

Do Cash Holdings Impact the Financials of Companies? Evidence from India

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Abstract

Purpose : The purpose of the study was to examine the impact of cash holdings on financial performance metrics, such as return on assets and Tobin's Q. Further, the study analyzed the impact of external shocks like the global pandemic, in addition to various determinants of cash holdings.

Design/Methodology/Approach : The study examined the financials of 38 non-financial firms listed On the National Stock Exchange's broader market index, Nifty, for eight years from 2014 to 2021. Panel data regression methods like fixed effects, random effects, pooled OLS, and GMM were used in the analysis.

Findings : The study found that cash holdings significantly affected the financial performance of companies measured by ROA but not on Tobin's Q. Further, the global pandemic did not impact cash holdings. Also, financially unconstrained companies held more cash than financially constrained companies. Further, free cash flow, age, and capital expenditure determined cash holdings. However, dividend payment, working capital, and leverage did not show any significant impact. Results of the GMM validated the dynamic nature of cash holdings, and Indian companies took 3 years to adjust their cash holding position.

Practical Implications : The study would help managers understand how factors, particularly external shocks like the global pandemic, affected firms' cash holdings. It would also assist managers in determining the optimal cash-holding ratio of total assets to enhance a company's value.

Originality/Value : The study's findings provided new evidence of the relationship between cash holdings and financial performance. Further, the study examined the impact of the pandemic on the cash-holding positions of Indian companies. It estimated the time taken by Indian companies to adjust the cash holdings during the phases of the pandemic.

Keywords : cash holdings ; pandemic and cash holdings ; COVID and liquidity ; dynamic GMM

JEL Classification Code : G30, G32

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Profitability and liquidity are the two widely examined topics in corporate finance. Liquidity, especially “cash holdings,” is considered a vital topic of investigation since excess cash holdings would impact profitability (Chukwunweike, 2014). In recent years, companies across the globe have accumulated a substantial amount of cash reserves (Magerakis, 2022). For instance, the largest companies in the world have 9%

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of their book value as cash, companies in the European Monetary Union hold 15% of the book value as cash, and US companies hold nearly 18% of the book value as cash (Gao et al., 2013).

However, in a perfect capital market, holding cash or any form of liquid assets is irrelevant to valuation because companies can raise funds from the markets at a meager cost even without holding cash for financing purposes (Guizani, 2017). Further, holding a large amount of cash is an ineffective managerial policy that results in inefficient governance (Alshammari, 2020). Yet, three important theories in corporate finance justify the possible explanation for holding cash. For instance, the trade-off theory (TOT) claims that companies hold cash considering the marginal benefits associated with the same, i.e., lower transaction cost, reduced financial distress, and investing by better management of the financial constraints.

Likewise, the pecking order theory (POT) and the free cash flow theory (FCT) provide comparable explanations for companies holding cash. POT says that asymmetric information between managers and investors makes external financing costly, and hence, companies hold more cash to meet investment requirements. POT impacts financial performance (Cahyono & Chawla, 2021). Likewise, FCT argues that cash holdings reduce the performance pressure of managers and more discretion to invest in projects of their interest (Guizani, 2017). Even though the determinants of cash holdings and their relationship in impacting financial performance are extensively examined, there has been variation in the impact of factors due to changing economic and financial conditions of the companies and the countries in which they operate (Jaworski & Czerwinka, 2021).

Further, India is an emerging economy, and the firm-level characteristics and their relationship with cash holding of an emerging economy differ from developed markets (Magerakis, 2020). Emerging markets exhibit weaker institutional development and socioeconomic factors than their developed counterparts (Guizani, 2017). Researchers found that institutional factors and economic conditions determine companies' financial practices, such as cash holdings.

Al-Najjar (2013) found that socioeconomic factors and companies' reactions to them were weak in emerging markets compared to developed markets. Hence, companies were involved in unproductive practices like holding excess cash—further, slow institutional development in emerging markets motivated companies to hold more cash conservatively.

