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The Determinants of Corporate Cash Holdings: Novel Evidence from Emerging Countries

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Abstract

The aim of this study is to investigate the determinants of corporate cash holdings in emerging countries. The sample comprises non-financial firms from six emerging countries, five of them commonly referred to as BRICS, plus Turkey. The dataset includes the data of 4,769 firms and covers a ten-year period from 2012 to 2021, resulting in a total of 47,690 firm-year observations. We run panel regressions, specifically fixed and random effects models, and conduct the J.A. Hausman [1] test to choose between the latter. We use several firm-specific variables as independent variables and the GDP growth rate and the inflation rate as country-specific control variables. The results reveal that firm size, leverage, capital expenditures, net working capital, operating cash flow, dividend payments, firm age, and research and development (R&D) expenditures are significant determinants of corporate cash holdings, with some differences among countries and/or industries in terms of the sign and the significance levels. The macroeconomic variables showed significant results in some countries and industries, yet they were not consistent enough to make general conclusions. This study provides new empirical evidence on the determinants of corporate cash holdings by using a large dataset from major emerging countries. Our findings have important implications for corporate managers and policymakers in designing cash holding and liquidity policies. A comprehensive understanding of the main determinants of corporate cash holdings enables managers to adopt appropriate financing and investing strategies in the long term, as well as better short-term financial policies.

Keywords: corporate cash holdings, BRICS, emerging countries, liquidity, financial determinants, panel data

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Introduction

Cash holdings play a crucial role for both firm managers and parties analyzing firms for several reasons. Managers must maintain a safe and efficient level of liquidity by holding cash and cash equivalents, ensuring smooth financial management and adhering to risk management policies. Shareholders and potential investors base their investment decisions on valuations, with cash, particularly free cash flow, serving as a fundamental component of many valuation models. Cash is central to both short- and long-term financial decisions. In the short term, a firm's cash conversion cycle is a commonly used measure of working capital management, while in the long term, the present value of expected future cash flows informs the firm's capital budgeting decisions. Although these cases pertain more to cash flows rather than the stock of cash as a balance sheet value, the importance of cash holdings remains unchanged due to the strong association between smooth cash flows and cash holdings. In general, firms tend to hold more cash than their working capital requirement, a tendency supported by empirical evidence worldwide [2–4].

Firms hold cash and cash equivalents for various purposes, including transaction, speculation, and precautionary motives. However, there exists a trade-off for firms in deciding the amount of cash to hold, as cash is not an earning asset and thus incurs an opportunity cost. Despite this, holding cash can offer benefits such as the ability to receive trade discounts from suppliers.

The study makes several contributions to the existing literature. Firstly, it offers novel empirical evidence on the determinants of cash holdings using a comprehensive dataset comprised of emerging countries. Secondly, it provides results for the entire sample, as well as at the country and industry levels.

The remainder of the article is structured as follows: the next section offers a review of pertinent literature. Third section outlines the sample details, data sources, methodology, and model specifications. Fourth section presents the findings and offers a discussion. The final section draws the conclusions.

Literature Review

Cash holdings and their determinants constitute one of the most extensively researched areas in corporate finance literature. Numerous studies across various contexts have explored the factors influencing corporate cash holdings, revealing significant variations across countries and regions. Theoretical frameworks have sought to explain these differences through various approaches.

Three theories commonly used in the literature offer explanations for why corporations maintain cash and cash equivalents: the trade-off theory, free cash flow theory, and pecking order theory. According to the trade-off theory, there exists an optimal level of cash where the marginal benefits and costs are balanced [5; 6]. The benefits typically stem from transaction and precautionary motives, while costs may include opportunity costs [7] and agency costs resulting from the desire to enhance managerial discretion [8; 9]. Pecking order theory [10], on the other hand, suggests that firms prioritize financing sources in a hierarchy, beginning with retained earnings, followed by debt, and finally equity. Cash holdings are viewed as a reflection of the firm's choices regarding potential investments and alternative financing options, suggesting that there is no single optimal level of cash. Free cash flow theory [11] contends that managers often hold cash to increase their discretion over the firm's investments and reduce monitoring by capital providers. However, this increased managerial power may lead to agency conflicts, as managers may prioritize retaining cash over investing in profitable projects, which may not align with shareholders' best interests [12].

