

EFFECT OF FIRM-SPECIFIC AND MACROECONOMIC CONDITIONS ON CORPORATE CASH HOLDINGS: EVIDENCE FROM FMCG COMPANIES IN INDIA

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ABSTRACT

This paper attempts to find out the effects of firm-specific and macroeconomic variables on corporate cash holdings. Panel data regression analysis was applied on the selected FMCG companies in India for the years 2001-02 to 2016-17. The analysis showed that FMCG firms in India prefer keeping huge amounts of cash reserves and one of the preferred sources of cash holdings is cash flow. However, large scale and highly levered firms do not have large cash holdings. On the other hand, among the macroeconomic variables economic growth and bank lending rate play a significant role while amaking cash holding decisions. The paper has tried to fill the gap in previous literature that often ignore the role of macroeconomic elements in cash holding decisions.

Keywords: cash holding, macroeconomics, panel data, FMCG companies, India.

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INTRODUCTION

The management of a company needs to make many important decisions to run a healthy and successful business empire. These include investment decisions, financing decisions and dividend decisions. The literature is filled with studies that are focused on such aspects. Yet another important decision/question that has remained unanswered is how much cash a company should hold? Various studies have made an effort to answer this question. The studies state that there are different motives for managers to hold cash. Kim, Mauer and Sherman (1998) stressed upon transactional cost motive while deciding cash holding. They mentioned that external financing cost plays a catalyst role in deciding on the amount of liquidity. Baum et. al (2006) explain that firms maintain less cash reserves when external funding is easily and cheaply available. Opler, Pinkowitz, Stulz and Williamson (1999) supported the trade-off theory and stated that a firm, with the objective of wealth maximization holds cash to a level where the marginal benefit of holding cash is more than the marginal cost of holding. On the other hand, some management run with a precautionary motive of holding more cash while ignoring the interest of shareholders. They believe that this will secure the business against any financial setbacks. Cash holding plays an important role in the economic growth of emerging countries (Abushammala & Sulaiman, 2014). Holding excess cash implies a lower rate of return, but non-availability of cash at the time of making payments may lead to bankruptcy, loss of creditors' trust, increasing bad debts and severe financial problems. Moreover, the decision regarding cash holding is important as holding cash provides the benefit of reduction in transaction costs and facilitates financing of any profitable projects without liquidating any assets. Therefore, cash holding decisions are required to be taken by managers in order to maintain optimal cash in business. The management of cash must be the main concern for both large-scale and small scale businesses.

The concept of cash holding has also gained the attention of many academicians and practitioners. They propose different theories like the pecking order theory, trade off theory, market timing theory and many others in order to determine the optimal cash position for a company. It was however seen that the studies mainly focused on developed countries like the U.S. or multi-country data. These studies have indicated that the companies

in developed nations are holding large cash reserves. For example, Kim et al (1998) claimed that industrial firms in the U.S. hold 8 per cent cash and marketable securities in proportion to the total assets. Okzan and Okzan (2004) revealed that UK firms maintain a mean cash ratio of 10 per cent. Further, the mean cash ratio in Swiss firms was found to be 15 per cent (Drobotz & Gruninger, 2006).

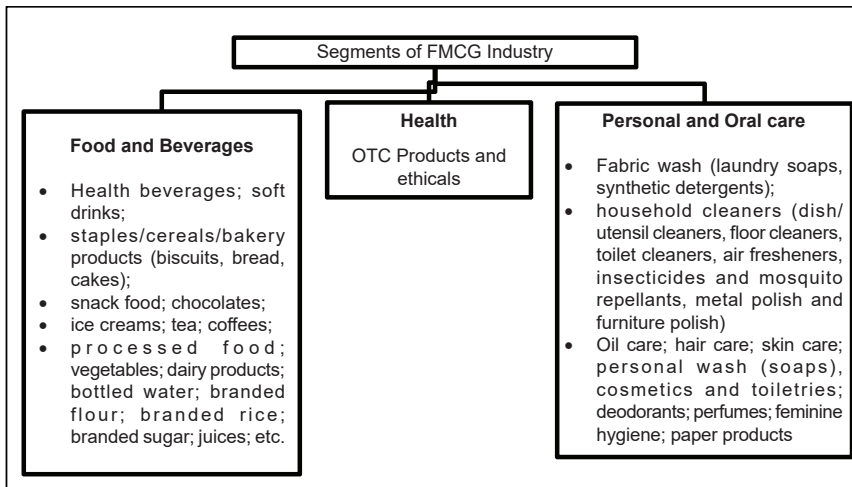
Nevertheless, it is worth noting that the results of such studies could not be applied on emerging countries like India due to the presence of unobservable differences between developed and emerging countries. Further, these studies concentrated more on firm-specific variables affecting corporate liquidity. The macroeconomic aspects like economic growth, inflation, changing interest rates, exchange rates and others were largely ignored. Studies like Chen and Mahajan (2010) and also Abushammala and Sulaiman (2014) however, mentioned that there are many macroeconomic variables that were important to study while determining the optimum amount to cash in business. They also stated that the real importance of the subject of cash holding was realized after the global financial crises 2008-09. During the economic meltdown when countries suffered from non-availability of cash, the firms felt the need to make necessary adjustments in their business. They realized that cash reserves are required to be increased to cope with such financial crises. The concept of cash management which was ignored by managers was now performed on a priority basis. The managers need to identify and understand the effects of macro-economic variables along with firm-specific variables on cash in order to make the right decision and hedge against economic risks.

