

# Determinants of Corporate Cash Holdings: Evidence from India

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## ABSTRACT

*Cash and cash equivalents are considered to be the lifelines of corporate financial management. Usually, three theories viz., tradeoff theory, pecking order theory and free cash flow theory explain the patterns of cash holdings. This paper investigates the determinants of corporate cash holding patterns in India. Data was collected from a sample of BSE-100 firms for a two year period 2013-2015. Regression analysis was used and the final results indicated that cash holding patterns in India were affected significantly by the working capital needs of the firms and profitability of the firm. Further, leverage, firm size, and dividend payments were found to be insignificant in determining the level of cash holding patterns in India.*

**Keywords:** Liquidity, Cash Holdings, Agency Cost, NPV.

## INTRODUCTION

Every organization holds a considerable amount of cash reserves in order to facilitate smooth functioning of its operations. Cash and cash equivalents are regarded as one of the important aspects of the financial management of a firm. The Managers hold a substantial portion of their assets in the form of cash and liquid securities for reinvestment in physical assets, distribution to investors and to keep cash inside the firm (Almeida et al, 2002). The cash holding patterns of the firms can be explained with the help of three theoretical models, viz., the trade-off theory, the pecking order theory and the free cash flow theory.

The trade-off theory states that the firms set their optimal level of cash holdings by weighing the marginal costs and marginal benefits of holding cash. There are several benefits related to holding cash (Ferreira and Vilela, 2004). First, cash holdings reduce the likelihood of the firm being financially

distressed as it acts as a safety reserve to face unexpected losses or external fundraising constraints. Secondly, it allows the firms to follow optimal investment policy, even when financial constraints are met. Otherwise, the firm would have to raise funds externally which would restrict them to invest in projects with positive NPV. Lastly, it acts as a buffer between the firm sources and uses of funds as it minimizes the cost of raising external funds. The marginal cost of holding cash is the opportunity cost of the capital that could be invested in other sources. According to the pecking order theory of Myers (1984), the firms finance their investments first with their retained earnings, then with safe and risky debt and finally with external equity. The purpose of this order of financing is to minimize asymmetric information costs and other financing costs. This theory states that cash reserves are held as a buffer between retained earnings and investment needs. When current operational cash flows are enough to finance new investments, firms repay debt and accumulate cash. When retained

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earnings are not enough to finance current investments, firms use the accumulated cash holdings and, if needed, issue debt.

Free cash flow theory by Jensen (1986) suggests that managers have an incentive to hoard cash to increase the amount of assets under their control and to gain

discretionary power over the firm investment decision. As a result, they don't feel the need to raise external debt and provide detailed information about their investment plans to the capital markets. This provides them with an opportunity to invest in even those projects which do not maximize shareholder wealth.

**TABLE 1: SUMMARY OF MODEL PREDICTIONS**

Variables	The trade-off theory	The pecking order theory	The free cash flow theory
Dividend payments	Negative		
Investment opportunity set	Positive	Positive	Negative
Liquid assets substitutes	Negative		
Leverage	Unknown	Negative	Negative
Real size	Negative	Positive	Positive
Cash flow	Negative	Positive	
Cash flow uncertainty	Positive		

The rest of the paper has been organized as follows. Section 2 explains the existing literature on the topic. It is followed by section 3 which states the research methodology in detail. Findings of the study and conclusion have been explained in section 4. Finally, section 5 states the limitation of the study and scope for future research.

## REVIEW OF LITERATURE

A number of studies have been conducted to study the factors affecting the level of cash holdings of firms in different countries. Some researchers have also done a comparison of these factors in developed and developing countries. One of the pioneer works in this field was done by Opler et. al.(1999). He examined the determinants and implications of holdings of cash and marketable securities by publicly traded U.S. firms in the 1971-1994 period. Using panel regression model, the study provided evidence supportive of a static trade-off model of cash holdings. In particular, firms with strong growth opportunities and riskier cash flows held relatively high ratios of cash to total non-cash assets. Firms that had the greatest access to the capital markets, such as large firms and those with high credit ratings, tend to hold lower ratios of cash to total non-cash assets.