Having reviewed the theoretical underpinnings, this section presents the findings from previous literature regarding the determinants of cash holdings. The discussion is structured according to the variables utilized in our empirical model, and hypotheses are formulated based on both theoretical discourse and empirical observations.

Firm Size

There are conflicting views regarding the relationship between firm size and cash holdings, both theoretically and empirically. On the one hand, some argue that small firms tend to hold more cash while large firms hold less, while others propose the opposite. Small firms may face higher costs related to external financing and bankruptcy due to lower credibility and diversification [13], suggesting a negative relationship. Conversely, large firms often possess better corporate governance mechanisms, leading to lower information asymmetry and external financing costs. Additionally, firm size can serve as a proxy for financial distress, with small firms holding more cash to mitigate such risks [14]. On the other hand, the pecking order theory suggests that large firms tend to have a more profitable history and higher accumulated reserves, suggesting a positive relationship between firm size and cash holdings [6].

Therefore, we formulate two hypotheses to investigate these opposing perspectives:

H1a: There is a positive relationship between cash holdings and firm size.

H1b: There is a negative relationship between cash holdings and firm size.

Leverage

Firms with higher levels of leverage might face increased financing costs due to a reduced borrowing capacity, leading them to hold less cash. This tendency is particularly notable in emerging countries where bankruptcy costs are significant [7; 15]. According to the pecking order theory, we anticipate a negative relationship, as firms would prioritize using liquid resources over issuing new debt when retained earnings are insufficient. Likewise, firms with a surplus may opt to repay existing debt, further reducing leverage. Empirical studies have consistently demonstrated

a negative correlation between cash holdings and leverage [9; 13; 16; 17]. This leads us to formulate the second hypothesis as follows:

H2: There is a negative relationship between cash holdings and leverage.

Profitability

Previous studies have consistently found a positive correlation between cash holdings and profitability, primarily supported by the pecking order theory [6; 7; 18; 19]. Profitable firms are better positioned to meet their financial obligations, including dividends and debt repayment, and are thus able to accumulate greater cash reserves. Conversely, less profitable firms tend to hold lower levels of cash and may rely on debt issuance to fund investments, exhibiting reluctance to issue new equity [20]. Based on these premises, we formulate the third hypothesis as follows:

H3: There is a positive relationship between cash holdings and profitability.

Growth Opportunities

Both the trade-off theory and the pecking order theory suggest a positive relationship between cash holdings and growth opportunities. Firms with greater growth prospects are inclined to maintain higher levels of cash reserves to mitigate the risk of illiquidity. This strategy aligns with the transaction cost motive and the precautionary motive, as firms with viable investment opportunities seek to safeguard against cash shortages and potential financial distress [6; 21; 22]. Accordingly, we formulate our next hypothesis as follows:

H4: There is a positive relationship between cash holdings and growth opportunities.

Capital Expenditures

Capital expenditures refer to investments made by a firm to enhance its productive capacity, typically involving the acquisition or construction of non-current assets. These assets can serve as collateral for borrowings, leading to an expansion in debt capacity and a reduced need for cash reserves [21]. Furthermore, in line with the pecking order theory, firms adhere to a financing hierarchy starting with internally generated funds. Accordingly, a firm with viable investment opportunities would prioritize spending on capital expenditures, thereby allocating a smaller portion of its resources to liquid assets. Consequently, we anticipate a negative correlation between cash holdings and capital expenditures:

H5: There is a negative relationship between cash holdings and capital expenditures.

