} + \beta_3 SZ_{it} + \beta_4 SG_{it} + \varepsilon_{it} \quad (1)$$

$$CCH_{it} = \beta_0 + \beta_1 IO_{it} + \beta_2 EO_{it} + \beta_3 SZ_{it} + \beta_4 SG_{it} + \varepsilon_{it} \quad (2)$$

Here β_0 intercept and β_1, β_2, β_3, β_4 are coefficients. FEit, is financial earnings (ROA), CCH_{it} corporate cash holdings, IO_{it} institutional ownership, and EO_{it} executive ownership. SZ (log of total assets) is the size and SG sales growth of the firm while ε_{it} is the error term.

4. Empirical analysis

4.1. Ordinary least square—Fixed effect models

From **Table 5** below, the result of the Hausman test displays that the chi-square statistics value is 20.048 and the p-value is 0.000. This indicates that there is no systematic difference between the two models. Therefore, the most consistent and efficient estimation for the research is the fixed effect cross-sectional model. The outcome proposes that the fixed effect model is better for the sample data because the

Hausman test statistics as represented by the corresponding probability value are less than 5%. It can be seen from the table that R-squared is 0.7786. This indicates that the independent variable explains 77.86% of the variations of the model. The F-statistic is significant at the 1 percent level. Institutional ownership (IO) has a positive and statistically significant effect on financial earnings (p-value < 0.05). Executive ownership (EO) has a positive and statistically significant effect on financial earnings. Size (SZ) has a negative and statistically significant effect on financial earnings (p-value < 0.05). Sales growth (SG) is not statistically significant at the 5% level (p-value > 0.05). This statistic tests for autocorrelation in the residuals; a value close to 2 suggests no autocorrelation.

Table 5. Hausman test and fixed effect model-dependent variable: Financial Earnings FE.

Correlated random effects—Hausman test				
Test summary		**Chi-Sq. statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random		20.048047	4	0.0005
Dependent variable: financial earnings FE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.504130	0.987854	1.522623	0.1291
IO	0.011879	0.004534	2.619685	0.0093
EO	0.092257	0.036109	2.554969	0.0112
SZ	−3.953105	1.162937	−3.399244	0.0008
SG	0.190513	0.134561	1.415813	0.1581
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.778672	Mean dependent var		−1.354229
Adjusted R-squared	0.665768	S.D. dependent var		0.542326
S.E. of regression	0.313534	Akaike info criterion		0.782459
Sum squared resid	24.28098	Schwarz criterion		2.115027
Log likelihood	−19.31983	Hannan-Quinn criter.		1.311550
F-statistic	6.896763	Durbin-Watson stat		1.954337
Prob (*F*-statistic)	0.000000			

Overall, the Hausman test indicates that the fixed effects model is appropriate. The fixed effects model results show significant positive impacts of IO and EO on financial earnings, a significant negative impact of SZ, and an insignificant effect of SG. The overall model fits the data well, explaining a substantial portion of the variance in financial earnings. Hence, it shows that the financial earnings (FE) of non-financial firms can be predicted through executive shares held (EO) as well as with institutional shares held (IO) plus the size of the firm (SZ) (control variable) in the industry.

Further, in **Table 6**, the fixed effect model has been accepted again because the null hypothesis is rejected (p < 0.05). The value (R-square 82.59%) indicates the variance in corporate cash holdings is explained by the model and adjusted R-square

for the number of predictors, indicating a good fit of the model to the data. The model is statistically significant overall (the *p*-value for the *F*-statistic is 0.000). Here our independent variable IO is insignificant, and EO is significantly related to CCH ($p < 0.05$). So, it indicated that the corporate cash levels of non-financial organizations can be analyzed through shares held by executive EOs and with sales growth SG (control variable) of the firms in the market. Management and the board of the firm can efficiently manage its corporate cash holdings for higher returns. The fixed effects model shows significant negative impacts of the constant term and EO on corporate cash holdings and a significant positive impact of SG. IO and SZ are not statistically significant. A similar study observed that SZ is insignificant in financial earnings [58]. The model explains a substantial portion of the variance in corporate cash holdings.