Against this backdrop, the objective of this study was to determine the cash holding position of FMCG companies in India. The present study examined the effect of various macroeconomic variables parallel with firm-specific variables on the cash holding of FMCG companies in India for the period, 2001-02 to 2016-17.

FMCG Industry in India: Indian FMCG industry is the fourth largest industry in the economy with a total market size in FY2016 of USD49 billion. The industry can be categorized as a market with a wide range of repeatedly purchased consumer products broadly divided as food & beverages, healthcare and household and personal care. Products under these

segments have a shift turnover and are of a relatively low cost. According to the India Brand Equity Foundation Report, November 2017, the food and beverages sector accounted for 19 per cent of the FMCG industry, the healthcare sector accounted for 31 per cent and the oral and personal care sector accounted for 50 per cent.

The Segments of FMCG Industry:



Source: India Brand Equity Foundation

The history of the FMCG industry in India is very long. The industry was once recognized as unorganized, unstructured and unregulated. Many organized packaged consumer goods companies entered in the FMCG sector by the time like ITC Ltd. (1910), Dabur India Ltd. (1936), Tata Coffee Ltd. (1943), Ruchi Soya Industries Ltd. (1960), Emami Ltd. (1974) and Radico Khaitan Ltd. (1983) to name a few. With the arrival of globalization in India, the industry witnessed a proliferation of multinational and domestic brands and currently, shares 0.68 per cent of the international FMCG market. However, it is projected to grow at a CAGR of 20.6 per cent and reach USD103.7 billion by FY2020. Against this backdrop, it can be viewed that the FMCG industry is an important contributor to the economic growth of India and has become an attractive market for foreign FMCG players. The present study therefore, examined the financing pattern of FMCG companies in India.

RELATED LITERATURE

Various studies were focused on determining the relation of liquidity with profitability, leverage and firm performance. Garanina and Petrova (2015) aimed to study the impact of liquidity and the cash conversion cycle on the financial performance of Russian companies from 2001 to 2012. For the analysis, the current ratio and return on net operating assets (RNOA) were taken as proxies for liquidity and financial performance respectively. The results depicted that the cash conversion cycle had a negative relation with RNOA which meant that the cash conversion cycle should be reduced to zero to improve financial performance. On the other hand, liquidity had a positive relation with the RNOA. Bansal and Bansal (2012) tested 100 firms in the textile and chemical sector undertakings for the period 1999-2008 and provided evidence for an increase in the firm's liquidity requirement with the increase in the free cash flow variability, return spread and cash flow, whereas an increase in debt ratio, average cash cycle and cash flow uncertainty had an inverse impact on liquidity requirements. The results also showed that the size of a firm had no impact on corporate liquidity. Bruinshoofd and Kool (2002) stated that the Dutch firms considered liquidity as an active financial decision by a firm. It was revealed that Dutch non-financial firms during 1986-1997 gave priority to long run liquidity targets and short-run liquidity behavior and was dependent on buffer stocks.

Many studies have shown the impact of firm-specific and macroeconomic variables on the corporate cash holdings. Kim et al. (1998) examined the financial data of 915 US firms from 1975 to 1994 to identify the determinants of corporate liquidity. It was found that the market to book ratio (proxy for growth opportunities) had a significant positive relation with liquidity. The study concluded that at times of good economic conditions, the growth prospects are high for companies. The companies therefore, increase their cash holding in anticipation of future prospects. John (1993) defined financial distress as a situation when a firm is unable to meet its current liquidity requirements of its hard contracts i.e., the company is unable to pay off its current obligations. Based on the test on 223 companies in 1980, he summarized that when the cost of financial distress (measured by R&D and advertisement expenditure and Tobin's q, bankruptcy) is high, a company maintains a large cash holding in business. Further it was found that a company's cash holdings is less when it has alternatives for cash like

cash flow availability, debt financing, length of cash cycle and collateral value of assets. A study from UK by Okzan and Okzan (2002) presented evidence of the significant impact of managerial ownership on cash holdings. It was found that firms with controllers are expected to have high levels of cash holdings. Dittmar, Mahrt-Smith and Servaes (2002) confirmed from a study on 11000 companies from 45 countries that agency problems had been the major determinants of cash holdings. The paper indicated that managers of companies holding large amounts of cash in countries having difficulty in accessing capital markets with low shareholder protection. Gill and Shah (2012) showed that the growth opportunities, net working capital and firm size had a significant negative impact on cash holdings of Canadian firms during 2008-2010 supporting the trade-off theory of cash holdings. On the other hand, cash flow, leverage, board size and CEO duality had a positive impact on cash holdings. Analysis of Bates et al. (2008) supported the precautionary motive of the management of U.S. industrial firms. They found the influence of riskier cash flow, fewer inventories and receivables along with high spending on R&D on cash holding.