The scenario was found in companies' optimal cash level determination in the Gulf Cooperation Council (GCC) region (Alshammari, 2020). In recent years, India has witnessed structural changes that have impacted its economic and financial systems. For example, demonetization in 2016 impacted enterprises' liquidity positions. Similarly, the establishment of the Goods and Services Tax (GST) in 2017 influenced companies' finances, hurting their profitability and liquidity (Riyazahmed, 2022).

Furthermore, the COVID-19 pandemic had a significant global influence on corporate financial performance and liquidity. In general, economic shocks would result in a financial crisis, and a financial crisis would harm business cash holdings (Magerakis, 2020). As a result, reexamining the drivers of cash holdings and their impact on financial performance is critical for reinforcing theoretical linkages during a crisis.

The level of cash holdings by Indian companies has not been stable in recent years. Cash levels showed a decreasing trend from 2014 to 2017 and subsequently showed an increasing trend till 2021 (Figure 1). What factors caused a shift in the level of cash holdings? The study is particularly fascinating in light of the worldwide pandemic because the study's years cover a period when the entire world, including India, was dealing with lockdowns and an economic crisis. Hence, it becomes crucial to understand the factors causing the shift in the cash holdings and its relationship to financial performance in the context of Indian companies during the crisis period.

The following are the objectives of the study:

- (1)** To assess the relationship between cash holdings and company financial performance.
- (2)** To analyze the factors significantly determining the level of cash holdings in companies.

Literature Review

The review of literature comprises two aspects, i.e., financial performance and cash holdings. Firstly, we examined the determinants of financial performance and the importance of cash holdings in determining financial performance. Secondly, we investigated the factors that determine the level of cash holdings of a company specifically addressing the crisis.

Profitability is a primary aspect of financial performance estimated through metrics like return on investment (ROI) and return on assets (ROA) (Kumar et al., 2018). Research studies have traditionally used the ROA metric for estimating the financial performance of a company (Hagel et al., 2013; Heikal et al., 2014). Researchers have extensively analyzed the determinants of ROA in the context of various economies, sectors, and companies. Sattar (2019) examined the determinants of ROA and found a significant negative impact on capital structure and tangibility. However, a positive impact was found on the firm sizes, which meant that the larger the firm, the higher the profitability.

Capital structure or usage of debt (borrowings) was found to be a focal determinant of ROA by Vatavu (2015), Chawla et al. (2019), Hossain (2020), Wodimu (2020), and Ifeduni and Charles (2018). Likewise, the size of the companies was significantly found to influence the ROA positively (Chawla & Manrai, 2019; Ifeduni & Charles, 2018; Wodimu, 2020). However, Hossain (2020) found no significant impact of size on ROA. Further, working capital and liquidity negatively impacted the ROA (Chawla et al., 2019; Hossain, 2020).

Additionally, regarding the previously discussed determinants, the literature provided evidence that the level of cash significantly influenced the ROA (Alshammari, 2020; Habib et al., 2022). Irrespective of the level of cash holdings and the size of firms, the impact of cash holdings on financial performance was significant (Alshammari, 2020). Cash holdings refer to the cash and marketable securities that act as the lifeblood for companies by impacting the operating and strategic activities.

In recent years, companies have increased their cash holdings, resulting in merits and demerits for the financial position (Magerakis, 2020). Researchers have stated that corporate finance theories about capital structure, like trade-off theory, pecking order theory, and the free cash flow theory, explain the determinants of cash holdings. The traditional argument of perfect capital markets claimed the irrelevance of cash holdings.

However, evidence of unrealistic assumptions of efficient markets brought about the trade-off theory (TOT), the pecking order theory (POT), and the free cash flow theory (FCF). The TOT argues that the companies have an optimum debt level, leading to an optimum level of cash holdings. Nguyen et al. (2017) found an inverted U-shaped relationship between cash holdings and company value, which supports the TOT. In contrast, POT argues that companies prefer internal sources like accumulated profits to finance expansion activities. Loncan and Caldeira (2014) found a negative relationship between leverage and cash levels. Harris and Raviv (2017) argued that companies tend to hold cash when the cost of cash is low and investment opportunities are high. A financial crisis at the macroeconomic level also has a significant influence on cash holdings. Corporate investments typically fall in post-crisis periods, affecting cash holdings (Duchin, 2010).

