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# Determinants of Corporate Cash Holdings Among Asia's Emerging and Frontier Markets: Empirical Evidence from Non-Financial Sector

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## Abstract

The determinants of Corporate Cash Holdings (CCH) have been a deep-seated debate among institutions and scholars over the last couple of years. Therefore, this paper aims to investigate the determinants of CCH among emerging and frontier markets (Bangladesh, China, India, Pakistan). Due to endogeneity, the generalized methods of moments (GMM) methodology was applied to capture the impacts of different variables, including profitability, firm size, financial leverage growth opportunity, dividend payout, and the business cycle on CCH. The result shows that the firm's size positively enhances CCH in emerging and frontier markets. Growth opportunity is negatively influenced by CCH in the case of Bangladeshi firms while a positive driver in emerging markets. The business cycle has a negative bearing on CCH across Pakistan, India, and Bangladeshi firms while positive and significant in Chinese firms. Financial leverage and dividend payout were positive determinants of CCH in Chinese firms, while they appear negative for Pakistan, India and Bangladeshi firms. Finally, profitability has a positive and significant impact on CCH in frontier and emerging markets. The study contributes to the incumbent determinants of CCH literature by introducing a fresh outlook and offering policy insights helpful in emerging and frontier markets perspectives.

**Keywords:** Corporate Cash Holdings, Emerging Markets, Growth Opportunity, Firm Size, Financial Leverage

**JEL Classification Code:** G32, E22, E32

## 1. Introduction

Corporate Cash Holdings (CCH) behavior and other financial topics have reached unprecedented consideration in the contemporary finance literature field (Miller &

Orr, 1966; Suryadi et al., 2021; Aziz et al., 2021). The value and enormity of cash cannot be watered down as cash provides financial freedom to firms by enabling them to independently take financial decisions without external interference (Boubaker et al., 2015; Al-Najjar & Clark, 2017). According to Khuong et al. (2019) and Oláh et al. (2019), cash is regarded as one of the riskier liquid assets, and an increase in cash flow can assist in better decision-making practices. Regarding this, Siddiqua et al. (2019) argue that the trade-off, pecking order and cash flow theory typically elucidate the pattern of CCH. Considerable research studies have been conducted into the determinants of CCH; nevertheless, the past literature reveals a magnitude of concepts that has room for further exploration. According to An et al. (2013), firms should maintain an appropriate liquid position to avoid costly external financing for operational and investment needs.

Interestingly, Blach et al. (2014) state that cash management policies have become essential research in recent years. If the organizations cannot maintain their liquidity position correctly, they may face bankruptcy even if they are profitable. In addition, Gill and Shah (2012) mention that the liquid assets available to finance positive net present value projects or available to distribute among

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shareholders are considered cash holdings. Yulu (2018) and Elbadry (2018) mention that the importance of cash holding increased in recent years.

Linking with the above discussion of the broad theoretical orientation, Lie et al. (2018) and Islam et al. (2020) argue that the sensitivity of cash holdings varies in developed, emerging, and frontier markets as financial development may bring down the affectability of cash holdings considerably. Datta and Jia (2012) state that there are different cash holding trends in different countries. Existing research investigates determinants of CCH and confirms a mix of association of CCH and its determinants across the different markets. This study's primary purpose is to examine the determinants of CCH in emerging and frontier markets. Thus, we concentrate on China, India, Pakistan and Bangladesh as representatives of respective markets by taking ten years' data from 2010 to 2019 of 166 firms from these emerging and frontier markets. Due to the endogeneity problem, the generalized methods of moments (GMM) method is applied to capture the impacts of different variables like profitability (P), financial leverage (FL), growth opportunity (GO), dividend payout (DP), firm size (FS) and the business cycle (BC) on corporate cash holdings (CCH). This study has mainly been undertaken to give a fresh insight into determinants of corporate cash holdings among emerging and frontier markets. It may be articulated from the lack of background research on cash holdings in emerging and frontier markets.

