

Cash holding and investment efficiency nexus for financially distressed firms: The moderating role of corporate governance

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ABSTRACT

The current research study aims to analyze the impact of cash holding on investment efficiency by moderating the role of corporate governance among financially distressed firms. The data for 14 years (2006-2019) is gathered from 400 companies of two Asian emerging economies (Pakistan and India). The results are obtained by applying a generalized method of moments (GMM), which postulates that corporate governance improves cash holding with investment efficiency in the Indian scenario and decreases in the Pakistani scenario. Concerning financially distressed firms, corporate governance strengthens the relationship of cash holding with investment efficiency in the Pakistani context but showing no moderating role in the Indian scenario. The results are helpful in cash management decisions to minimize the agency issue and to avail investment opportunities.

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1. Introduction

Investment is considered the lifeblood of business development; therefore, investment-related concerns are a prime consideration for researchers across the globe. Investment efficiency is a significant factor contributing to achieving the firm's goal, i.e., maximizing shareholders' wealth (Quah, Human & Naidu, 2020). Investment efficiency elaborates the firm performance in terms of utilizing the assets and generating revenue. In other words, it measures that how efficiently the resources of business organizations are used (Chen, Sung & Yang, 2017). Modigliani and Miller (1958) argue that investment opportunities open the doors for firms' investment. The theory explains that firms continue to invest in all projects having positive net present values until the marginal benefit and cost are equated (Hayashi, 1982). The Modigliani & Miller theory postulates that investment decisions and credit policies are irrelevant because the capital markets are perfect. Conversely, Fazzari et al. (1998) argue that the capital markets are not perfect because of the information asymmetry problem. Hence, the firms' borrowing costs are higher than internal credit costs. The deficiency of internally generated funds enforces the business organizations to forego the projects even having positive Net Present Value, which leads to investment inefficiency. Managers keep their eyes on investment opportunities and healthy projects to maximize shareholders' value maximization (Naeem & Li, 2019). Practically, managers have limitations to invest in all value-maximizing projects because of financing constraints (Fazzari, Hubbard & Petersen, 1988) and capital market frictions (Chen *et al.*, 2017), which cause over-under investment (also known as investment inefficiency). The under-investment phenomenon is because of withdrawal from value-maximizing projects and over-investment refers to the inefficiency of managers to invest in practical projects (Biddle *et al.*, 2009).

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The entrenched managers have the opportunity to hold the excess cash rather than paying a dividend or availing the investment opportunities (Dittmar et al., 2003). On the other hand, they have less cash reserve by using it for their self-interests (Sun, Yung, & Rahman, 2012; Bhuiyan & Hooks, 2019). This inefficient use of cash creates the agency issue between managers (Agent) and shareholders (Principals) (Dittmar et al., 2003) and investment inefficiency (Blanchard, Lopez-de-Silanes, & Shleifer, 1994). The previous strand of empirical and theoretical literature has widely discussed that informational asymmetry and agency issues are the main types of frictions, which give rise to investment inefficiency (Benlemlih & Bitar, 2018). Financially distressed firms are in danger zone and are struggling to improve the investment efficiency, so predicting financial distress is essential and is considered a hot topic to be researched (Li, Crook, Andreeva & Tang, 2020). Moving the firms towards financial distress is alarming because such firms may face cash flow constraints that directly affect investment efficiency (Habib, Costa, Huang, Bhuiyan & Sun, 2020). Over the past two decades, the literature suggested that corporate governance practices are not only effective in controlling the agency issues and the probability of financial distress (Shahwan & Habib, 2020) but they help to improve financial performance (Udin *et al.*, 2017; Ali & Nasir, 2018). However, the research of over and under-investment decisions amongst the listed firms during financial distress is still scarce and needs to be reviewed comprehensively. Therefore, the current research study intends to analyze the impact of cash holding and optimal level of corporate investment of financially distressed firms with the moderating role of corporate governance. The contribution of this research is multifold; firstly, as far as the influence of cash holding on investment efficiency among the Pakistani listed firms are concerned, the results indicate that holding more cash does not improve investment efficiency among Pakistani listed firms. It may be due to the lack of investment opportunities available for the firms operating in Pakistan. In the case of India, the results demonstrate that holding an excess of cash improves investment efficiency, which means companies having cash have invested in profitable investment projects because of the availability of investment opportunities.