Similarly, firm size, cash flow level, growth rate, dividend payments, and liquidity are important drivers (Orlova & Rao, 2018; Roy, 2022; Shah, 2011). By researching Saudi Arabian companies, Guizani (2017) discovered that in addition to size, cash flow, leverage, and capital expenditure, the volatility of cash flow and working capital levels also determined cash holdings. So, it became crucial to examine the determinants in the current Indian context.

Hence, based on the discussed literature, this study analyzed the following two hypothesizes:

↪ H_{01} : Cash holdings have no significant impact on the financial performance of companies.

↪ H_{02} : The crisis has no significant impact on the level of cash holdings.

Data and Methodology

The study examined companies featured in the NSE's broader market index, the Nifty 50. The index accounts for 65% of the stock exchange's free-float market capitalization, the largest in India. Excluding financial companies, the analysis includes 38 non-financial firms. Data from 2014 to 2021 (eight years) were collected for analysis. Two sets of analyses were performed in the study. Firstly, the study intended to examine the impact of cash holdings on the financial performance of the chosen companies using accounting-based measures, i.e., return on assets (ROA), and market-based measures, i.e., Tobin's Q . Likewise, the study intended to examine the determinants of cash holdings by examining the impact of the crisis period (i.e., mainly the effect of the COVID-19 pandemic).

The following models (eq. 1 to eq. 3) are used for analysis. Table 1 details the variables used in the models and the major literature that studied them.

$$ROA_{it} \sim \beta_0 + \beta_1 \cdot CH_{it} + \beta_2 \cdot SIZ_{it} + \beta_3 \cdot LV_{it} + \beta_4 \cdot WC_{it} + \beta_5 \cdot SG_{it} + \beta_6 \cdot TANG_{it} + \varepsilon_{it} \quad \dots \text{eq. (1)}$$

$$TQ_{it} \sim \beta_0 + \beta_1 \cdot CH_{it} + \beta_2 \cdot SIZ_{it} + \beta_3 \cdot LV_{it} + \beta_4 \cdot WC_{it} + \beta_5 \cdot SG_{it} + \beta_6 \cdot TANG_{it} + \varepsilon_{it} \quad \dots \text{eq. (2)}$$

$$CH_{it} \sim \beta_0 + \beta_1 \cdot CRP_t + \beta_2 \cdot KZ_t + \beta_3 \cdot FCF_{it} + \beta_4 \cdot AGE_{it} + \beta_5 \cdot CAPEX_{it} + \beta_6 \cdot LV_{it} + \beta_7 \cdot NWC_{it} + \beta_8 \cdot DP_t + \varepsilon_{it} \quad \dots \text{eq. (3)}$$

Financial constraint (KZ)—to estimate other variables used in eq. (3), financial constraint is calculated through the Kaplan Zingales (KZ) Index. Joshi (2021) found that firms with low financial constraints consumed more cash than companies with extreme financial constraints. The study groups the companies into financially constrained and unconstrained based on the KZ Index. In a year t , if the KZ Index is lower than the sample median, the company is classified as financially unconstrained and vice versa. KZ Index is estimated through the following equation (eq. 4):

$$KZ \text{ Index} = (-1.00909 * \text{Cash Flow}) + (0.283 * Q) + (3.139 * \text{Leverage}) - (39.368 * \text{Dividend}) - (1.315 * \text{Cash}) \quad \dots \text{eq. (4)}$$

Where cash flow is estimated as operating profit plus depreciation to total assets, and Tobin's Q is estimated through the market value of equity plus the book value of debt in proportion to total assets (Negi & Jain, 2022). Leverage is calculated through debt divided by total assets. The dividend ratio is calculated as the dividend amount in a particular year divided by total assets. The cash ratio is estimated as cash balance to total assets. Table 1 presents the details of the variables used in the models and the major research works that investigated them.