Net Working Capital

Net working capital represents the difference between current assets and current liabilities. While current assets may comprise some less liquid items such as inventory, the majority are comprised of liquid assets that can be readily converted into cash if needed. Consequently, firms with higher net working capital tend to maintain lower levels of cash reserves [7]. Previous research has similarly identified a negative correlation between cash holdings and net working capital, aligning with the principles of the trade-off theory [13; 14; 23].

H6: There is a negative relationship between cash holdings and net working capital.

Operating Cash Flow

The net cash flow from operations serves as the primary liquidity source for a healthy firm. Conversely, in cases where this is insufficient, firms may resort to external financing, incurring additional costs and imposing financial constraints. As such, operating cash flow acts as a safeguard against financial constraints [24]. The trade-off theory posits a negative correlation between operating cash flow and cash holdings, contending that firms with stable operating cash flow trends require smaller cash reserves. Conversely, the pecking order theory suggests a positive relationship, as firms prioritize reserves as their primary financing option, thereby accumulating greater cash holdings [9]. Hence, we formulate two hypotheses:

H7a: There is a negative relationship between cash holdings and operating cash flow.

H7b: There is a positive relationship between cash holdings and operating cash flow.

Firm Age

Firm age denotes the number of years since the establishment of the firm. It is presumed that there exists a positive correlation between firm age and cash holdings, as older firms typically operate in more mature phases of their life cycle, thereby generating higher cash flows [25].

H8: There is a positive relationship between cash holdings and firm age.

Dividends

The trade-off theory posits a negative relationship between dividend payments and cash holdings. This perspective suggests that firms distributing dividends may opt to reduce or eliminate dividends to access funds when necessary, leading them to maintain lower levels of cash reserves [26].

H9: There is a negative relationship between cash holdings and dividend payments.

Research and Development Expenditures

Research and development (R&D) initiatives typically span long periods and may require significant financial resources over time. Consequently, firms engaged in R&D endeavors often maintain substantial cash reserves to sustain these activities. Empirical studies have indicated a positive correlation between higher levels of R&D expenditure and increased cash holdings [21; 27].

H10: There is a positive relationship between cash holdings and R&D expenditures.

Methodology

Sample and Data

The sample comprises 4,769 non-financial firms from six major emerging countries. Table 1 provides a breakdown of the firms by country and industry. Initially, the sample consisted of 6,505 firms; however, after eliminating those with missing data or outlier values, the final sample comprised 4,769 firms. The dataset spans a 10-year period from 2012 to 2021, totaling 47,690 firm-year observations. The countries included are the BRICS nations (Brazil, Russia, India, China, and South Africa), along with Turkey, another significant emerging economy with similar characteristics. The industries covered are non-financial, excluding sectors such as banking, insurance, and leasing. Additionally, governmental agencies and non-profit organizations were omitted due to their distinct characteristics. The data were sourced from Refinitiv Eikon, formerly known as Thomson Reuters.

Table 1. Sample Details by Country and Industry

	Brazil	China	India	Russia	South Africa	Turkey	Total
Basic Materials	24	435	388	42	26	45	**960**
Consumer Cyclicals	43	398	404	13	22	63	**943**
Consumer Non-Cyclicals	21	176	128	12	9	33	**379**
Energy	7	99	36	29	3	5	**179**
Healthcare	6	208	104	6	2	4	**330**
Industrials	32	600	254	56	16	31	**989**
Real Estate	25	143	72	2	12	22	**276**
Technology	8	340	122	11	15	14	**510**
Utilities	34	96	24	44	–	5	**203**
Total	**200**	**2495**	**1532**	**215**	**105**	**222**	**4769**

Variables

Table 2 displays the variables used in the analysis, along with their measurements and the expected sign of their relationship with cash holdings. Net cash, which excludes cash and cash equivalents from total assets, is preferred as the proxy for cash holdings.