Finally, the robust least squares highlight the significance level of all the study variables in both the models in **Table 7**.

Table 6. Hausman test and fixed effect model-dependent variable: Corporate cash holdings CCH.

Correlated random effects—Hausman test				
Test summary		**Chi-Sq. statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random		16.978404	4	0.0020
Dependent Variable: Corporate Cash Holdings CCH				
Variable	Coefficient	Std. Error	*t*−Statistic	Prob.
C	−0.861345	0.347209	−2.480766	0.0135
IO	−0.001692	0.001542	−1.097398	0.2731
EO	−0.020407	0.007150	−2.854303	0.0045
SZ	0.305465	0.423014	0.722116	0.4706
SG	0.085672	0.025104	3.412680	0.0007
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.825853	Mean dependent var		−0.455874
Adjusted *R*-squared	0.759344	S.D. dependent var		0.255223
S.E. of regression	0.125204	Akaike info criterion		−1.087676
Sum squared resid	6.239047	Schwarz criterion		0.109593
Log likelihood	452.6548	Hannan-Quinn criter.		−0.619840
F-statistic	12.41723	Durbin-Watson stat		0.966196
Prob (*F*-statistic)	0.000000			

Table 7. Robust least squares (robustness tests).

Dependent variable: FE				
Variable	**Coefficient**	**Std. error**	***z*-statistic**	**Prob.**
C	−0.46676	0.084839	−5.50169	0
IO	0.003154	0.002617	1.204991	0.2282
EO	−0.00461	0.001881	−2.45215	0.0142
SG	0.062593	0.013472	4.646209	0

Table 7. (*Continued*).

Dependent variable: FE				
Variable	**Coefficient**	**Std. error**	***z*-statistic**	**Prob.**
SZ	0.028858	0.009589	3.009363	0.0026
	Robust statistics			
R-squared	0.224889	Adjusted *R*-squared		0.198614
*R*w-squared	0.381035	Adjust *R*w-squared		0.381035
Akaike info criterion	166.2445	Schwarz criterion		181.0386
Deviance	0.345272	Scale		0.046899
Rn-squared statistic	49.87638	Prob (Rn-squared stat.)		0
	Non-robust statistics			
Mean dependent var	0.025187	S.D. dependent var		0.073403
S.E. of regression	0.066814	Sum squared resid		0.526766
Dependent variable: CCH				
Variable	Coefficient	Std. error	*z*-statistic	Prob.
C	−1.40297	0.552458	−2.53951	0.0111
IO	−0.02457	0.017043	−1.44148	0.1495
EO	−0.08651	0.012247	−7.06393	0
SG	−0.03611	0.087727	−0.41162	0.6806
SZ	0.056668	0.062444	0.907507	0.3641
	Robust statistics			
R-squared	0.22034	Adjusted *R*-squared		0.193911
*R*w-squared	0.354064	Adjust *R*w-squared		0.354064
Akaike info criterion	132.1506	Schwarz criterion		148.4237
Deviance	15.2329	Scale		0.349982
*R*n-squared statistic	53.37412	Prob (Rn-squared stat.)		0
	Non-robust statistics			
Mean dependent var	−1.05242	S.D. dependent var		0.478
S.E. of regression	0.437571	Sum squared resid		22.59322

4.2. Results and discussion

Tables 5 and **6** report the results of our models. The empirical tests of the main hypotheses examine the relationship between ownership structure, cash holdings, and financial earnings.

Table 5 presents the results of our model (1), which also analyzes whether a firm's ownership structure affects the levels of financial earnings, controlling for the impact of other relevant variables. We find that institutional ownership (IO) is expected to be positive and statistically significant at the 1 percent level in the case of the Financial Earnings variable (FE). This result suggests that there is a significant and positive relationship between institutional ownership and financial earnings. It suggests that as the level of institutional ownership increases by 1%, the financial earnings of the firm tend to also rise by 0.93%. This indicates that institutional ownership has a significant impact on a firm's financial performance. According to