Table 1. Variable Definition

Variables	Measurement	Major Research Works
Determinants of Firm Performance		
Dependent Variables		
Return on Assets (ROA)	Net income/Total assets	
Tobin's Q (TQ)	(Market value of equity + Total debt)/Total assets	
Independent Variables		
Cash Holdings (CH)	Cash to total assets	Iftikhar (2017), Wibawa & Nareswari (2020), Yun et al. (2020), Amahalu & Beatrice (2017), Joshi (2021)
Size (SIZ)	Log of total assets	Meiryani et al. (2020), Atiningsih & Izzaty (2021), Isik et al. (2017), Omenyo & Muturi (2019), Sritharan (2015), Joshi (2021)

Leverage (<i>LEV</i>)	Total debt to total assets	Chohan (2014), Ilyukhin (2017), Maarten (2018), Gathara et al. (2019), Joseph (2018), Iqbal & Usman (2018), Kalantonis et al. (2021), Mohamed (2017), Paul (2017), Ibrahim & Isiaka (2021), Eldhose & Kumar (2019)
Working Capital (<i>WC</i>)	Net current assets to total assets	Al-Mawshaki (2022), Anton & Nucu (2021), Prasad et al. (2019), EL-Ansary & Al-Gazzar (2020), Rathirane & Sangeetha (2011), Hameer et al. (2021), Nguyen (2020)
Sales Growth (<i>SG</i>)	Percentage of change in sales between two financial years	Rachmawati & Sherlita (2021), Hamidzadeh & Zeinali (2015), Odalo et al. (2016)
Tangibility (<i>TAN</i>)	The ratio of tangible assets/total assets	Arilyn (2020), Gamlath & Rathirane (2014), Irungu et al. (2018)

Determinants of Cash Holdings

Dependent Variable

Cash Holdings (<i>CH</i>)	Cash to total assets
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Independent Variables

Crisis Period (<i>CRP</i>)	Crisis period (2019 to 2021) – 1 Non-crisis period (2014 to 2018) – 0	Batuman et al. (2022), Singh & Bansal (2022)
Financial Constraint (<i>KZ Index</i>)	Financially constrained – 1; Financially unconstrained – 0	Singh & Bansal (2022)
Free cash flow (<i>FCF</i>)	Operating profit to total assets	Batuman et al. (2022)
Age of Companies (<i>AGE</i>)	Natural logarithm of the current year minus incorporated year	Hossain (2020)
Capital expenditure (<i>CAPEX</i>)	Consolidated cash flow from investing activities to total assets	Guizani (2017), Habib et al. (2022), Kim (2014)
Leverage (<i>LEV</i>)	Total debt/Total assets	Cahyono & Chawla (2021)
Net working capital (<i>NWC</i>)	Net current assets to total assets	Habib et al. (2022)
Dividend payout (<i>DP</i>)	Dummy variable: dividend paid – 1, otherwise – 0	Roy (2022), Venkataramanaiah et al. (2018)

Source : Prepared by authors based on the gathered literature review.