This article contributes to the current literature in a few ways. Firstly, studies by Shah (2011), Haraguchi et al. (2017) and Mostafa and Klepper (2017) contributed by analyzing cash holdings determinants in a different kind of macroeconomic environment as to our study, which focuses on emerging markets (China, Pakistan, India) and a frontier market (Bangladesh). Our study's countries are also characterized by high macroeconomic uncertainty, prompting the managers to hold more cash than would be optimally required. Since macroeconomic uncertainty increases volatility in the firm's cash flows, managers are sensitive to such variations, leading to different cash holding behavior than under a stable macroeconomic environment. Secondly, evidence from emerging and frontier markets help us better understand the underlying effect of determinants of CCH.

Furthermore, it is essential to swiftly look at emerging and frontier markets as these markets tend to change quickly (Khan et al., 2020). The economy of Pakistan, China and Indian is treated as emerging economies of the world. Bangladesh is considered a frontier market. Bangladesh's business hub is Dhaka Stock Exchange and the Chittagong Stock Exchange (Bates & Buckles, 2017). Qoyum et al. (2015) studied the relationship between business cycles and macroeconomics performance. The study revealed that money supply, interest rates, exchange rates, and stock

prices, among other determinants, fluctuate in south Asia and Asia-Pacific regions.

The remainder of the requisite article is ordered as follows: Section 2 delves into the literature review and construction of the hypotheses. Section 3 discusses the study's methodology. Results are offered in Section 4 and end with the research article's conclusion and upcoming studies in Section 5.

## 2. Literature Review

Corporate Cash Holdings (CCH) behavior has received unprecedented consideration in the contemporary finance literature field after Miller's contribution twentyfiveand Modigliani and Miller's preliminary work (1958). An et al. (2013) state that firms should maintain appropriate liquidity positions to avoid costly external financing for operational and investment needs. Interestingly, Błach et al.'s (2014) study on policies about cash management has become essential research in recent years. If the organizations cannot maintain their liquidity position correctly, they may face bankruptcy even if they are profitable. The related strand of literature confirms the importance of determinants of cash holdings. The first theory about cash holdings is the Trade-off theory presented by Miller and Orr (1966). According to Han and Qiu (2007), precautionary motives usually expect a problematic situation to generate funds for different investment purposes and operations purposes and hold high cash to secure them. The third motive is the speculative motive. Tax laws of the country also affect the firm's decision about cash holding levels. Firms adopt their policies about cash holdings as per the tax laws that affect them (Gill & Biger, 2013).

### 2.1. Firm Size and Cash Holdings

According to the first theory, Trade-off theory, about the cash holdings, the organizations more significant in size can distribute external funds cost over large size and enjoy economies of scale. Conversely, Aftab et al. (2018) documented a positive association between firm size and cash holdings. This leads to our first hypothesis.

**H1:** Firm size (FS) significantly affects cash holdings (CCH) in emerging and frontier markets.

### 2.2. Financial Leverage and Cash Holdings

Abbadi and Abbadi (2013) demonstrated a negative relationship between financial leverage and liquid assets; a higher level of financial leverage reflects a higher risk level. Another study conducted on Croatian firms by Sarlija and Harc (2012) on European change economies affirmed

a negative relationship between liquidity and financial leverage. Gancherka (2018) observed different associations among the variables.

**H2:** Financial leverage (FL) significantly affects cash holdings (CCH) in emerging and frontier markets.

### 2.3. Growth Opportunities and Cash Holdings

Ullah et al.'s (2018) trade-off model state that the firms with higher growth opportunities and risky debt on their balance sheets are most likely to face the under-investment problem. Therefore, organizations with more significant growth opportunities (GO) have a strategy to accumulate extra cash to avoid a financially stressful situation. Contrary to this literature, we found numerous researchers who revealed an opposite relation between GO and CCH.

**H3:** Growth opportunity (GO) significantly affects cash holdings (CCH) in emerging and frontier markets.

### 2.4. Dividend Payments and Cash Holdings

From the Trade-off model view between cash holdings and dividend payments, a negative relationship exists. From this view, in the case of a liquidity shortage, dividend cuts can provide funds. Those organizations that are paying profits gather less cash than those that are paying earnings since profit slices are expected to be related to low expenses. Ullah et al. (2018) found a negative association between dividend payments and cash holdings. Singh and Misra (2019) and Julio and Yook (2012) found that dividend payments are adversely related to liquid corporate assets.