Secondly, the moderating role of corporate governance in the relationship between Cash holding and investment efficiency is observed. The empirical evidence suggests that in both economies, corporate governance plays a moderating role in the relationship of Cash holding with investment efficiency. Still, in India, it is improving investment efficiency and decreasing investment inefficiency in Pakistan. Finally, the results indicate that both the financially distressed and financially stable firms have significantly different investment efficiency in Pakistan. Corporate governance is showing a moderating role by improving the investment efficiency for financially distressed firms. In the Indian scenario, both firms have similar investment efficiency, and no modification in the relationship between cash holding and investment efficiency is explained by corporate governance.

2. Literature Review

2.1 Investment Efficiency

The Investment decision is amongst the very pivotal financial decisions since it directly affects the value of firms by ensuring their success or failure. Efficient investment decision-making is considered a critical business goal because it allows for long-term growth and maximizes stakeholder capital's profit (Cherkasova & Rasadi, 2017). Investment is defined as the current commitment of funds to gain some future benefits. Modigliani-Miller's (1958) study argues that internal funds and external debt are a perfect substitute for each other because the capital markets are perfect. Thus, the investment decisions are not dependent upon the financial situation of firms. On the other hand, corporate investment can be unresponsive to firms' investment opportunities due to a variety of market frictions in the real world, causing firm investment to fall short of its optimum level (Tran & Nguyen, 2014). The previous researchers have found that the cash held by the business organizations has a very significant effect on the investment decisions as the holding of excessive cash may cause the agency issues and finally inefficient usage of cash, which contributes to investment inefficiency (Biddle, Hilary, & Verdi, 2009; Sheu & Lee, 2012). Ozkan (2002) observed that cash held by business organizations is an essential factor that stimulates growth. Hence the optimum level of cash holdings must be determined because the excess of cash may result in non-utilization of cash or its investment less profitable projects resulting in the decreased return of assets. On the other hand, cash deficiency may restrict the firm from availing of profitable investment opportunities. The asymmetric information view explains that managers work in favor of shareholders' interest (Chen et al., 2017) as information asymmetry between principals and agents leads to higher cost of financing and cost of project selection (Myers, 1984; Myers & Majluf, 1984) due to higher cost managers sacrifice good investment opportunities (Benlemlih & Bitar, 2018). Conversely, the agency view indicates that managers act in their interests (Chen et al., 2017). According to Jensen and Meckling (1976), managers are intended to avail themselves of investment opportunities, resulting in their welfare and not in shareholders' interest. Therefore, an agency issue is created, which leads to investment inefficiency (Lang et al., 1991; Blanchard et al., 1994; Benlemlih & Bitar, 2018). Over and under investment creates hurdles to achieve the corporate objective of maximizing shareholders' wealth (Quah, Haman & Naidu, 2020). The researchers have investigated the association between available cash and investment choices. Since the time, scope, and nature of these studies are different; therefore, the results are mixed and inconclusive i.e., cash holdings have a positive, negative, linear, or non-linear (U-shaped or inverted U-shaped) effect on the investment level. Therefore, it is essential to analyze the impact of cash holdings on the investment decisions of firms.

H₁: Cash holdings significantly influence investment efficiency.

2.2 Moderating Role of Corporate Governance

The poor quality of corporate governance causes agency issues (Habib & Bhuiyan, 2016), as weak corporate governance practices encourage the excessive holding of cash (Dittmar, Mahrt-Smith, and Servaes, 2003) or excessive use of cash (Biddle, Hilary, & Verdi, 2009; Sheu & Lee, 2012). Therefore, investment inefficiency (under/over investment) is caused due to ineffective usage of cash, which invites agency conflicts (Dittmar et al., 2003). Knowledge asymmetry (Chen et al. 2006) and the agency issue (Jiang et al., 2011) affect corporate investment productivity. Moreover, the firms operating in financial distress are also faced with investment inefficiency due to scarcity of financial resources (Habib, Costa, Huang, Bhuiyan & Sun, 2020). Implementing effective corporate governance practices helps mitigate the agency issue (Shahwan & Habib, 2020) and minimize the chances for financial distress (Udin et al., 2017; Nasir & Ali, 2018). Therefore, corporate governance moderates in the relationship of cash holding with the investment efficiency of financially distressed firms.