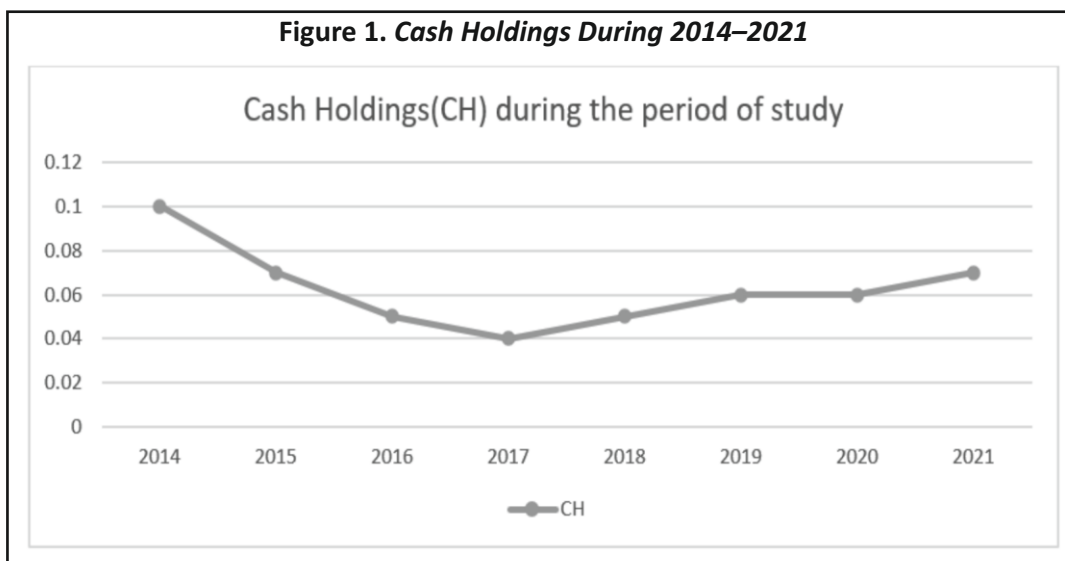
Analysis and Results

Table 2 provides descriptive statistics of key variables used in the study. To address the influence of extreme outliers, we randomized the key variables at the 5th and 95th percentile in line with existing literature. The average cash holdings of the Indian companies was 10.7% during the study period, with a median of 6.06%. A lower median value compared to the average cash holdings indicates very high cash levels in a small group of companies. The average CH of Indian companies is much higher than the cash holdings of companies in the GCC (Gulf Cooperation Council) at 8.8%, Italy at 7.6% but less than the US at 10.9%, and France at 12.3% (Alshammari, 2020).

The average SIZ of Indian companies is found to be 4.58 times during the study period. The average LV of the companies is 24.8%, indicating that one-fourth of the company funding is in the form of borrowings. The range (difference between Max. and Min.) shows more borrowings by some companies during the study period. The average LV is much less than the borrowings of companies in other countries (Alshammari, 2020). The average

Table 2. Descriptive Statistics

Variable	Mean	Median	SD.	Min.	Max.
Return on Assets (<i>ROA</i>)	0.138	0.113	0.103	0.00686	0.358
Tobin' <i>Q</i> (<i>TQ</i>)	4.51	2.55	4.84	0.656	17.8
Cash Holdings (<i>CH</i>)	0.107	0.0606	0.119	0.0102	0.502
Size (<i>SIZ</i>)	4.58	4.71	0.595	3.16	5.38
Leverage (<i>LV</i>)	0.248	0.189	0.225	0.00025	0.624
Working Capital (<i>WC</i>)	0.0643	0.0713	0.168	-0.326	0.369
Sales Growth (<i>SG</i>)	0.0840	0.0827	0.117	-0.151	0.326
Tangibility (<i>TAN</i>)					

Figure 1. Cash Holdings During 2014–2021**Table 3. Correlation Matrix**

	Cash Holdings	Size	Leverage	Sales Growth	Tangibility
Cash Holdings	1.00				
Size	-0.10	1.00			
Leverage	-0.32	0.54	1.00		
Sales growth	0.09	-0.08	-0.03	1.00	
Tangibility	-0.36	0.20	0.21	-0.04	1.00
VIF	1.55	4.84	1.63	1.99	1.52

Tobin's *Q* (market-based performance measure) was 4.51 during the study period, much higher than that of the UK. Investment in net current assets, on average, is 6.43% by the companies under study.

Similarly, the average SG and ROA are 8.4% and 13.8%, respectively, during the study period. The values are much higher when compared to the companies from GCC (SG 3%, ROA 4%). Figure 1 shows an increase in cash holdings during 2018–2021.

Table 3 shows the correlation matrix of the variables considered for the study. VIF (Variance Inflation Factor)

indicates whether the variables are serially correlated. If the VIF value is more than 10, it points to a multicollinearity problem (Magerakis, 2020; Sriram, 2020). The VIF of all the variables in the present study is less than 10, indicating an absence of a multicollinearity issue. Hence, all the variables are considered for further analysis in the study.