Dittmaret. al. (2003) examined the role of international corporate governance in the determination of corporate cash holdings by sampling 11,591 companies from 45 countries. Using multiple regression, the study concluded that firms in countries with the lowest level of shareholder protection held almost 25 percent more cash than firms in countries with the highest level of shareholder protection. In particular, firms held more cash when they had higher market-to-book ratios and higher R &D expenditures, which provided a support for the tradeoff theory.

Ferreira and Vilela (2004) investigated the determinants of corporate cash holdings in EMU countries, viz., Germany, France, Netherlands, Italy, Spain, Finland, Belgium, Austria, Ireland, Luxemburg, Greece and Portugal for the period 1987-2000 using pooled time-series cross-sectional regression. The results stated that cash holdings were positively affected by the investment opportunity set and cash flows and negatively affected by asset's liquidity, leverage and size. Firms in countries with superior investor protection and concentrated ownership held less cash, supporting the role of managerial discretion agency costs in explaining cash levels.

Saddour (2006) investigated the determinants of the cash holdings of French firms over the period 1998-

2002, using the trade-off theory and the pecking order theory. The companies were divided into growth companies and mature companies on the basis of their growth opportunities taking Tobin's  $q$  as a proxy for growth. For growth companies, there was found a negative relation between cash and the following firm's characteristics: size, level of liquid assets and short-term debt. The cash level of mature companies was positively related with their size, their investment level, and the payout to their shareholders in the form of dividends or stock repurchases, and negatively related with their trade credit and their expenses on R&D.

Gill and Shah (2012) sampled 166 listed Canadian manufacturing firms to determine the factors affecting corporate cash holdings in Canada. Using OLS regression and ANOVA, the findings of the study stated that market-to-book ratio, cash flow, net working capital, leverage, firm size, CEO duality and board size significantly affected the cash holdings in Canada. The results also supported that agency problems were important determinants of cash holdings as CEO duality and larger board size positively affected the level of cash holdings in Canada.

TABLE 2: SUMMARY OF LITERATURE REVIEW

S. NO.	AUTHOR (YEAR)	COUNTRY	VARIABLES	TOOLS OF ANALYSIS	FINDINGS
1.	Howorth and Westhead (2003)	U.K.	Stock turnover, stock levels, stock reorder levels, customer credit period, customer discount policy,	PCA, cluster analysis and multinomial logistic regression.	Firms which focus on cash management were larger, younger, with fewer and seasonal cash sales, more external financing and more cash flow problems.
2.	Afza and Adnan (2007)	Pakistan	Growth and investment opportunities, size of the firm, cash flow, liquidity management, leverage, cash flow uncertainty, dividend payments.	Pooled time-series regression.	Firms on an average, held 13.1 percent cash for investment and financing purposes. Size, cash flow and cash flow uncertainty were positively associated with cash levels. Investment opportunities, liquid assets, leverage and dividend payments were negatively associated.
3.	Isshaq and Bokpin (2009)	Ghana	Liquidity ratio, liquidity, size, NWC, near liquidity, total debt, short-term debt, investments, ROA, earning uncertainty, avg. interest rate.	Pooled Panel Cross-Section Regression.	Leverage was found to be insignificant. Liquidity was positively influenced by a target liquidity level. Firm size, ROA and NWC.
4.	Najjar (2013)	BRIC nations, U.K. and U.S.A.	Cash ratio, Leverage, dividend, profitability, liquidity, firm size.	Cross-sectional time-series regression.	Leverage, dividend and firm size affect cash holdings positively. Industrial and institutional settings were the main reasons behind the differences in cash holding decisions. Factors affecting cash holdings were majorly the same in developing and developed countries.
5.	Kusnadi, W. and John Wei, K.C. (2011)	39 countries	Dependent variable: cash holdings Independent variables: short-term debt, total debt, cash flow, capital expenditures, total assets, book value of equity, and market capitalization.	Weighted least square regression model	Cash holdings had a positive but insignificant correlation with both CF and SIZE and negative but insignificant with market capitalization and CAPX.