H₂: *Corporate Governance moderates the relationship of Cash holding with investment efficiency.*

2.3 Role of financial distress

The financial distress of firms influences the investment and repayments for liabilities, so the accuracy for the prediction of financial distress is essential (Li, Crook, Andreeva & Tang, 2020). Fazzari et al. (1988) discussed in their study that financing decision for an investment project is based upon the financial condition of a firm as financially constrained companies use internal sources of financing for the investment project. On the other side, internal financing sources are limited because the firm faces obstacles to avail all investment opportunities. Raising funds from an external source at the low cost of capital is also tricky; subsequently, it precludes firms from improving investment efficiency (Naeem & Li. 2019). Because of its value to creditors such as banks, predicting corporate bankruptcy or financial distress has become a hot topic in banking, industry, and finance (Li, Crook, Andreeva & Tang, 2020). The prior research studies related to investment decisions identified the presence of financial restraints as an essential element. Bhagat et al. (2005) argued that “financially distressed firms behave differently from other firms”. Therefore, the findings of financially constrained firms do not apply to the business concerns operating under financial distress, although such firms are also pruned to financial constraints. This study revealed that some characteristics of financially distressed and firms facing financial constraints are similar, such as firm size, market share, growth, etc. Nonetheless, the findings showed that financially distressed firms could not invest more than other firms because of low growth, small size, high gearing, and less availability of cash. Because of such dissimilarities, Bhagat et al. (2005) concluded that the investment the behavior of distressed firms concerning cash flow fluctuations varies from the companies with financial constraints.

H₃: *Corporate Governance moderates differently between the relationship of cash holding and investment efficiency for financially distressed and financially stable firms.*

3. Methodology

Our research sample covers the stock exchange listed companies in Asian emerging economies (Pakistan and India). Thus, the study includes two emerging economies, one from BRICS countries (India) and the other from N-11 countries (Pakistan). In emerging economies, the institutional environment is weak and complex, which is not very effective in safeguarding the shareholder's rights (Zhang, Yang, Strange & Zhang, 2017). These economies are required to investigate the corporate governance practices necessary to protect the rights of shareholders. We gathered the data from annual reports and Wharton Research Data Services (WRDS) for 14 years (2006 to 2019). Total 400 firms are part of the analysis; 200 of these firms are listed on Pakistan Stock Exchange (PSX) and remaining on the Indian Stock Exchange. The study covers a total of 5,600 firm-year observations for each variable.

3.1 Econometric model and variable measurements

We tested the hypothesis by applying the Panel dynamic model (Generalized methods of moments), which addresses endogeneity (Busch & Lewandowski, 2018).

$$Inveff_{it} = \beta_0 + \beta_1 CH_{it} + \beta_2 CI_{it} + \beta_3 CH_{it} \times CI_{it} + \beta_4 FD + \beta_5 FD \times CH_{it} \times CI_{it} + \sum_{i=1}^j \lambda_i FCon_{it} + \epsilon_{it} \quad (1)$$

By following Biddle et al. (2009), the residual from Eq. (2) is obtained to measure the investment efficiency. The absolute value of residuals is used to determine investment efficiency. The larger value of absolute residual shows more variation from the optimal level of investment (Cherkasova & Rasadi, 2017).

$$Investment_{it} = \beta_0 + \beta_1 Sale\ growth_{it} + \epsilon_{it} \quad (2)$$

Investment is the sum of R&D expenditure, capital expenditure, and acquisition expenditure, scaled by total assets. Cash holding (CH) is determined by taking cash and cash equivalent divided by total assets (Ozkan & Ozkan, 2004). Corporate Governance Index (CI) is constructed using Principal Component Analysis and board size, board meetings, board independence, duality, and management size as dimensions of corporate governance. By following Altman (1968), Z-score is determined to identify the financially distressed firms. A dummy variable that separates the financial distressed firms and value is taken as 1 if Altman's (1968) Z-score is below 1.81 and 0 otherwise.

$$Z = 1.2 \left(\frac{\text{Working Capital}}{\text{Total Assets}} \right) + 1.4 \left(\frac{\text{Retained Earnings}}{\text{Total Assets}} \right) + 3.3 \left(\frac{\text{EBIT}}{\text{Total Assets}} \right) + 0.6 \left(\frac{\text{MV Equity}}{\text{Total Assets}} \right) + 1.0 \left(\frac{\text{Sales}}{\text{Total Assets}} \right)$$

$\sum_{i=1}^j \lambda_i FC_{it}$ is representing the different firm-level control variables included leverage, firm size, and firm age.