**H4:** Dividend payout (DP) significantly affects cash holdings (CCH) in emerging and frontier markets.

### 2.5. Profitability and Cash Holdings

Ullah et al. (2018) again found a negative association between profitability and cash holdings. Whereas Aftab et al. (2018) found adverse results significantly bearing on cash holdings and profitability.

**H5:** Profitability (P) significantly affects cash holding (CCH) emerging and frontier markets.

### 2.6. Business Cycle and Cash Holdings

Wang and Wang (2019) studied the relationship between the economic cycle and cash holdings rate using data from firms listed on the Schengen security exchange (period 2004 to 2015). They found a negative relationship between the economic cycle and CCH levels. Jebran's (2019) research

investigated firms in Pakistan from 2004 to 2015 and divided them into three phases: pre-crisis, crisis, and post-crisis and found that financial crisis affects firms' cash holdings.

**H6:** Business cycle (BC) significantly affects cash holdings (CCH) in emerging and frontier markets.

### 2.7. Conceptual Framework

The scholarly theoretical and empirical literature review reveals an inconclusive association among determinants of corporate cash holdings. It is stated in the literature that the effect of study variables varies from country to country and from sector to sector. Some researchers explored the determinants of corporate cash holdings from developing, emerging and developed countries separately, but not in a single study. Therefore, this study contributes to new knowledge as it assesses the determinants of corporate cash holdings among developed, emerging and frontier markets. Based on the previous review, the designed framework is portrayed in Figure 1.

## 3. Research Methodology

### 3.1. Research Design

This study utilized the GMM test to examine the relationship between the dependent (CCH) and independent variables (P, FL, GO, FS, DP and BC) using STATA 12. The purpose of using GMM was to overcome the endogeneity problem (Khan et al., 2020). Endogeneity may lead to parameters being biased and inconsistent (Roberts & Whited, 2011). This paper excludes non-financial sectors because they are grounded on unique accounting standards or benchmarks and have different capital structures.

There are two types of GMM, system and difference. The dependent variable is used as a lag variable on the right-hand side, so the model becomes dynamic, and the independent variables' lag values are used as instruments.

### 3.2. Empirical Model Building and Estimation

In past investigations, many factors were explored to check their association with cash holdings by various

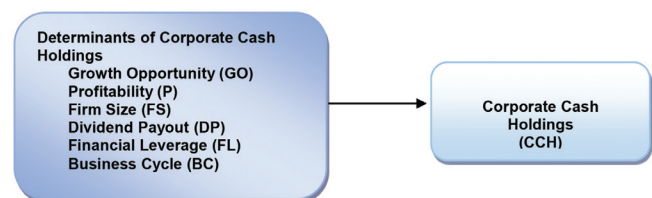


Figure 1: Determinates of Corporate Cash Holdings

specialist research scholars of different nations worldwide. Affirming these researchers' results, this study has analyzed a few factors by testing emerging and frontiers markets. The study research model is stated as follows.

$$CCH_{it} = \alpha + \beta_1 FS + \beta_2 P + \beta_3 GO + \beta_4 FL + \beta_5 DP + \beta_6 BC + \varepsilon_{it}$$

Where, CH: Cash Holdings of the firm;  $P$ : Return on assets (Profitability); FS: Firm Size; GO: Growth Opportunities; FL: Leverage; DP: dividend payout; BC: Business cycle  $\varepsilon$ : represents error. For this study, the data was collected through different data streams and official websites. For the emerging countries, Pakistan, India and Chinese firms were included using data from 2010 to 2019, and Bangladeshi firms used as part of the frontier market. From the Indian, Chinese and Pakistan markets, we have collected data from 42 firms per country and the Bangladesh market 40 firms.

### 3.3. Variables Measurement

Cash Holdings (CCH) taken as dependent variable represents Cash + Cash equivalent divided by Total asset  $\times 100\%$ . This choice is in line with Nasr et al. (2020) and Opler et al. (1999). The dependent variables were selected as follows: Growth Opportunity (GO) is calculated as Market Value of common Equity GO divided by Book Value of common Equity  $\times 100\%$ , which is in line with Ozkan and Ozkan (2004). Profitability ( $P$ ) = Net profit after tax divided by Total asset  $\times 100\%$ . We compute Firm Size (FS) =  $\ln$  Total Assets (Ali et al., 2016).