Impact of Cash Holdings on Financial Performance

Table 4 shows the effect of cash holdings (CH) on the performance of companies in India. Two variables, namely ROA (accounting-based measure) and Tobin's Q (market-based measure), have been used to measure the performance of the companies. The results indicate CH significantly influences companies' performance when an accounting-based measure (ROA) is used. However, cash holdings do not influence companies' performance when a market-based performance measure, Tobin's Q , is employed. Control variables, such as size, sales growth, and leverage, significantly influence the performance of companies during the study period. For instance, size negatively impacts company performance, indicating that small companies with low asset bases tend to provide more returns than large companies. According to Alshammari (2020), size was found to have a positive relationship with the returns of companies. In the present study, SG was positively influencing the performance of the companies and was statistically significant. LV was negatively associated with ROA, indicating that large debt in the capital structure affected profitability. However, when Tobin's Q was used as a proxy to measure companies' performance, LV was found to be statistically significant and positively influencing the dependent variable. The findings but for the variable 'size' were consistent with earlier studies, such as those of Alshammari (2020).

Table 4. Impact of Cash Holdings on the Financial Performance

	Return on Assets (ROA)			Tobin's Q		
	OLS	Fixed Effect	Random Effect	OLS	Fixed Effect	Random Effect
Const.	0.405	0.297	0.342	23.84	6.25	8.46
<i>p</i> -value	0.000	0.0015	0.000	0.000	0.05	0.02
Cash Holdings	0.178	0.152	0.161	7.85	2.29	2.72
<i>p</i> -value	0.042	0.08	0.080	0.141	0.6122	0.526
Size	-0.05	-0.038	-0.046	-4.6	-0.63	-1.31
<i>p</i> -value	0.094	0.026	0.004	0.000	0.072	0.049
Sales Growth	0.063	0.076	0.079	1.11	1.15	1.38
<i>p</i> -value	0.093	0.0005	0.000	0.043	0.08	0.033
Tangibility	-0.047	-0.003	-0.048	1.9	1.3	-0.824
<i>p</i> -value	0.54	0.96	0.400	0.54	0.61	0.67
Leverage	-0.188	-0.018	-0.050	-2.99	2.01	0.845
<i>p</i> -value	0.0001	0.419	0.015	0.05	0.04	0.382
Industry Dummy	yes	no	yes	yes	no	yes
Adj. R^2	0.55			0.57		
<i>F</i> -statistics		6.48	34.200		5.32	51.42
Wald χ^2			25.390			65.39
Hausman Test		34.86			18.1	

Determinants of Cash Holdings

Table 5 provides the factors determining the cash holdings of companies considered for the study. The ratio FCF to TA (free cash flow to total assets) significantly impacts companies' cash holdings. The coefficient value indicates that this ratio explains a 13.56% variation in the cash holdings. The result is similar to the studies carried out by Alshammari (2020) and Magerakis (2020). Financial constraint is another significant factor that determines the cash holdings of companies. Companies have been classified as financially constrained and financially unconstrained based on the KZ Index. The analysis finds that financially unconstrained companies hold more cash than companies with financial constraints. The result contradicts the findings of Alshammari (2020), where companies with financial constraints hold more cash than others. Age has also been found to influence the cash holdings of companies significantly.

The coefficient of "Age" is -0.4863 , which indicates an inverse relationship between age and cash holdings. This outcome shows that younger companies hold more cash than older companies. Moreover, a negative association exists between capital expenditure and company cash holdings. The variable is statistically significant at 10%. The coefficient value of -0.138 reveals that companies with higher capital expenditure hold less cash and cash equivalents.