4. Results and discussion

Table 1 and Table 2, the results for descriptive statistics and correlation analysis are specified for the Pakistani and Indian scenarios. The results for testing of hypothesis are demonstrated in Table 3.

Table 1
Descriptive Statistics and Correlation Analysis (Pakistan Scenario)

	Mean	S.D	ABINEFF	CH	CI	AGE	FS	LEV
ABINEFF	5.65	21.51	1					
CH	0.06	0.13	0.0002	1				
CI	0.01	1.44	-0.0343	-0.0475	1			
AGE	3.49	0.62	-0.0053	0.0334	0.0780	1		
FS	15.4	1.69	-0.2430	0.0340	0.3040	0.0064	1	
LEV	2.6	65.6	-0.0042	-0.0179	0.0732	0.0117	0.0624	1

Abineff=Absolute value of investment efficiency, Cash holding (CH), Corporate Index (CI), Firm age (Age), Firm size (FS), Leverage (LEV)

Descriptive Statistics (Table 1) containing average values and dispersion for all variables of study determines that the average value for investment efficiency is 5.65, which means firms averagely from Pakistan are inefficient in investment as residual values taken from equation No.2, which should be closer to zero for investment efficiency. However, investment efficiency from firm to firm and time to time may change as the standard deviation value is 21.51. Averagely firms have cash 6% of total assets with a variation of 13%. The corporate governance index constructed by using PCA has an average value of 0.01, but variation is 1.44 points in the index. Control variables also have average values with variation in each variable. The correlation analysis demonstrates that all variables, especially explanatory variables have a weak correlation, which expresses no serious issue of multi-co-linearity.

Table 2
Descriptive Statistics and Correlation Analysis (India Scenario)

	Mean	S.D	ABINEFF	CH	CI	AGE	FS	LEV
ABINEFF	0.11	0.21	1					
CH	0.08	0.12	-0.0314	1				
CI	0.0001	1.57	-0.0178	-0.0624	1			
AGE	3.57	0.60	-0.1893	-0.0027	0.1159	1		
FS	17.05	1.55	-0.0431	-0.0687	0.2843	0.1847	1	
LEV	0.60	2.64	0.0225	-0.0679	0.0228	-0.0434	0.0926	1

Abineff=Absolute value of investment efficiency, Cash holding (CH), Corporate Index (CI), Firm age (Age), Firm size (FS), Leverage (LEV)

In Table 2, descriptive Statistics in the Indian scenario are showing that the average investment efficiency of 0.11, which is near to zero as compared to the Pakistani scenario, so firms listed on the Stock Exchange of India are making more investment efficiently than their counterparts listed on PSX. Similarly, less cash holding is there with firms of India as compared to Pakistan. The average index of corporate governance is 0.001, with a variation of 1.57 points. In correlation analysis, the results indicate that no serious problem of multi-co-linearity is there between independent variables as they show weak correlation to each other.

5. Regression Analysis

In Table 3, testing of hypothesis is carried out by applying panel dynamic model (GMM) with fixed effect model to address endogeneity in both Pakistan and India scenario.

Table 3
Generalized Method of Moments (Fixed Effect Model)

Variables	Pakistan Scenario			India Scenario		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
C	9.497	5.152	0.000	0.102	1.980	0.048
CH	85.908	4.650	0.000	-0.061	-7.359	0.000
CI	0.361	2.886	0.004	0.005	5.581	0.000
CH*CI	16.631	4.424	0.000	-0.013	-2.786	0.005
FD	0.961	4.013	0.000	-0.003	-1.190	0.234
FD*CH*CI	-26.267	-4.975	0.000	0.011	0.249	0.803
AGE	1.336	3.409	0.001	0.002	0.394	0.694
FS	-0.925	-6.876	0.000	0.000	-0.008	0.993
LEV	0.000	-0.153	0.879	-0.001	-2.225	0.026
R-Square		0.2851			0.6590	
Adj. R-Square		0.2220			0.6295	