the efficient monitoring hypothesis, institutional investors possess the resources and incentives to actively monitor management, thereby reducing agency problems and contributing to higher transparency and performance. This can contribute to increasing oversight and improving corporate governance practices, which in turn can result in higher financial earnings. Studies by Koh and Jang [24]; Ali et al. [8], Din et al. [10] reported similar results, showing that institutional ownership correlates positively with financial earnings, attributed to these investors' impact on governance quality and managerial accountability. Also, this observation supports the view of agency theory, which argues that the more institutional ownership a company has, the larger the transparency level becomes. Therefore, agency problems, such as information asymmetry, are reduced, forcing managers to make decisions beneficial to shareholders rather than prioritizing their interests. Interestingly, these outcomes contrast with studies such as [4], which report an insignificant relationship between institutional ownership and financial earnings. relationship between institutional ownership (IO) and financial earnings (FE). Therefore, Hypothesis one (H1), the relationship between institutional ownership and financial earnings is statistically positively significant, was supported.

This study assumes that there is a positive and statistically significant relationship between executive ownership (EO) and financial earnings (FE) at the 5% threshold. This indicates that the increase of executive ownership is associated with higher financial earnings levels. The result is in line with our empirical studies [32,33], which illustrate that executive ownership was significantly related to financial earnings. Aggarwal and Samwick [32] found that CEOs who hold a larger percentage of company stock tend to make decisions that are in the best interest of shareholders, leading to higher earnings growth and financial performance. Therefore, the second hypothesis (H2), the relationship between Executive Ownership (EO) and financial earnings is statistically positively significant, was supported. Regarding the other control variables, we find that the size of the firm is significantly higher for firms with greater political costs (size). Only the Sales Growth (SG) has a positive and significant effect on Corporate Cash Holdings at the 1% level, whereas the firm size (SIZE) has a positive impact on Corporate Cash Holdings but is statistically non-significant.

This research projected a negative relationship between institutional ownership (IO) and corporate cash holdings. As shown in **Table 6**, institutional ownership (IO) has a negative and non-significant relationship with corporate cash holdings. The result is incoherent with our expectation and empirical study of [33,39,43]. Therefore, there are also contrary results to the works of Alghadi et al. [21] and Kusnadi and Wei [59], which found a positive and significant relationship between institutional ownership and corporate cash holdings. Their findings suggest that the presence of institutional investors in a firm indicates the possibility of an effective governance mechanism. Hence, our outcomes show that in an Asian country like Pakistan, where corporate governance is weak, institutional investors are the reason for the firms to hold less cash. Thus, hypothesis three (H3), the relationship between Executive Ownership (EO) and corporate cash holdings is not statistically significant, was rejected.

Executive ownership (EO) has a negative and significant effect on corporate cash holdings at a 1% level. It suggests that when executives have significant ownership

stakes in the firms they work for, it tends to negatively impact the amount of cash that the firms hold. On the other hand, the increase in executive ownership leads to lower cash holdings. A reasonable explanation can be that executive ownership (EO) operates as a two-edged sword where elevated levels are linked with bigger short-term relative performance but also a higher probability of failure. Consequently, small business managers need to balance these trade-offs, and then little is known about what encourages managers to opt for higher or lower levels of executive ownership (EO). This result is supported by research conducted by Wang et al. [16]. The results indicate that firms subject to regulated executive compensation exhibit lower cash holdings.

Hence, hypothesis four (H4), the relationship between executive ownership (EO) and corporate cash holdings, which is statistically negatively significant, was accepted. For controlled variables, only the sales growth (SG) has a positive and significant effect on corporate cash holdings at the 1% level, whereas the firm size (SIZE) has a positive impact on corporate cash holdings but is statistically non-significant.

5. Conclusion and policy implications

This paper tests the impact of ownership structure (presented by institutional ownership and executive ownership) on firm financial earnings and corporate cash of 200 non-financial firms listed on the stock market exchange of Pakistan PSX during the period 2013 to 2018. Our dataset is balanced for firms and years. For the empirical analysis, the study employs a fixed effect model with pooled ordinary least squares (OLS) regression to encounter any endogeneity problem between ownership structure, cash holding, and financial earnings.