Table 5. Impact of the Crisis on the Cash Holdings of Companies

	Model 1	Model 2	Model 3	Model 4	Model 5
Const.	0.9812	0.743	0.7865	0.7764	0.935
<i>p</i> -value	0.0001 [@]	0.0015 [@]	0.000 [@]	0.0001 [@]	0.02 [#]
FCF to TA (Free Cash Flow)	0.1874	0.177	0.1776	0.1386	0.1356
<i>p</i> -value	0.04 [#]	0.026 [#]	0.004 [@]	0.0001 [@]	0.049 [#]
KZ Class (Financial Constraint)	-0.0251	-0.0251	-0.0251	-0.0234	-0.0231
<i>p</i> -value	0.0421 [#]	0.08 [^]	0.08 [^]	0.08 [^]	0.08 [^]
Age		-0.394	-0.4028	-0.3868	-0.4863
<i>p</i> -value		0.0005 [@]	0.000 [@]	0.043 [#]	0.033 [#]
CAPEX (Capital Expenditure)			-0.138	-0.1455	-0.138
<i>p</i> -value			0.0425 [#]	0.07 [^]	0.07 [^]
LV (Leverage)				-0.0274	-0.0267
<i>p</i> -value				0.546	0.67
CRP (Crisis Period)				-0.0200	-0.0183
<i>p</i> -value				0.237	0.385
NWC to TA (Networking Capital)					-0.07983
<i>p</i> -value					
DP (Dividend Payment)			-0.019	-0.0200	-0.0183
<i>p</i> -value			0.5969	0.434	0.3787
Fixed Effect (Ind)	Yes	Yes	Yes	Yes	Yes
R^2 (<i>F</i> -statistic)	0.055(6.57)	0.095(6.88)	0.096(5.54)	0.105(3.78)	0.102(4.22)

Note. *All tests are carried out with HAC robust standard errors. Hausman test shows that the fixed effect model is preferred to the random effect model. @ Significant at 1%, # significant at 5%, ^ significant at 10%.

The result contradicts the findings of Alshammari (2020) and Magerakis (2020). The entire study period has been classified into crisis period and non-crisis period, and the coefficient of the crisis period (CRP) does not impact the companies' cash holdings.

This finding contradicts previous studies' findings that companies hold higher cash to recover quickly from the crisis. Similarly, the effect of other coefficients, such as NWC/TA (net working capital/total assets) and DP (dividend payment status), is insignificant on the companies' cash holdings during the study period.

Additional Analysis

➤ **Dynamic GMM Model.** Based on the findings of Oztekin and Flanner (2012) and Magerakis (2020), we estimated the following dynamic model (eq. 5) of cash holding determinants:

$$CH_{it} \sim B_0 + (1-B_0) \cdot CH_{t-1} + B_1 \cdot CONTROLS_{it} + Year\ fixed\ effects + Firm\ fixed\ effects + \varepsilon_{it} \quad \dots\dots eq. (5)$$

CH_{it} denotes the predicted value of cash to total assets of a firm “ i ” at a year “ t ,” and $CH_{i,t-1}$ represents the change of cash to total assets from the time $t-1$ to t . Predictors of the baseline model (CONTROLS) are included along with the year and firm effects. Results of the one-step system generalized methods of moments (GMM) show that the

Table 6. Two-Step GMM Model

Variable	Coefficients
CH_{t-1} (Cash holdings previous year)	0.672
p -value	0.000[@]
CRP (Crisis period)	0.051
p -value	0.255
KZ Class (Financial constraint)	-0.002
p -value	0.751
FCF (Free cash flow)	0.152
p -value	0.021[#]
Age	0.005
p -value	0.730
CAPEX	-0.50
p -value	0.354
LV (Leverage)	0.011
p -value	0.37
WC (Working capital)	0.008
p -value	0.72
DP (Dividend payment)	-0.04
p -value	0.07

Note. This table reports the results of the Two-step GMM estimation procedure of Blundell and Bond (1998). Refer to Table 1 for variable definition. Significance levels are presented: @ Significant at 1%, # significant at 5%, and ^ significant at 10%. Sargan test: Chi-square (15) = 111.988 [p -value = 0.00]. AR (1): $z = -2.1891$ [p -value 0.028]. AR (2): $z = 0.1602$ [p -value = 0.03].

lagged cash holdings have a positive and significant impact on cash holdings with a coefficient value of 0.672 (Table 6). Hence, we do not reject the dynamic nature of the cash holdings. The coefficient of adjustment Ch_{t-1} ($1-B_0$) captures the speed of adjustment toward a target cash holding ranging between 0 and 1.