Cash holding (CH), Corporate Index (CI), Firm age (Age), Firm size (FS), Leverage (LEV)

The model's explanatory power as depicted by R-square is 28.51% and 65.9% in the scenario of Pakistan and India, respectively. In both cases, the corporate governance index positively impacts investment efficiency, which means that if the corporate governance index increases, then investment inefficiency also improves. It is due to the corporate governance index, which is based upon different dimensions board size, board meetings, board independence, duality, and management size. Some dimensions improve the investment efficiency, e.g., board independence and duality, but some increase investment inefficiency, so the net effect of all dimensions in the shape of governance index is not improving the investment efficiency. In the Pakistan scenario, cash holding (CH) has a positive and significant coefficient, i.e., 85.9, with a p-value less than 0.05. It indicates that holding more cash does not improve investment efficiency; it is due to the non-availability of investment opportunities according to available resources with firms in Pakistan scenario. In the case of India, cash holding (CH) has a negative and significant coefficient, i.e., -0.06, with a p-value less than 0.05. These results demonstrate that holding an excess of cash improves investment efficiency, which means companies have cash and invested in different projects due to the availability of investment opportunities.

In the Pakistan scenario, the corporate governance index strengthens the relationship between cash holding (CH) and investment efficiency (Abineff) as interaction term (CH*CI) is positive and significant with a co-efficient 16.631 and P-value<0.05 (p-value=0.000). The results indicate that corporate governance plays a moderating role in the relationship of cash holding with investment efficiency, but it does not improve investment efficiency. However, in the case of India, the corporate governance index improves the investment efficiency as co-efficient of the interaction term (CH*CI) is negative and significant. The results express that corporate governance weakens the relationship of cash holding and absolute residual measured for investment efficiency. Therefore, enhancing the corporate governance practices in India can help in improving the relationship of cash holding with investment efficiency.

In the Pakistani scenario, the results for financially distressed firms (FD), measured with a binary number (1 in case of financial distress and 0 otherwise), demonstrate that investment efficiency for financially distressed and non-financially distressed firms is significantly different. The firm in financial distress has less investment efficiency than non-financially distressed firms as the co-efficient of FD is 0.961 with a p-value less than 0.05. The corporate governance index improves the investment efficiency in the case of financially distressed companies as the interaction term (CH*CI*FD) has negative and significant co-efficient (-26.267 with p-value< 0.05).

On the other side, in the case of the Indian scenario, the investment efficiency for both financially distressed and financially stable firms are not significantly different as co-efficient financial distress (FD) is insignificant. Further, the corporate governance index is not playing a moderating role in the relationship of cash holding with investment efficiency for financially distressed firms. The results are consistent with the discussion that cash management decisions significantly improve the firm's ability to act timely and to avail investment opportunities (Xiong, Zheng, An, & Xu, 2020).

6. Conclusion

The research intends to pinpoint the moderating role of corporate governance in the relationship of cash holding with investment efficiency for financially distressed and stable firms listed on stock exchanges of Pakistan and India. By analyzing the data from 200 companies from Pakistan and 200 from India for 14 years (2006-2019), the study elucidated empirical evidence that in both economies, corporate governance is playing a moderating role in the relationship of cash holding with investment efficiency. Still, in India, it is improving investment efficiency and decreasing investment inefficiency in Pakistan. Moreover, in the Pakistan scenario, both the financially distressed and non-financially distressed firms have significantly different investment efficiency. Corporate governance is showing a moderating role by improving the investment efficiency for financially distressed firms. In the Indian scenario, both firms have similar investment efficiency, and no modification in the relationship between cash holding and investment efficiency is explained by corporate governance. The results indicate that the cash

management decisions enhance the firm's capabilities to avail investment opportunities, especially in the Indian scenario. The study is helpful in cash management decisions to minimize the agency issue and to avail investment opportunities. The study uses the corporate governance index as a moderator, and data from only two countries are gathered. In future studies, all dimensions of corporate governance are required to be studied separately. Moreover, other factors are required to study, contributing to investment efficiency e.g., managerial ability and ownership structure.

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