Although the studies focusing upon the effects of macroeconomic variables on cash holding are few, some researchers realized their importance and included them in their studies. Ferreira and Vilela (2004) provided evidence that the EMU countries maintained 14-20 per cent of cash ratio and one of the reasons was the indirect financing costs and external financial constraints. The analysis also showed that countries with more investment protection hold more cash. Further, the level of capital market development was also found to have a negative relation with cash holding. Chen and Mahajan (2010) introduced many macroeconomic variables in their study like GDP growth, inflation, short-term interest rate, budget deficit, corporate tax and credit spread and revealed that these variables have a significant effect on cash holding decisions. They stated that these variables have an indirect relationship with cash holding via firm specific variables like market-to-book ratio, cash flow and leverage. Bhaduri and Kanti (2011) examined 240 non-financial listed firms in India and revealed that among all Indian companies, the middle group companies in terms of size and middle-aged companies had a significant influence on macroeconomic uncertainty. They showed that private companies and business group affiliated companies tend to hold more cash when the economy is volatile. Abushamalla and Sulaiman (2014) examined the impact of macroeconomic

variables on cash holdings of companies in Jordan from 2000 to 2011. It was found that GDP growth had a positive relationship with cash holding whereas inflation had a negative impact. Further, the companies kept more cash when they anticipate credit risks due to an illiquid market.

Overall, the literature suggests that cash holding decisions should be considered as an important tool for running a successful business. Firm managers should actively participate in determining the right amount of cash to be kept in the business to avoid a situation of a lower rate of return as well as to avoid the situation of non-availability of cash at the time of making payments. To reach at an optimum cash position for business they should understand the impact of both firm-specific and macroeconomic variables on cash holding. A review of past literature has also shown that macroeconomic factors to a great extent affect corporate business, but are often ignored in the decision making process. For better decision making, the managers of companies must be aware of the changes and uncertainty in the economy. This can guide them better in adjusting the liquid assets as per their requirements. The focus of this paper is to identify such economic factors necessary to be considered along with firm-specific factors while deciding on the level of cash to be maintained in the business in the Indian context.

STATEMENT OF THE PROBLEM

The paper aims to examine the cash holdings position of selected FMCG companies in India and the effect of firm-specific and macro-economic factors on cash holding decisions of these companies.

RATIONALE FOR VARIABLE SELECTION

For the selection of variables for the study, the available literature (the research papers, working papers and dissertations) across national and international boundaries were scrutinized. This helped in identifying the variables that provided the best estimations. In order to measure the cash holding position of companies, the variables scrutinized include cash and cash equivalent to total asset and cash, cash and cash equivalent to net assets and cash to current assets as the proxies for liquidity.

Further, to examine the effects of firm-specific and macro-economic variables on cash holding of companies, the dependent variables (cash holding) selected were cash and cash equivalent to total assets and cash and cash equivalent to net assets as the proxies. The independent variables included economic growth, inflation rate, index for industrial production, bank lending rate and short-term interest rate as macro-economic variables and growth opportunities, cash flow, leverage and firm size as firm-specific variables, as provided in Table 1.

Cash Holding: Cash holding signifies the amount of cash a company is holding for its business. It is explained as a short term fund availability of the firm to pay out the day to day obligations and includes the cash balance, bank balance and near cash assets (marketable securities) which could be easily converted into cash when required. Chen and Mahajan (2010) also recognized cash holding as the key variable of corporate liquidity. In this paper, cash holding was measured by the availability of cash to total assets commonly referred to as cash ratio, secondly, as cash and cash equivalents to net assets (total assets minus cash and cash equivalents) and lastly, as cash to current assets

For the purpose of determination of firm-specific and macroeconomic effects on cash holding of the FMCG companies in India, the study considered two dependent variables. Dependent variable I is cash and cash equivalents to total assets (CNC_TA) in Model 1 and dependent variable II, cash and cash equivalents to net assets (CNC_NA) for Model 2. The dependent variables were taken in logarithm form.