The adjustment coefficient value, in this case, is 0.328 ($1 - 0.672$), which denotes that companies adjust their cash holdings to 32.8% yearly. Alternatively, it can be said that the Indian firms take 3.04 years ($1/0.328$) to adjust their cash holdings. Based on the rationale of Magerakis's (2020) research work, companies maintain cash holdings within a range (Figure 1) to a target level.

Likewise, companies tend to adjust the cash holding level from actual to target relatively slowly if the adjustment coefficient value is low ($1-b = 0.328$). This is due to the low cost of deviation from the actual to target cash holdings. Further, the sign of the effect of the control variables did not change from the baseline model even though they failed to exhibit significance, except for free cash flow (FCF).

Managerial Implications

The findings of the study contribute to managerial practice in the following ways. The study suggests that companies are conservative and prudent regarding cash holdings for precautionary purposes, as seen by the relationship between cash holdings and other variables. Additionally, cash holdings affect companies' financial results. So, Indian companies must be cautious in holding excess cash, impacting their financial performance. Further, the study's findings show that Indian companies adhere to the pecking order principle, with retained earnings serving as the primary source of finance for operations and all eventualities, such as global crises. Hence, during the economic crisis, Indian companies prefer internal funding. Overall, the study will assist managers in understanding how many circumstances, especially external shocks like the global pandemic, affect organizations' cash holdings. It will also help managers create an ideal cash-holding ratio of total assets to maximize a company's worth.

Conclusion

The paper has attempted to make an empirical contribution to the existing literature by analyzing two aspects: the impact of cash holdings on financial performance and determinants of cash holdings (including the impact of the global pandemic). The study finds that cash holdings positively impact companies' financial performance after controlling for size, leverage, type of industry, etc. However, the impact of cash holdings is not significant when a market-based measure, viz., Tobin's Q , is considered.

Free cash flows (FCF), financial constraint (KZ), age of companies (AGE), and capital expenditure (CAPEX) are the factors found to significantly determine the cash holdings of companies during the study period. The variables such as dividend payment (DP), net working capital (NWC), leverage (LV), and crisis period (CRP) have no significant impact on the cash holdings of the companies. The study has some interesting results and observations. For instance, the global pandemic, considered part of the crisis period, does not impact the companies' cash holdings. The results only indicate that companies were insulated from the impact of the global pandemic due to increased cash holdings. Also, financially unconstrained companies held more cash than financially constrained companies. It shows that financially unconstrained companies tend to have better flexibility in liquidity management. There is an inverse relationship between the age of companies and cash holdings, indicating that old and mature companies tend to hold less cash due to limited opportunities for growth and expansion.

The existing literature supports the finding, which states that Indian companies adhere perfectly to the pecking order theory due to more long-term borrowings and act conservatively during a crisis. Further, cash holding

significantly depends on the level of cash held during the previous year. The Indian companies maintain a target level of cash holding; on an average, it takes three years to change the level of holdings. The scenario reflects that Indian companies change cash holding slower than companies in the Kingdom of Saudi Arabia (Guizani, 2017), like companies in Greece (Magerakis, 2020).

Limitations of the Study and Scope for Further Research

The current analysis focuses on companies listed among the top 50 in India by market value. Broader indices, such as the S&P CNX 500 and sector-specific companies, could be explored for research in this field. The outcomes of this study are based on samples from Indian companies. Because company operations and management styles differ greatly between countries, the findings of this study should be extended to organizations in other economies after considering the similarities between these companies and the sample companies.

Authors' Contribution

Dr. K. Riyazahmed conceptualized the idea and created quantitative designs for the empirical study. Dr. M. Sriram retrieved research papers of high repute, sorted them using keywords, and developed concepts and codes pertinent to the study design. Dr. M. Sriram carried out the descriptive analysis while Dr. K. Riyazahmed performed the other numerical computations using the R software program. Both authors collaborated in writing the manuscript.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

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