Table 2. The variables used in the analysis

	Variable	Calculation Formula	Selected References	Expected Sign
Dependent	Cash Holdings	Cash & Cash Equivalent (CCE)/ (Total Assets–CCE)	[21]	n/a
Independent	Size	Natural logarithm of Total Assets	[2]	+/–
	Leverage	Total Debt/Total Assets	[16]	–
	Profitability	Net Profit/Total Assets	[19; 20]	+
	Growth Opportunities	Market Price per Share/Book Value per Share	[22]	+
	Capital Expenditures	Net Cash Flow of Capital Expenditures/Total Assets	[21]	–
	Net Working Capital	Net Working Capital/Total Assets	[7; 13]	–
	Operating Cash Flow	Cash Flow from Operations/ Total Assets	[9]	+/–

	Variable	Calculation Formula	Selected References	Expected Sign
Independent	Firm Age	Number of years since establishment	[25]	+
	Dividends	Dummy variable: 1 if paid, 0 if not paid	[26]	–
	RD	R&D Expenditures/Total Assets	[27]	+
Control	GDP Growth	YoY change in GDP	[28]	+
	Inflation	Annual rate of inflation	[28]	–
Dummy		Dummies for country and industry		n/a

Model Specification

The model is represented by the following equation:

$$CH_{i,t} = \beta_0 + \hat{a}_1 SIZE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 PROF_{i,t} + \\ + \beta_4 GROW_{i,t} + \beta_5 CAPEX_{i,t} + \beta_6 NWC_{i,t} + \\ + \beta_7 OCF_{i,t} + \beta_8 AGE_{i,t} + \beta_9 DIV_{i,t} + \beta_{10} RD_{i,t} + \\ + \beta_{11} GDPGR_{i,t} + \beta_{12} INFL_{i,t} + \beta_{13} COUN_i + \\ + \beta_{14} IND_i + \varepsilon_{i,t},$$

where *CH* – cash holdings; *SIZE* – the firm size measured as the natural logarithm of total assets; *LEV* – leverage measured as the ratio of total debt to total assets; *PROF* – the net profit margin; *GROW* – growth opportunities measured as the ratio of market price per share to book value per share; *CAPEX* – capital expenditures measured as the ratio of net cash flow of capital expenditures to total assets; *NWC* – the ratio of net working capital to total assets; *AGE* – the firm's age; *DIV* – the dummy variable for dividends; *RD* – research and development expenditures divided by total assets; *GDPGR* – the country's GDP growth rate; *INFL* – the country's inflation rate; *COUN* – the country dummy variable; *IND* – the industry dummy variable.

Estimation Technique

Following the approach of previous studies on the determinants of corporate cash holdings [6; 9; 28], we employ a static model and conduct estimation in two steps. Initially, we utilize pooled ordinary least squares (POLS) regressions, followed by panel regressions, encompassing both fixed and random effects. To determine whether panel regressions are warranted, and thus ascertain the presence of panel effects, we administer the Breusch – Pagan Lagrange Multiplier (LM) test. Subsequently, we employ the Hausman test to choose between fixed and random effects [1].

Results and Findings

Descriptive Statistics

The descriptive statistics for all variables are presented in Table 3.

Table 3. Descriptive Statistics

Variable		Mean	Std. Dev.	Min	Max
CH	overall	0.149	0.246	–0.117	4.991
	between		0.179	–0.002	2.707
	within		0.169	–1.478	4.185
SIZE	overall	19.648	2.048	10.331	26.736
	between		2.005	11.997	26.644
	within		0.416	15.502	23.177
LEV	overall	0.539	0.362	0.001	14.335
	between		0.314	0.020	10.682
	within		0.180	–4.030	10.742
PROF	overall	0.042	0.122	–3.531	3.411
	between		0.071	–0.515	1.201
	within		0.099	–3.366	3.408