List of Firm-specific Variables

Growth Opportunities (FGR): Growth opportunities means the investment prospects that the company expects to get in future and which will bring a positive net present value (NPV). Various studies like Ferreira and Vilela, 2004; Ozkan and Ozkan, 2004, Chen and Mahajan (2010) and many others have measured growth opportunities as market value of assets to book value of total assets. Market value of assets is measured as book value of assets plus market value of equity minus book value of equity.

Cash Flow (FCF and FCF_NA): Cash Flow can be measured in different ways. In studies like Opler et. al. (1999), Ferreira and Vilela (2004) and Koshio and Cia (2004), cash flow means cash flow to net assets while John (1993) defines cash flow as operating income to sales and operating income to total assets. In this paper, cash flow was measured as ratio of profit after tax plus depreciation to total assets and ratio of profit after tax plus depreciation to net assets.

Firm Size (FLN(NS)): Past studies by John (1993), Opler et al. (1999), Kim et al. (1998), Koshio and Cia (2004) and Chen and Mahajan (2010) had provided evidence favoring the association between firm size and corporate liquidity. In reference to these studies, in this paper, size was measured as a natural logarithm of net sales.

Leverage (FTD_TA): A firm is said to be levered when it is financed with both debt and equity. With more debt in the capital structure, the more levered a firm will become. With reference to studies like Opler et al (1999), Kim et al. (1998) and Chen and Mahajan (2010), leverage was computed as the total debt to book value of total assets.

List of Macroeconomic Variables

Economic Growth (MGDP): Growth in GDP represents the economic growth of a country. The literature, like Abushammala and Suliaman (2014), Khanna, Medury and Srivastava (2015) and others, have explained that economic growth has a significant influence on cash holding decisions of a firm. These studies state that with superior economic growth, the firms increase their cash holding. Some studies also argued that when the economy is growing, the capital market also progresses. In such a situation, firms will shift towards equity or debt market supporting market timing theory.

Change in Inflation (MCPI): Another important economic factor that impacts the cash holding decision of a firm is the inflation rate. A rise in the inflation rate leads to an increase in the cost of firm's raw material and other facilities which consequently increases the fund requirement of the firm (Khanna, et al. (2015). This suggests that firms should as a precautionary step increase their cash reserves. However, the studies are still ambiguous in relation to the relationship between inflation rate and cash holding. In

India, WPI and CPI are two price indices used to measure the inflation rate. In this study, CPI was taken as a proxy.

Index for Industrial Production (MIIP): The Index for Industrial Production is the index or composite score used to measure the growth of various sectors. A decrease in the index for industrial production is a sign of a coming recession. The companies need to hoard cash to prevent them from any crisis. In the paper, change in IIP (manufacturing sector) was used as a proxy for industrial growth.

Short-term Interest Rate (MINTR): Short-term interest rate is measured in different forms like money market rate, bank rate, call money rate or treasury bills rate (Chen and Mahajan, 2010). For this paper, short-term interest rate refers to treasury bills rate for 91 days collected from the RBI

Bank Lending Rate (MLR): Bank lending rate denotes the interest rate charged on loans provided by banks during a particular year. A high interest rate implies a costly debt. When the debt is costly, firm prefers hoarding cash for future investments. Custodio, Ferreira and Raposo (2005) stated that besides, as a precautionary motive, one of the motives of maintaining large cash reserves is the non-availability or costly finance availability.

DATA DESCRIPTION

The paper examined selected 27 FMCG companies listed on the Bombay stock exchange in India to measure cash holding positions of these FMCG companies and identify the effects of macro-economic factors on cash holding. The data was gathered from various secondary sources like Prowess database software of CMIE, RBI reports and the annual reports of the companies and pooled together in a panel data format. In addition, various other secondary sources like online and offline journals/magazines, websites of the Bombay stock exchange of India and the Reserve Bank of India, were studied to gather related informative study material. The time period for the analysis was 16 years, from FY2001-02 to FY2016-17.

DESCRIPTIVE STATISTICS

Table IIa presents the descriptive statistics (mean, coefficient of variation, 25th percentile, median and 75th percentile) of the variables measuring cash holding of the FMCG companies in the study. The results are discussed below:

Cash Holdings: Cash holding was measured using the variables, namely, CASHT, CASHN and CASHC. The results show that the FMCG companies hold large amounts of cash as the mean value for CASHT, CASHN and CASHC recorded to 16.22 per cent, 23.29 per cent and 24.25 per cent respectively. Further, the median value for CNC_TA, CNC_NA and C_CA were 12.68 per cent, 14.52 per cent and 15.39 per cent respectively. The results are in line with the results of previous studies of Kim et al, 1998; Opler et al, 1999; Okzan and Okzan, 2004; Drobetz and Gruninger, 2006. The coefficients of variation were 84.44, 105.82 and 93.92 for CNC_TA, CNC_NA and C_CA respectively and explain the variance in overall cash holding.