In India, most of the studies on working capital management examine the relationship between working capital management efficiency and firm profitability or performance. Therefore, this study contributes to the literature on the determinants of corporate cash holdings in at least two ways. First, it focuses on Indian firms where only limited research has been conducted on such firms. Second, this study validates some of the findings of previous authors by testing the relationship between cash holdings and firm size, leverage, net working capital and dividends of the sample firms. Thus, this study adds substance to the existing theory developed by previous authors. The objective of this paper is to identify the determinants of cash holding patterns in Indian firms.

## RESEARCH METHODOLOGY

For the purpose of data collection, BSE-100 companies have been selected. Out of them, financial firms and public sector undertakings were deleted. The final sample consisted of 65 companies with a total of 780 observations. The data had been collected for a period of two years, i.e., 2013-2015. All the information was taken from CMIE propress database.

To remain consistent with the previous studies, most of the variables taken under the study have been

derived from Afza and Adnan (2007) and Gill and Shah (2012). The names of the variables and their measurements have been stated below.

1. **CASH RATIO:** Cash and cash equivalents / (Book value of assets - Cash and equivalents)
2. **FIRM SIZE:** Natural log of total assets of firm
3. **LEVERAGE:** Total debt / (Total assets - Cash and equivalents)
4. **NET WORKING CAPITAL:** Total current assets - Total current liabilities
5. **DIVIDEND:** Dividend Payout Ratio
6. **PROFITABILITY:** Return on Assets Ratio

In order to analyze the data, multiple regression model was applied. The resulting equation of dependent and independent variables which was formed is stated below.

$$CH = \alpha + \beta (FS) + \beta (LEV) + \beta (NWC) + \beta (DIV) + \beta (P) \dots \dots \dots (1)$$

Where dependent variable = cash holdings (CH)

Independent variables = Firm size (FS), Leverage (LEV), Net working capital (NWC), Dividend (DIV) and Profitability (P).

## Descriptive Statistics

Table 3 shows the descriptive statistics of the variables which include the mean and standard deviation of the variables. The explanation on descriptive statistics is as follows:

**TABLE 3: DESCRIPTIVE STATISTICS (N=65)**

VARIABLES	MEAN	STANDARD DEVIATION
Cash ratio (percentage)	0.594	0.862
Net working capital (rs.)	4010.7	71.59
Firm size	12.25	1.027
ROA (percentage)	.17	0.99
Dividend payout ratio	.17	0.138
Leverage (percentage)	.28	0.564

The above table shows that the data for all the variables of the firms does not deviate much from their mean values except for net working capital. The standard deviation of net working capital is high maybe because of the difference in the cash conversion cycles of the firms.

Further, correlation analysis was performed in order to study the type and level of correlation among the variables. Table 4 shows the results of the Pearson's correlation analysis performed between the variables selected for regression tests.

**TABLE 4: CORRELATIONS (r values)**

VARIABLES	NWC	SIZE	ROA	DPR	LEV
CASH RATIO	0.602	0.03	0.49	0.25	-0.004

The above table shows that the cash holdings in India are positively correlated with net working capital, firm size, profitability and dividend payout ratio but the degree of this correlation varies. Cash holdings have a moderate correlation with net working capital and return on assets ratio and low correlation with firm size and dividend payout ratio. However, the cash holdings in India are found to be

negatively correlated with the degree of leverage in the capital structure of the firm.

### Model Summary

This part provides the explanations for the justification of the model being used to analyze the data. The table below reports the value for r square, adjusted r square and the Durbin Watson test value.

**TABLE 5 - MODEL SUMMARY**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.706 <sup>a</sup>	.498	.481	.0621016	.136	15.743	1	58	.000	2.107

**TABLE 6 - ANOVA VALUES**

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	.222	2	.111	28.816	.000 <sup>c</sup>
Residual	.224	58	.004		
Total	.446	60			

\* NOTE: In the above tables, Dependent variable is cash ratio; predictor variables are NWC and ROA.