Financial Leverage, (FL) = Total debt divided Total assets  $\times 100\%$  (Teruel et al., 2009). Business Cycle (BC) = Industrial Production Index (Qoyum et al., 2015) of Pakistan, India, Bangladesh and China. In Table 1, operational details are offered.

## 4. Empirical Results and Discussion

This section reports the descriptive statistics, variance inflation factor, GMM results, discussion, and hypothesis testing.

### 4.1. Baseline Results

Tables 2, 3, 4, and 5 report descriptive statistics of the data's basic pattern and behavior, i.e., mean, SD, minimum and maximum in all cases.

### 4.2. Correlation Results

The study shows that there is a significant association among variables in cases of emerging and frontier markets.

### 4.3. Variance Inflation Factor (VIF)

An important test of detecting multicollinearity is VIF (Gujarati, 2010). Before moving forward and applying GMM, we check the absence of multicollinearity. There should be no correlation between IVs and DV and the value of VIF presented in Appendix A, which are less than 5 in all cases. Hence, the results show that there is no multicollinearity problem.

**Table 1:** Operational Definition of Variables and Measurement

Variables	Symbol	Measurement
<b>Dependent Variable</b>		
Cash Holding	CCH	Cash Holding (CCH) = (Cash + Cash equivalent / Total asset) $\times 100\%$ (Nasr et al., 2020); (Opler et al., 1999).
<b>Independent Variables</b>		
Growth Opportunity	GO	GO = (Market Value of common Equity GO / Book Value of common Equity) $\times 100\%$ (Ozkan and Ozkan, 2004).
Profitability	P	P = (Net profit after tax / Total asset) $\times 100\%$ (Husain, Sunardi & Review, 2020).
Firm Size	FS	FS = $\ln$ (total assets) (Ali et al. 2016).
Dividend Payout	DP	Dividend Payout Ratio = (Cash dividend / Net Income) $\times 100$ (Kusuma & Samuel, 2019).
Financial Leverage	FL	FL = (Total debt / Total assets) $\times 100\%$ (Teruel et al., 2009).
Business Cycle	BC	Business cycle = Industrial Production Index (Qoyum et al., 2015).

**Table 2:** Chinese Firms Descriptive Statistics

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
CCH	301	9.555	7.509	0.020	38.940
FS	301	11.951	2.884	6.080	18.270
P	301	5.713	6.210	-34.570	37.250
GO	301	2.772	2.871	0.250	38.170
DP	301	25.243	25.72	-76.900	137.20
FL	301	53.527	13.476	16.500	84.630
BC	301	98.002	2.4613	93.230	101.020

**Table 3:** Pakistani Firms Descriptive Statistics

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
CCH	328	8.490	10.371	0.020	48.721
FS	328	17.989	3.408	9.930	26.310
P	328	3.891	11.464	-57.170	54.110
GO	328	1.631	2.247	-2.561	28.823
DP	328	16.757	31.084	-103.380	230.794
FL	328	53.403	19.735	10.510	98.130
BC	328	4.3850	1.1324	3.000	6.807

**Table 4:** Indian Firms Descriptive Statistics

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
CH	336	3.198	4.192	0.0100	29.790
FS	336	12.691	4.758	5.280	22.430
PROF	336	5.255	8.180	-37.750	50.231
GO	336	2.372	2.2023	-1.340	11.503
DP	336	18.520	27.257	-49.661	24.281
LEV	336	50.994	19.673	0.050	95.863
BC	336	99.986	7.137	91.871	110.951

**Table 5:** Bangladeshi Firms Descriptive Statistics

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
CCH	280	3.855	6.177	0.021	40.941
FS	280	21.960	1.515	16.453	27.320
P	280	3.928	4.446	-9.323	21.061
GO	280	1.640	1.105	0.047	7.580
DP	280	19.964	39.846	-26.860	180.161
FL	280	48.0131	22.935	5.817	91.901
BC	280	8.542	0.6148	7.467	9.521