The results indicate that FMCG companies are maintaining a large cash holding compared to other companies. The proportion of cash holding is much high in comparison to the results reported in studies like Kim et al. (1998), Okzan and Okzan (2004) and Drobetz and Gruninger (2006).

Table IIb also shows the descriptive statistics (mean, coefficient of variation, 25th percentile, median and 75th percentile) for the dependent variables, LCNC_TA and LCNC_NA and their determinants for a better understanding of every independent variable. The results depict that:

Dependent Variables, LCNC_TA and LCNC_NA: In order to run regression model, natural logarithm of cash to total assets (LCNC_TA) and cash to net assets (LCNC_NA) is taken instead to cash to total assets (CNC_TA) and cash to net assets (CNC_NA) to reduce variations in the results. The mean value for LCNC_TA and LCNC_NA is found to be 2.25 and 2.44 respectively.

The mean value of FCF and FCF_NA was 0.15 and 0.19 respectively with a median value of 0.14 and 0.18. FLN(NS) had a mean value of 9.42

lying between the median 9.34 and 75th percentile 10.36. Similarly, FGR had a mean value of 1.05 which ranged between the median 1.02 and 75th percentile 1.07. The overall mean value of leverage, measured by total debt to total assets was 0.54 with a median value of 0.52 suggesting that the companies had more than 50 per cent debt to finance their assets. For the macroeconomic variables, the mean value was 6.37, 13.20, 5.83, 11.88 and 6.42 for MCPI, MGDP, MIIP, MLR and MINTR respectively. The variation was recorded to be more than 20 per cent. The mean values for all these variables exist between the median and the 75th percentile except for MGDP and MINTR.

EMPIRICAL RESULTS OF THE STUDY

1. Correlation Results

Table III shows the correlation matrix for the selected variables. The correlation explains the relationship between the cash ratio and the explanatory variables and also among the explanatory variables. There are two correlation results with each dependent variable, CNC_TA and CNC_NA in Table III.a and Table III.b respectively. The correlation results show a positive relation between CNC_TA and explanatory variables such as FGR, FCF, MCPI, MGDP, MIIP and MLR whereas a negative relation between CNC_TA and FLN(TA), FTD_TA and MINTR in table III.a and similar relation is between CNC_NA and explanatory variables in table III.b. The correlation matrix also checks for correlation between explanatory variables. A high correlation between the explanatory variables may lead to inconsistent results. Hence, such variables were identified and not considered in the regression analysis.

2. Impact of Firm-Specific and Macroeconomic Variables on the Corporate Cash Holding of FMCG Companies in India- Panel Data Regression Approach

Table IV reports the results of panel data regression applied to the financial data of 27 FMCG companies for 16 years from 2001-02 to 2016-17. The panel data regression facilitates identification of

unobservable heterogeneity by working on both cross-sectional and time-series data simultaneously. In this paper, the dataset included 27 companies over 16 years from 2001-02 to 2016-17, making to total of 432 (27 X 16) observations. Such a regression analysis provides a more precise and clear explanation on the relationship between the dependent variable and the explanatory variables (firm-specific and macroeconomic variables) after taking into account the unobserved individual heterogeneity by using different panel data models namely, Pooled OLS, Fixed effect model and Random effect model.

In the paper, two panel data regression results are explained. Model 1 presents regression equation explaining the relation of dependent variable, LCNC_TA with a different explanatory variable (firm-specific and macroeconomic variables) and Model 2 presents regression equation explaining the relation of the dependent variable, LCNC_NA with different explanatory variables (firm-specific and macroeconomic variables). Table IV reports for model 1 in column 2, 4 and 6 while, for Model 2 in column 3, 5 and 7 showing results of pooled OLS, fixed effect model and random effect for each model. The administered models are as follows:

Model 1: Cash to total assets, $(CNC_TA)_{it} = \alpha + \beta_1(\text{Cash Flow})_{it} + \beta_2(\text{Growth Opportunities})_{it} + \beta_3(\text{Firm Size})_{it} + \beta_4(\text{Leverage})_{it} + \beta_5(\text{Change in Inflation})_{it} + \beta_6(\text{Economic Growth})_{it} + \beta_7(\text{IIP})_{it} + \beta_8(\text{Lending rate})_{it} + \beta_9(\text{short term interest rate})_{it} + u_i + \varepsilon_{it}$

Model 2: Cash to net assets, $(CNC_NA)_{it} = \alpha + \beta_1(\text{Cash Flow})_{it} + \beta_2(\text{Growth Opportunities})_{it} + \beta_3(\text{Firm Size})_{it} + \beta_4(\text{Leverage})_{it} + \beta_5(\text{Change in Inflation})_{it} + \beta_6(\text{Economic Growth})_{it} + \beta_7(\text{IIP})_{it} + \beta_8(\text{Lending rate})_{it} + \beta_9(\text{short term interest rate})_{it} + u_i + \varepsilon_{it}$

Here,

- (a) α is a constant term,
- (b) $\beta_1, \beta_2, \dots, \beta_9$ are regression coefficients (β_1 to β_4 represents coefficient for firm-specific variables and β_5 to β_9 represents coefficient for macroeconomic variables),
- (c) u represents the unobserved individual heterogeneity,
- (d) ε is an error term, i denotes companies and t denotes year.