Our results of regression tests and analysis prove that institutional ownership (IO) and executive ownership (EO) are positively and statistically significantly related to executive ownership (EO) dependent variables, which are financial earnings (FE). Thus, the presence of institutional ownership and executive ownership has a direct impact on financial earnings. This significant relationship underlines the monitoring and governance mechanisms within the company, leading to enhanced financial performance. This suggests that institutional investors, under their stake in the firm, exert a positive impact on executive decision-making and alignment with shareholders' interests, ultimately contributing to increased financial earnings. Further, institutional ownership (IO) has a negative and statistically insignificant connection with corporate cash holdings (CCH). Thus, we agree that in the case of an Asian country like Pakistan, the presence of institutional shareholders is active in reducing cash holdings. Furthermore, the detection of the negative relationship between institutional ownership and cash holding indicates that these investors aim to improve the value of firms and maximize their financial health. Thus, executive ownership (EO) has a negative and significant effect on corporate cash holdings (CCH). Consequently, the involvement of executive shareholders in a company's management could result in decreased levels of cash reserves within the corporation. Additionally, executive shareholders tend to have lower corporate cash holdings because they prioritize their interests over the liquidity requirements of the company and those shareholders.

Our study contributes to the research on the relationship between ownership

structure within firms and their impact on their cash holding and financial earnings in emerging economies. It has significant implications for different imminent usage of cash by shareholders, analysts, and regulators. Also, this research is highly relevant in the field of corporate finance and has practical and social implications that need to be understood and explored. The practical implication of this research can help companies make informed decisions about their capital structure and financing choices. By analyzing the ownership structure, companies can detect potential agency conflicts and managerial entrenchment that may affect cash flow. Different ownership structures may lead to differences in the concentration of power and decision-making processes within firms. So, firms and policymakers need to consider how ownership structures affect financial earnings and align them with the interests of both shareholders and other stakeholders (e.g., employees, customers, and communities). From a social perspective, understanding the implications of structural corporate ownership on cash flow and financial earnings is crucial for maintaining a fair and sustainable system.

Different ownership structures can result in variations in wealth distribution, income inequality, and corporate responsibility. For instance, the ownership concentration leads to a focus on short-term financial goals at the expense of long-term sustainability and social impact. In other words, the dispersion of ownership can result in a greater focus on shareholder value and accountability. The outcomes highlight for managers the significance of ownership in managing liquidity and financial performance, showing that executive ownership can result in reduced cash reserves to increase firm value. In order to strike a balance between immediate profitability and long-term financial stability, managers should evaluate cash allocation practices while taking ownership structures into account.

Therefore, policymakers, regulators, and stakeholders need to consider the social implications of ownership structures and their impact on cash flow and financial earnings. This may involve implementing regulations and frameworks that promote transparency, accountability, and long-term value creation. This research highlights that both institutional and executive ownership positively impact profitability, suggesting policies to encourage responsible shareholder engagement. Policymakers could foster institutional involvement while balancing governance to ensure sufficient liquidity. It also requires promoting a balance between the interests of shareholders, employees, and society as a whole. These implications are essential for companies to make informed decisions, optimize cash flow, and align ownership structures with the interests of shareholders and society. By elucidating the relationships between ownership, earnings, and cash holdings, this study provides analysts and investors with a clearer understanding of how ownership patterns impact financial results in non-financial organizations. Gaining insight into these patterns enables analysts to assess corporate governance's contribution to Pakistani firm stability and profitability more effectively and aids investors in making well-informed decisions.

Given the social implications acknowledged, future studies could examine the effect of ownership concentration on firms' CSR activities and their alignment with long-term sustainable value creation. Future research could examine cash management strategies and financial performance across diverse regulatory environments.

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Abbreviation

IO	Institutional Ownership
EO	Executive Ownership
FE	Financial Earnings
CCH	Corporate Cash Holdings
SZ	Firm Size
SG	Sales Growth
PSX	Pakistan Stock Exchange
OLS	Ordinary Least Squares
FEM	Fixed Effects Model
REM	Random Effects Model

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