Variable		Mean	Std. Dev.	Min	Max
GROW	overall	1.530	1.463	0.002	14.991
	between		1.145	0.003	9.057
	within		0.911	–4.213	13.845
CAPEX	overall	0.038	0.060	–1.638	0.786
	between		0.035	–0.543	0.217
	within		0.048	–1.412	0.749
NWC	overall	0.151	0.294	–3.780	0.985
	between		0.245	–1.889	0.888
	within		0.163	–2.710	1.891
OCF	overall	0.054	0.098	–2.255	2.222
	between		0.054	–0.303	0.410
	within		0.082	–1.899	2.059
AGE	overall	26.792	17.915	1.000	158.000
	between		17.685	5.500	153.500
	within		2.872	22.292	31.292
DIV	overall	0.587	0.492	0.000	1.000
	between		0.385	0.000	1.000
	within		0.307	–0.313	1.487
RD	overall	0.008	0.016	0.000	0.308
	between		0.014	0.000	0.233
	within		0.007	–0.157	0.260
INF	overall	0.041	0.031	0.010	0.196
	between		0.025	0.021	0.115
	within		0.018	0.001	0.133
GDPGR	overall	0.057	0.033	–0.063	0.114
	between		0.017	0.005	0.067
	within		0.028	–0.058	0.118

The table gives descriptive statistics for the overall sample, including the mean, standard deviation, minimum, and maximum values. For cash holdings, the mean value is 15%, which is considered reasonable for most firms. The minimum value is negative, potentially due to bank overdrafts, while the maximum value reaches almost 5, indicating very high cash holdings. Leverage averages 53.9%, a moderate level for non-financial firms. Profitability, measured by net profit margin, stands at 4.2%, indicating an acceptable level. Growth opportunities, as indicated by the market-to-book price ratio for shares, average 1.5, suggesting generally positive market valuation of firms. Capital expenditures vary widely, with a mean of 3.8%, a maximum of 78%, and a minimum of –163%. Thus, some firms make huge investments while others decrease their capacities. Net working capital to total assets ratio averages 15%, while operating cash flow to total assets ratio stands at 5.4%. The age of firms averages 27 years, ranging from 1 to 158 years. The dividend dummy variable has a mean value of 0.58, indicating that dividend payment is prevalent among firms. The relative R&D spending (RD) is quite low, with a mean of 0.8%, suggesting limited investment in R&D activities. On a country level, the average inflation rate is 4.1%, with an average GDP growth rate of 5.7%.

Correlation Matrix

Table 4 shows the correlations among the independent variables of the empirical model.

Table 4. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Firm Size	1.000											
(2) Leverage	0.048*	1.000										
(3) Profitability	0.067*	–0.253*	1.000									
(4) Growth Opportunities	–0.037*	–0.151*	0.113*	1.000								
(5) Capital Expenditures	0.090*	–0.065*	0.133*	0.064*	1.000							
(6) Net Working Capital	–0.057*	–0.660*	0.266*	0.171*	–0.048*	1.000						
(7) Operating Cashflow	0.045*	–0.074*	0.314*	0.085*	0.201*	–0.004	1.000					
(8) Firm Age	–0.144*	0.092*	0.053*	–0.094*	–0.066*	–0.087*	0.058*	1.000				
(9) Dividend Payments	0.315*	–0.234*	0.316*	0.117*	0.148*	0.249*	0.172*	0.007	1.000			
(10) R&D Spending	0.148*	–0.144*	0.004	0.261*	0.051*	0.184*	0.024*	–0.182*	0.146*	1.000		
(11) Inflation	–0.346*	0.093*	0.097*	–0.208*	0.004	–0.081*	0.061*	0.295*	–0.139*	–0.272*	1.000	
(12) GDP Growth Rate	0.045*	–0.082*	–0.002	0.148*	0.057*	0.071*	–0.060*	–0.177*	0.078*	0.124*	–0.287*	1.000

* $p<0.01$/

The pairwise correlations among the independent variables are relatively low, confirming that the model does not suffer from multicollinearity problems.