Before selection of an appropriated model, the necessary assumptions of regression were duly checked to avoid the problem of serial correlation, stationarity, normality and multi-collinearity in the panel data. Hence, all these problems were identified and resolved by applying the relevant tests on the data, i.e. Unit root test for stationarity, Durbin-Watson Test for serial correlation, normality test and VIF test for multi-collinearity before proceeding to panel regression analysis.

The next step included the selection of an appropriate model viz.-a-viz., selection among pooled OLS, fixed or random effect model. With the help of the Hausman Test for fixed versus random effect, an appropriate panel data model was identified. The test followed the null hypothesis, i.e. the Random effects model is more efficient than the fixed effects models. According to the results, it was found that the test fails to reject the null hypothesis (as $p > 0.05$). In this paper, the results of random effect model are considered as appropriate for both the model, Model 1 and Model 2.

As for the random effects model, the estimation results for Model 1 (Table IV) with Log of cash to total assets, LCNC_TA as the dependent variable, disclose that among the firm-specific variables, FCF, FLN(NS) and FTD_TA explains the variation in cash holding. Firstly, the results show that a 1 per cent increase in the FCF leads to a significant positive (coefficient as 2.24) increase in cash holding following the pecking order theory. Secondly, FLN(NS) was found to have a significant negative relation with LCNC_TA with a coefficient of -0.14. Lastly, FTD_TA (having coefficient -1.02) have also shown a significant negative relation with cash holding. This suggests that the companies maintain a huge cash holding and with an increase in cash flow, these cash reserve increases. However, this phenomenon is more prevalent in small scale companies. Such companies may not have easy credit availability due to which they prefer to maintain huge cash reserves. The cash holding decisions based on precautionary motives are more prevalent in small companies. On the other hand, large firms enjoy economies of scale and establish good creditability in market which facilitates less costly debt financing to these companies. Such companies also maintain low cash reserves. The study found that the results are in line with Ozkan and Ozkan (2004).

Among the macroeconomic variables, MGD_P and MLR had a significant positive relationship with cash holding. These results are in line with Chen and Mahajan (2010) and Abushammala and Suliaman (2014). The relationship suggests that in good economic conditions, when companies' financial health progresses, their cash holding also expand. Thus, an economic growth brings a positive change in cash holding of companies. Apart from this, a positive relation between MLR and LCNC_TA suggests that the companies also hold huge cash funds to be used for financing when external financing is expensive. In addition, the study found weak evidence supporting a positive relationship between cash holding and inflation, while a negative relationship between cash holdings and the remaining two macroeconomic variables, MIIP and MINTR were observed.

Further, Model 2 also provides similar results. As for the random effects model, the estimation results for Model 2 (Table IV) with the dependent variable, cash to net assets, CNC_NA, disclosed that among firm-specific variables, FCF, FLN(NS) and FTD_TA explain the variation in cash holding. Firstly, the results show that a 1 per cent increase in the FCF leads to a significant positive (coefficient as 4.53) increase in cash holding (random effects model result). Secondly, FLN(NS) was found to have a significant negative relation with LCNC_TA with coefficient as -0.17. Lastly, FTD_TA (having coefficient -0.81) also showed a significant negative relation with cash holding. Among the macroeconomic variables, MGD_P and MLR had a significant positive relationship with cash holding.

Overall, the results show that FMCG companies are motivated to keep excess cash holding as a caution for future needs. Such a situation is mostly prevalent in small companies or when external financing is costly.

CONCLUSION

The FMCG industry is identified as an industry manufacturing and retailing products which are of a reasonably low cost and have a shorter shelf life. The analysis provided evidence that the FMCG companies in India maintain large cash reserves. The managers of firms hoard cash in response to the increase in cash flow. This suggests the nature of the industry signifies a regular flow of cash in business, thus companies are likely to have more cash. In

addition, a booming economy also brings in more income to the companies. GDP growth has a positive influence on cash holding of firms. As stated by Abushammala and Sulaiman (2014), this suggests that companies presume a positive increase in income in response to higher economic growth. Such incoming cash expands the cash holding of companies. However, the same is not true for large scale companies. The large companies that enjoy economies of scale possess less cash than smaller companies. Such companies also have the ability to finance debt easily. Therefore, the levered companies also hold less cash. As the study found that bank lending rate plays a significant positive influence on cash holding decisions, it is concluded that the companies are likely to hoard cash only when other financing sources are costly. The results also showed that macroeconomic elements like inflation rate, index for industrial production and short-term interest rate showed a weak effect on corporate cash holding. The paper has tried to fill the gap in previous literature that often ignores the role of macroeconomic elements in cash holding decisions.