Table 5 shows that the adjusted r square value came out to be 0.498. This value indicates that 49 percent of the variation in the dependent variable (cash ratio) is caused by the independent variables taken in the equation. Further, the model summary table showed significance value as 0.00 which is less than 0.05. This indicates that the model used in the study is appropriate. This result is further supported by Durbin-Watson test value, i.e., 2.10. Table 6 indicates the f-value was coming out to be 0.000 which is less than 0.05 and significant. This indicates that the

model is appropriate and the findings of the sample can be generalized to the entire population.

### Regression Analysis

The coefficient table below provides the estimates of regression coefficients. In order to remain persistent with the previous studies, step wise regression model was applied to analyze the equation. The results have been summarized in table 7 below.



**TABLE 7 - REGRESSION COEFFICIENTS OF THE VARIABLES**

Variables	Regression coefficient	Significance value at 0.05 significance level
NWC	0.524	0.000
ROA	0.329	0.000
SIZE	0.171	0.077
DPR	-0.032	0.803
LEV	0.031	0.742

The values of the regression coefficients were coming out to be significant for two independent variables only. These were

- a) Net working capital: regression coefficient = 6.339,  $p \leq 0.05$ .
- b) ROA: regression coefficient = 0.329,  $p \leq 0.05$ .

The results indicate that cash holdings in India are influenced by the level of net working capital maintained in the firm and the profitability of the firm. Firm size, dividend payout ratio and leverage do not affect the level of cash holdings in India.

Further, the test of multi-colinearity was performed to check the interaction between the independent variables as this might strongly affect the dependent variables. The VIF values of all the variables were between 1 and 2 which is less than 10. Therefore, it is proved that there is not much interaction between the independent variables. If at all some interaction exists, it can be controlled.

This study was conducted to investigate the determinants of corporate cash holdings in India. The relationship of cash holdings was studied with firm's net working capital, profitability, size, dividends paid by the firm and the degree of leverage in the capital structure using multiple regression analysis. The findings of the study are partially in agreement with the existing literature. Prior studies state that in emerging countries, there is a positive significant relationship of cash holdings with net working capital and firm size; negative significant relation of cash holdings with leverage, dividends paid and profitability (Saddour, 2006; Gill and Shah, 2012). However, in India, it was found that the cash holdings were positively and significantly affected by the working capital needs and

profitability of the firms. Leverage, firm size and dividends paid were found to be insignificant.

### INTERPRETATION OF THE RESULTS

These results indicate that firms which have more working capital requirements hold more cash as compared to other firms. This may be because their short-term obligations would be higher as compared to other firms or the demand for their products is not stable due to which they have large amounts blocked in their cash conversion cycles.

Further, it was found that cash holdings are positively affected by the firm's profitability. This indicates that highly profitable firms hold more cash as compared to other firms. Therefore, we can conclude that either these firms are not reinvesting or this is due to increased agency problems in these companies, i.e., the managers of profitable firms prefer to hold more cash to increase their controlling stake in the firms.

### LIMITATIONS AND SCOPE FOR FUTURE RESEARCH

Apart from the results indicated by the study, it suffers from some limitations. The data has been collected from a sample of 65 firms, which is very small in number. Further, the research was conducted over the data for only two years, i.e., 2013-2015. The results would have come out to be more significant if the sample size would have been larger and the time period would have been extended to at least five years. Moreover, the study did not take into consideration the financial firms and the public sector undertakings. Therefore, the findings can be generalized only to Indian non-financial firms.

Future research can be conducted by including financial firms and public sector undertakings in the sample. Further, an inter-sector comparative study can be done to determine if there are any variations in the cash holding patterns of the firms in different sectors or not. The recent global financial crisis has questioned the short-term solvency position of various companies throughout the world. Therefore, a comparative study can be conducted examining the pre-financial crisis cash holding pattern and the post-financial crisis cash holding patterns of the companies. Important control variables such as industry sectors from different countries, audit committee, board composition, etc., should also be used.

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