#### 4.4. GMM Regression Results

Referring to Table 6, results signify that financial leverage (FL) significantly impacts cash holdings. Profitability and CCH are positively related at the 5% level, and a 1% change in profitability will change the cash holdings by 0.047% in the case of Chinese firms. Firm size and cash holdings also have a positive and significant link in Chinese firms, and the result is significant at the 5% level. The results indicate that an increase of 1% in firm size is associated with an increase of 0.018% in Chinese firms. These results of firm size and cash holdings are consistent with the results of Bigelli and Sanchez-Vidal (2012). They also found that the variable growth opportunities significantly affect cash holdings in Chinese firms, where a 1% increase in GO results in an increase of 0.018% in firms' cash holdings. This is in line with Khieu and Pyles (2012). While the dividend payout ratio has a significant relationship with cash holdings in China's case, BC has little bearing on CCH.

In Pakistan and India, FL and CCH are negatively related. An increase of 1% in leverage resulted in a decrease of 0.022 in Pakistani firms' cash holdings and 0.015 in Indian firms' cash holdings. These results are consistent with Sarlija and Harc (2012). The profitability result is also positive and significant in Pakistan at the 5% level. Hence, a 1% increase in Pakistani firms' cash holdings is 6.9% of the emerging Pakistani market. Thus, profitability plays a more critical role in Pakistan.

On the other hand, results show that profitability is insignificant with cash holdings in India's emerging market. The result indicates that an increase of 1% in firm size is associated with a rise of 0.065% in Pakistani firms and by 0.0056% in Indian firms. A 1% rise in GO leads to an increase of 0.00046% in Pakistani firms' cash holdings and 0.014% in Indian firms' cash holdings. The variable business cycle has a negative and significant relation with cash holding in Pakistan and India, and the result is significant at the 5% level. The result indicates that an increase of 1% in the business cycle

is associated with a decrease of 0.014% in Pakistani firms' cash holdings and 0.018% in Indian firms. Wang (2019) found a negative connection between the monetary cycle and cash holdings. The results further indicate that DP negatively and significantly affects cash holdings in Pakistan's case, and in India's emerging market, it is insignificant. Hence, the findings suggest that a 1% rise in dividend payment results in a decrease of 13% in Pakistani firms. The FS and FL have positive and significant results in the case of a frontier market. Likewise, the firm's size and profitability also show a significant positive liaison. Bangladeshi firms showed that a 1% increase in profitability would increase the cash holdings levels by 0.003%. These findings are supported in the study of Bigelli and Sánchez-Vidal (2012). The results also show that the variable growth opportunities negatively and significantly affect cash holding in Bangladesh. A 1% increase in GO results in a decrease of 0.06% of Bangladeshi firms' cash holdings; this result was also found by Bigelli and Vidal (2012). The results further indicate that dividend payout negatively and significantly affects cash holdings in Bangladesh. Hence, the findings suggested that a 1% rise in dividend payment results in a decrease of 8.7% in Bangladeshi firms and supported the previous studies by Julio and Yook (2012). The variable business cycle has a negative and significant relation with cash holdings in Bangladesh, and the result is significant at the 5% level. The result also indicates that an increase of 1% in the business cycle is associated with a decrease of 0.014% in Bangladeshi firms. Wang (2019) discovered a negative connection between the monetary cycle and cash holdings.

#### 4.5. Diagnostic Test

To check the instrument's validity, the study employed the Hansen test where the null hypothesis is that instruments and error term is correlated. Further, to check whether there is autocorrelation, the study uses the Arellano–Bond

**Table 6:** GMM Results-Emerging and Frontier Markets

Dynamic Panel-Data Estimation-Emerging, and Frontier Markets, Two-Step System GMM								
2-Step System GMM	GMM-China [Emerging Markets]		GMM-Pakistan [Emerging Markets]		GMM-India [Emerging Markets]		GMM-Bangladesh [Frontier Markets]	
	Coef.	$P >  t $	Coef.	$P >  t $	Coef.	$P >  t $	Coef.	$P >  t $
CCH	0.384	0.000	0.435	0.000	0.470	0.000	0.347	0.000
FS	0.018	0.012	0.065	0.000	0.005	0.029	0.004	0.046
P	0.001	0.007	0.069	0.044	0.001	0.604	0.003	0.017
GO	0.018	0.031	0.000	0.019	0.014	0.049	0.014	0.049
FL	0.000	0.033	-0.022	0.008	-0.015	0.000	-0.004	0.068
DP	0.017	0.035	-0.131	0.017	-0.039	0.140	-0.087	0.023
BC	0.001	0.007	-0.014	0.049	-0.018	0.015	-0.014	0.004
Constant	-0.094	0.000	-0.134	0.000	-0.125	0.000	-0.047	0.024