Table 5. Variance Inflation Factor (VIF)

Variable	VIF	SQRT VIF	Tolerance	R-Squared	Eigenval	Cond. Index
(1) Firm Size	**1.34**	1.16	0.747	0.253	2.433	1.000
(2) Leverage	1.85	1.36	0.540	0.459	1.751	1.179
(3) Profitability	1.32	1.15	0.754	0.245	1.444	1.298
(4) Growth Opportunities	1.17	1.08	0.857	0.142	1.086	1.497
(5) Capital Expenditures	1.1	1.05	0.912	0.087	0.941	1.608
(6) Net Working Capital	1.94	1.39	0.514	0.485	0.877	1.665
(7) Operating Cashflow	1.18	1.08	0.850	0.149	0.790	1.755
(8) Firm Age	1.15	1.07	0.871	0.128	0.688	1.881
(9) Dividend Payments	1.35	1.16	0.743	0.256	0.651	1.934
(10) R&D Spending	1.19	1.09	0.842	0.157	0.557	2.091
(11) Inflation	1.44	1.2	0.695	0.304	0.461	2.297
(12) GDP Growth Rate	1.13	1.06	0.888	0.112	0.321	2.754
Mean VIF	1.34				Condition Number	2.754

Table 5 presents the variance inflation factors (VIF) for the independent variables used in the model. All VIF values for the independent variables are below 10, with a mean VIF of 1.34. This confirms the absence of multicollinearity issues within the model. Additionally, the condition index values are very low, and the overall condition number is 2.754, which is less than 30, further corroborating the VIF findings.

Regression Results

This section presents the results of the regressions and provides a discussion of these findings. Table 6a displays the results for the entire sample and broken down by country, while Table 6b presents the results by industry. The industries are numbered from 1 to 9, as outlined in Table 1.

Table 6a. Regression Results for the Entire Sample and by Country

CH	SIZE	LEV	PROF	GROW	CAPEX	NWC	OCF	AGE	DIV	RD	INF	GDPGR	CONS	OBS
All	–0.05***	0.11***	–0.02	0.01	–0.14***	0.37***	0.22***	–0.00***	0.03***	–1.29***	–0.14**	–0.02	1.09***	47,690
Brazil	–0.01	0.03**	0.03	–0.01	–0.07	0.08***	0.05*	–0.00	0.02***	–0.28	–0.06	–0.14*	0.39	2,000
China	–0.04***	0.26***	–0.10**	–0.02	–0.18***	0.79***	0.40***	–0.01***	0.01***	–1.42***	0.12	0.13*	0.83***	24,950
India	–0.01**	0.02***	–0.01	0.05**	–0.14***	0.08***	0.10***	0.00***	0.01*	–0.11	0.09*	–0.01	0.15	15,320
Russia	–0.01	0.07**	–0.04*	0.09	–0.08	0.14***	0.32***	0.00***	–0.00	0.59*	0.03	–0.02	–0.01	2,150
S. Africa	–0.02	0.12*	0.05	0.03**	–0.18*	0.34**	0.19*	0.00	0.00	1.11*	–0.20	–0.12	0.26	1,050
Turkey	0.02	0.13**	–0.02	0.05	–0.09	0.24***	0.23***	0.00***	0.03**	1.07	0.01	0.29***	-0.59**	2,220