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APPENDICES

Table I: Variable definition for the regression analysis			
Dependent Variable	Proxy		Related Studies
Cash and cash equivalents to Net Assets	Cash + Marketable Securities/ Total assets - (Cash + Marketable Securities)	CNC_NA	Drobetz, W. and Gruninger, M.C. (2006); Ferreira, M.A. and Vilela, A.S. (2004); Chen and Mahajan (2010)
Cash to Cash Equivalents to Total assets	Cash + Marketable Securities/ total assets	CNC_TA	Bansal, R. and Bansal, V. (2012); Mai, P.T.T. and Trinh, T.H. (2016); Kim, C., Mauer, D.C. and Sherman, A.E. (1998) and John T.A. (1993); Ozkan, A. and Okzan, N. (2004)
Cash to Cash Equivalents to Current assets	Cash/ Current assets	C_CA	
Independent Variable	Proxy		Related Studies
Leverage	Total debt to total assets	FTD_TA	Kim, C., Mauer, D.C. and Sherman, A.E. (1998); Mai, P.T.T. and Trinh, T.H. (2016); Bansal, R. and Bansal, V. (2012); Opler, T. et al (1999); Ozkan, A. and Okzan, N. (2004); Drobetz, W. and Gruninger, M.C. (2006)
Cash Flow	(Earnings before interest and taxes but before depreciation less interest, taxes and dividend)/ Total Assets	FCF	Bansal, R. and Bansal, V. (2012); Mai, P.T.T. and Trinh, T.H. (2016) and Kim, C., Mauer, D.C. and Sherman, A.E. (1998); Chen, N. and Mahajan, A. (2010)
Growth Opportunities	Market value of Assets/ Book Value of assets	FGR	Kim, C., Mauer, D.C. and Sherman, A.E. (1998); Bansal, R. and Bansal, V. (2012); Cia, J. N.D.S and Koshio, S. (2004); Opler, T. et al (1999); Ferreira, M.A. and Vilela, A.S. (2004); Drobetz, W. and Gruninger, M.C. (2006); Chen, N. and Mahajan, A. (2010)
Firm Size	Natural Log of Net sales	FLN(NS)	

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Economic Growth	$\text{GDP Growth} = \frac{\text{GDP}_t - \text{GDP}_{(t-1)}}{\text{GDP}_{(t-1)}}$	MGDP	Chen, N. and Mahajan, A. (2010); Abushammala, S.M.N. and Suliaman, J. (2014); Stone, A.L. and Gup, B.E. (2015)
Change in Inflation rate	$\frac{\text{CPI}_t - \text{CPI}_{(t-1)}}{\text{CPI}_{(t-1)}}$	MCPI	Chen, N. and Mahajan, A. (2010); Abushammala S.M.N. and Suliaman, J. (2014).
Index for industrial production (IIP)	$\frac{\text{IIP}_t - \text{IIP}_{(t-1)}}{\text{IIP}_{(t-1)}}$	MIIP	Stone, A.L. and Gup, B.E. (2015)
Bank lending Rate	Maximum bank lending rate for the year	MLR	-
Short-term interest rate	91-days treasury bills rate (yearly basis)	MINTR	Chen, N. and Mahajan, A.b (2010)

Table IIa: Descriptive Statistics of the Variables used in the analysis					
Variables	Mean	Coefficient of variation	p25	Median	p75
CNC_TA	16.22	84.44	4.35	12.68	25.65
CNC_NA	23.29	105.82	4.54	14.52	34.50
C_CA	24.25	93.92	6.55	15.39	36.07
Table IIb: Descriptive Statistics of the Variables used in the analysis					
LCNC_TA	2.25	54.84	1.47	2.54	3.24
LCNC_NA	2.44	56.79	1.51	2.68	3.54
FTD_TA	0.54	40.56	0.38	0.52	0.69
FCF	0.15	69.05	0.08	0.14	0.21
FCF_NA	0.19	73.82	0.09	0.18	0.27
FGR	1.05	6.99	1.01	1.02	1.07
FLN(NS)	9.42	15.88	8.59	9.34	10.36
MGDP	13.20	23.52	10.95	13.40	15.32
MCPI	6.37	37.14	4.04	6.00	8.43
MIIP	5.83	70.27	2.87	4.33	7.33
MLR	11.88	20.89	10.25	11.00	13.25
MINTR	6.65	21.88	5.78	6.79	7.62