**Table 7:** Diagnostic Test

Arellano-Bond Test for AR (1) in First Differences-(China)	Arellano-Bond Test for AR (2) in First Differences-(Pakistan)	Sargan Test of Overid. Restrictions-India	Hansen Test of Overid. Restrictions-Bangladesh
z = -7.710 Pr > z = 0.000	z = 0.020 Pr > z = 0.983	$\chi^2$ (94) = 124.030 Prob > $\chi^2$ = 0.021	$\chi^2$ (94) = 109.781 Prob > $\chi^2$ = 0.027
z = -4.120 Pr > z = 0.000	z = 0.450 Pr > z = 0.655	$\chi^2$ (39) = 39.270 Prob > $\chi^2$ = 0.045	$\chi^2$ (39) = 38.770 Prob > $\chi^2$ = 0.030
z = -5.470 Pr > z = 0.000	z = -0.320 Pr > z = 0.748	$\chi^2$ (85) = 128.750 Prob > $\chi^2$ = 0.002	$\chi^2$ (85) = 81.510 Prob > $\chi^2$ = 0.087
z = -3.280 Pr > z = 0.001	z = -0.810 Pr > z = 0.421	$\chi^2$ (48) = 47.790 Prob > $\chi^2$ = 0.031	$\chi^2$ (48) = 47.790 Prob > $\chi^2$ = 0.031

**Table 8:** System GMM Regression Results [Comparative Representation]

Variables	Model-1 CHINA	Model-2 PAK	Model-3 IND	Model-4 BAN
CCH (-1)s	0.3842** (0.010)	0.435** (0.030)	0.470** (0.012)	0.347** (0.022)
FL	0.001*** (0.003)	-0.022*** (0.008)	-0.015*** (0.000)	-0.004** (0.068)
P	0.001** (0.047)	0.069** (0.044)	0.003** (0.604)	0.003** (0.017)
DP	0.017** (0.005)	-0.131** (0.017)	-0.039** (0.010)	-0.087** (0.023)
FS	0.0183** (0.012)	0.065*** (0.000)	0.005** (0.029)	0.004** (0.046)
BC	0.001** (0.687)	-0.014** (0.049)	-0.018** (0.015)	-0.014*** (0.004)
GO	0.010** (0.031)	0.004** (0.019)	0.014** (0.049)	-0.061** (0.048)
Constant	-0.094*** (0.000)	-0.134*** (0.000)	-0.125*** (0.000)	-0.0471*** (0.024)
Observations	301	328	336	280
No. of Instruments	48	52	56	49
AR (1)	-7.71	-4.12	-5.47	-3.28
P-value	(0.000)	(0.000)	(0.000)	(0.001)
AR (2)	0.02	0.45	-0.32	-0.81
P-value	(0.983)	(0.655)	(0.748)	(0.421)
Hansen test	109.78***	38.77***	81.51***	47.79***
P-value	(0.027)	(0.080)	(0.087)	(0.081)
Differ. in Hansen test	13.09	11.36	8.79	9.70
P-value	(0.834)	(0.252)	(0.964)	(0.376)
F-significance	(0.000)	(0.000)	(0.000)	(0.000)

Standard error in Parentheses. \*\*\* $P < 0.01$ ; \*\* $P < 0.05$ ; \* $P < 0.1$ .

test (see Table 7), which shows that the  $p$ -value is greater than 5%; hence the null hypothesis cannot be rejected. Thus, there is no autocorrelation in the dataset. The speed of adjustment towards China’s target cash holdings is 62%, for Pakistan 57%, for India 53%, and for Bangladesh 66%.