***, **, * Significance at 1%, 5%, and 10% levels, respectively. OBS: Number of observations.

Table 6b. Regression Results by Industry

CH	SIZE	LEV	PROF	GROW	CAPEX	NWC	OCF	AGE	DIV	RD	INF	GDPGR	CONS	OBS
1	–0.04***	0.06***	–0.13	0.01	–0.12**	0.29***	0.16***	0.00	0.02***	–0.87**	0.15	0.01	0.74***	9,600
2	–0.05***	0.05**	0.04**	0.01***	–0.05**	0.20**	0.16**	–0.00***	0.02***	–0.57	-0.13*	-0.11**	1.02	9,430
3	–0.03**	0.15**	0.00**	0.01***	–0.35	0.37*	0.26*	–0.00***	0.03**	–0.49	0.08	0.18*	0.68	3,790
4	–0.04**	0.06**	0.02**	0.01**	–0.14	0.26*	0.15*	0.00***	0.03**	0.53	0.32	0.17	0.84	1,790
5	–0.07**	0.39*	–0.04*	–0.01***	–0.11*	0.82	0.31	–0.01***	0.02**	–3.28	-0.78	-0.11	1.37	3,300
6	–0.04***	0.21**	–0.03**	–0.00***	–0.13*	0.42**	0.29**	–0.01***	0.03***	–0.83	-0.38	-0.02**	0.94	9,890
7	–0.02***	-0.05**	0.06**	0.00***	0.03*	0.16**	0.25**	0.00***	0.02**	–2.77	-0.04*	0.04*	0.35	2,760
8	–0.07**	0.28*	–0.04**	–0.01***	–0.28	0.78*	0.24*	–0.01***	0.03**	–1.11	-0.58	-0.17	1.57	5,100
9	–0.04**	0.07**	0.04*	0.01**	–0.00*	0.22*	0.29*	0.00***	0.00***	–3.07	-0.05	0.01*	0.94	2,030

***, **, * Significance at 1%, 5%, and 10% levels, respectively. OBS: Number of observations.

Discussion of Results for the Entire Sample and by Country

The regression results for the entire sample and by country are presented in Table 6a. As described in the methodology section, we employed pooled OLS regressions and panel regressions using fixed effects (FE) and random effects (RE) models. Based on the LM test, panel models were deemed more appropriate in the initial step. Subsequently, the Hausman test [1] determined that the FE model was preferable over the RE model. Therefore, the results in both Tables 6a and 6b are derived from the FE model.

The findings indicate that firm size has a significantly negative impact on cash holdings, contradicting the pecking order theory yet aligning with the notion that smaller firms tend to hold more cash due to lower credibility and restricted access to financing compared to larger counterparts. This trend is observed in China and India at the country level, while insignificance is noted in other countries.

Across the entire sample and all countries therein, a positively significant relationship between leverage and cash holdings is identified, contrary to our hypotheses, the pecking order theory, and previous empirical findings.

Profitability is generally insignificant, except for China and Russia, where a negative relationship is observed, contrary to our expectations.

Regarding growth opportunities, insignificance is generally noted, except for India and South Africa, where a negative relationship is observed, consistent with our hypotheses and the pecking order theory.

Capital expenditures display a negative significant relationship with cash holdings in the overall sample and in China, India, and South Africa. In other countries, this relationship is insignificant. This suggests that increased capital expenditures diminish cash holdings, consistent with our hypotheses, the pecking order theory, and prior research [9; 17].

We found a highly positive and significant relationship between net working capital and cash holdings across the entire sample and at the country level for all countries. This finding aligns with the pecking order theory yet contradicts the trade-off theory and our hypotheses.

Similarly, a positive relationship between operating cash flow and cash holdings was observed for the entire sample and at the country level for all countries. This result is consistent with the pecking order theory.

Regarding firm age, we obtained mixed results with very low coefficients. For the entire sample and China, a negative relationship was found, while a positive relationship was observed in India, Russia, and Turkey. In Brazil and South Africa, the results were insignificant.

Concerning dividend payments, a significant positive relationship was identified for the entire sample and all countries except Russia and South Africa at the country level. This finding is intriguing as it contradicts both the pecking order theory and the trade-off theory. Theoretically, dividend payments are expected to have a negative effect on cash holdings. However, in our model and in most empirical studies, the dividend variable is included as a dummy variable rather than a continuous variable. This approach may impact the results and presents a potential area for future research.

Our findings regarding relative R&D expenditures yielded mixed results. We observed a significant negative relationship for the entire sample and China, while a positive relationship was identified for Russia and South Africa. In other countries, the relationship was deemed insignificant.