Table III.a: Correlations Results when the Dependent Variable is LCNC_TA in Regression Analysis for FMCF Companies (2001-02 to 2016-17)										
	FLN(NS)	FGR	FCF	FTD_TA	MCPI	MGDP	MIIP	MLR	MINTR	LCNC_TA
FLN(NS)	1.00	-0.16	0.20	0.20	0.22	0.08	-0.14	-0.16	0.24	0.01
FGR		1.00	0.31	-0.20	0.01	0.09	-0.04	-0.11	0.04	0.20
FCF			1.00	-0.27	0.05	0.08	0.03	0.03	0.01	0.35
FTD_TA				1.00	0.10	0.11	0.00	-0.03	0.07	-0.26
MCPI					1.00	0.57	-0.16	0.25	0.18	0.15
MGDP						1.00	0.43	0.22	-0.07	0.20
MIIP							1.00	0.32	-0.31	0.09
MLR								1.00	-0.28	0.20
MINTR									1.00	-0.06
LCNC_TA										1.00

Table III.b: Correlations Results when the dependent variable is LCNC_NA in regression analysis for FMCF companies (2001-02 to 2016-17)										
	FLN(NS)	FGR	FCF_NA	FTD_TA	MCPI	MGDP	MIIP	MLR	MINTR	LCNC_NA
FLN(NS)	1.00	-0.16	0.14	0.20	0.22	0.08	-0.14	-0.16	0.24	-0.01
FGR		1.00	0.33	-0.20	0.01	0.09	-0.04	-0.11	0.04	0.21
FCF_NA			1.00	-0.32	0.06	0.09	0.03	0.04	0.00	0.54
FTD_TA				1.00	0.10	0.11	0.00	-0.03	0.07	-0.27
MCPI					1.00	0.57	-0.16	0.25	0.18	0.14
MGDP						1.00	0.43	0.22	-0.07	0.20
MIIP							1.00	0.32	-0.31	0.09
MLR								1.00	-0.28	0.20
MINTR									1.00	-0.07
LCNC_NA										1.00

Table IV: Results of Panel Data Regression estimating the determinants of cash holdings for FMCG companies for 2001-02 to 2016-17						
	Model 1: Dependent Variable, LCNC_TA, Model 2 : Dependent Variable, LCNC_NA					
	Pooled OLS $Y_{it} = \alpha + \beta X_{it} + \epsilon_{it}$		Fixed Effect $Y_{it} = (\alpha + u_i) + \beta X_{it} + \epsilon_{it}$		Random Effect $Y_{it} = \alpha + \beta X_{it} + (u_i + \epsilon_{it})$	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
C	-1.28 (-1.17)	0.02 (0.02)	2.75** (2.44)	3.53*** (3.02)	1.63 (1.53)	2.55** (2.32)
FCF	3.07*** (5.11)		1.83*** (2.55)		2.24*** (3.33)	
FCF_NA		4.76*** (10.54)		4.39*** (8.12)		4.53*** (8.91)
FGR	1.61** (1.99)	0.50 (0.60)	0.30 (0.38)	-0.65 (-0.78)	0.20 (0.26)	-0.70 (-0.88)
FLN(NS)	0.02 (0.38)	-0.03 (-0.83)	-0.28*** (-3.12)	-0.29*** (-3.14)	-0.14** (-2.07)	-0.17*** (-2.47)
FTD_TA	-1.05*** (-3.99)	-0.75*** (-2.73)	-0.99*** (-3.01)	-0.81** (-2.34)	-1.02*** (-3.33)	-0.81*** (-2.50)
MGDP	0.07** (2.41)	0.07** (2.36)	0.08*** (3.39)	0.08*** (3.21)	0.08*** (3.42)	0.08*** (3.23)
MCPI	0.00 (0.03)	0.00 (0.01)	0.04 (1.28)	0.04 (1.07)	0.02 (0.64)	0.02 (0.54)
MIIIP	-0.01 (-0.75)	-0.02 (-0.84)	-0.02 (-1.10)	-0.02 (-1.19)	-0.02 (-1.14)	-0.02 (-1.21)
MLR	0.09*** (3.43)	0.08*** (3.10)	0.05** (2.42)	0.05** (2.22)	0.07*** (3.19)	0.06*** (2.87)
MINTR	-0.01 (-0.31)	-0.01 (-0.27)	0.03 (0.98)	0.03 (0.81)	0.01 (0.39)	0.01 (0.33)
N	432	432	432	432	432	432
Adjusted R2	0.21	0.34	0.50	0.58		
F-statistics	13.69 (0.00)	25.30 (0.00)	13.54 (0.00)	17.69 (0.00)		
D-W Statistics	0.75	0.75	1.14	1.16		
Hausman Test					1	1
***. Coefficients are significant at the 0.01 level (2-tailed)						
**. Coefficients are significant at the 0.05 level (2-tailed)						
*. Coefficients are significant at the 0.1 level (2-tailed)						