As for macroeconomic variables, our results also varied. The inflation rate demonstrated a negative relationship for the entire sample. In individual countries, this relationship was mostly insignificant, except for India, where a positive relationship was observed. The negative relationship for the overall sample suggests that firms tend to hold less cash during periods of higher inflation, possibly due to decreased purchasing power.

The GDP growth rate showed an insignificant relationship with corporate cash holdings for the entire sample, although significant coefficients were detected in three countries, each with different signs.

Discussion of Results by Industry

Table 6b presents the regression results by industry. Across all industries, firm size exhibited a significantly negative relationship with corporate cash holdings, consistent with the findings for the entire sample and at the country level. This contradicts the pecking order theory but aligns with the perspective that smaller firms tend to hold more cash relative to their larger counterparts within the same industry.

With regard to leverage, a positively significant relationship with cash holdings was observed in all industries except for real estate, mirroring the results at the country level.

The relationship between profitability and cash holdings varied across industries, being positive in five industries, negative in three industries, and insignificant in one industry. This variability could stem from differences in trade credit policies and supplier-customer relationships.

In most industries, growth opportunities exhibited a positively significant relationship with cash holdings, in line with our hypotheses. This indicates that growing sectors tend to hold more cash to finance their expansion.

Capital expenditures showed a significantly negative relationship with cash holdings in the majority of industries, consistent with our hypotheses and country-level findings.

Net working capital and operating cash flow both displayed a positive relationship with cash holdings across all industries except for healthcare, aligning with country-level results.

The relationship between firm age and cash holdings varied across industries, with some showing positive coefficients and others negative.

All industries demonstrated a positively significant relationship between dividend payments and cash holdings,

suggesting a need for increased cash reserves to accommodate dividend payouts.

R&D expenditures yielded mostly insignificant results across industries, except for the basic materials sector, which showed a negative relationship.

Inflation and GDP growth rates did not produce consistent results at the industry level, with varying significance across different sectors.

Conclusion

This study aimed to explore the determinants of corporate cash holdings using a comprehensive panel dataset spanning major emerging countries over a decade-long period from 2012 to 2021. The regression results, presented for the overall sample and dissected by country and industry, shed light on the factors influencing corporate cash reserves.

Across the board, firm size, leverage, capital expenditures, net working capital, operating cash flow, firm age, R&D expenditures, and dividend payments emerged as significant determinants of cash holdings, albeit with some variations observed at the country and industry levels. Notably, macroeconomic variables such as inflation and GDP growth rate exhibited limited significance compared to firm-level determinants. These findings give preference to the pecking order theory over the trade-off theory in elucidating the drivers of corporate cash holdings.

The results of this study carry significant implications for both corporate managers and policymakers. Understanding the determinants of corporate cash holdings can help managers to formulate effective short and long-term financial strategies tailored to their specific circumstances. Policymakers, particularly those in governmental regulatory bodies, can leverage these insights to shape new regulations aimed at fostering liquidity at both the firm and market levels.

These findings hold particular relevance in view of the pivotal role of cash holdings in firm liquidity, particularly in less developed financial systems and emerging economies. While our study focused on major emerging countries, its implications extend to other regions with similar characteristics, highlighting the broader applicability of our findings across diverse economic contexts.

Cash holdings play a central role in the liquidity management of the firms, while firm liquidity is crucial for the financial soundness of firms and for global financial markets, insofar as liquidity problems are among the primary causes of macroeconomic crises. Cash holdings are particularly important for developing countries where the financial system is relatively less developed. While our sample was limited to major emerging economies, the findings are also applicable to other emerging countries with similar characteristics.

Our study has several limitations that pave the way for future research avenues. Firstly, our analysis employed a static model to investigate the determinants of corporate cash holdings. Future studies could expand upon this by incorporating dynamic models.

Secondly, our study did not incorporate variables related to corporate governance characteristics. Future research endeavors could take such factors as board size, board gender diversity, and CEO duality into account.

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