#### 4.6. Comparative Analysis of Emerging and Frontier Markets

The relationship between financial leverage and cash holding found significant in the market of Chinese markets (see Table 8). On the other side, it was found negatively significant

in the emerging market of Pakistan, India and frontier markets. Profitability shows the insignificant relationship in India’s emerging market and is positively significant in our study’s rest markets. The dividend payout ratio also shows a significant relationship with cash holding in the case of china and a significant negative relationship in the other markets of our study. Firm size is positively significant in emerging and frontier markets of this study. Else than these, firms greater in size could gather more cash. GO has a considerable impact in cases of emerging and frontier market. BC has a negative bearing in the case of Pakistani, Indian and Bangladeshi firms while significant in Chinese firms (see Tables 9 and 10).

**Table 9:** Summary Results across Frontier and Emerging Markets

Country	Variables	Findings	Probability
CHINA [Emerging]	Growth opportunity	+	Significant
	Leverage	+	Significant
	Profitability	+	Significant
	Dividend payout	+	Significant
	Firm size	+	Significant
	Business cycle	+	Significant
Pakistan [Emerging]	Growth opportunity	+	Significant
	Leverage	-	Significant
	Profitability	+	Significant
	Dividend payout	-	Significant
	Firm size	+	Significant
	Business cycle	-	Significant
India [Emerging]	Growth opportunity	+	Significant
	Leverage	-	Significant
	Profitability	+	Significant
	Dividend payout	-	Significant
	Firm size	+	Significant
	Business cycle	-	Significant
Bangladesh [Frontier]	Growth opportunity	-	Significant
	Leverage	+	Significant
	Profitability	+	Significant
	Dividend payout	-	Significant
	Firm size	+	Significant
	Business cycle	-	Significant

**Table 10:** Hypothesis Testing

Hypotheses	Statements	Results
H1	Firm size significantly affects cash holdings in emerging and frontier markets.	Accepted
H2	Financial leverage significantly affects cash holdings in emerging and frontier markets.	Accepted
H3	Growth opportunity significantly affects cash holdings in emerging and frontier markets.	Accepted
H4	Dividend payout significantly affects cash holdings in emerging and frontier markets.	Accepted
H5	Profitability significantly affects cash holdings in emerging and frontier markets.	Accepted
H6	Business cycles significantly affect cash holdings in emerging and frontier markets.	Accepted

## 5. Conclusion

This paper was meant to investigate the determinants of corporate cash holdings among emerging and frontier markets. Ten years' data from 2010 to 2019 of 166 firms were analyzed. Owing to endogeneity, the generalized methods of moments (GMM) methodology was applied to capture the impacts of different variables, including profitability, firm size, financial leverage, growth opportunity, dividend payout, and the business cycle on CCH. The result shows that firm size has a positive and significant impact on emerging and frontier markets. Growth opportunity has a negative and significant effect in Bangladeshi firms while positive and significant in emerging market firms. The business cycle has a negative and significant bearing in Pakistan, India and Bangladeshi firms while positive and significant in Chinese firms. Financial leverage and dividend payout are significant in Chinese firms while negative and significant signals Pakistan, India and Bangladeshi firms. Profitability has a positive and significant effect in the case of frontier and emerging markets on corporate cash holdings.

The study contributes to the incumbent determinants of cash holdings literature by introducing a fresh outlook and offering policy insights helpful in emerging and frontier market perspectives. This study's results can be significant for firms to have a deeper understanding and appreciation of the role and the importance of the firm characteristics on the level of cash holdings. It can improve decision-makers knowledge, such as shareholders, managers, and investors, concerning what motivates firms to hold a certain level of cash holdings. It is finding the right balance between holding too much and less cash based on various factors.

Although many determinants of cash holdings have been investigated in this paper, many other factors influence the firm's cash holdings level. Agency problems and corporate governance mechanisms (size and structure of the board of directors, shareholder protection and so forth) are internal characteristics that can impact how liquid assets are managed. For further research, it would be interesting to



investigate some macro-economic factors such as inflation, unemployment rate or capital market developments. This study's results may not be generalized since small firms may have other factors influencing the cash holdings level. It may be interesting to look at small firms to see if the relationship holds. More than one frontier and emerging markets with extended years of data may be chosen in future research.

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## Appendix A

### VIF Test for Emerging and Frontier Markets

Variables	VIF (China Firms)		VIF (Pakistani Firms)		VIF (Indian Firms)		VIF (Bangladeshi Firms)	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
FS	1.04	0.962	1.02	0.976	1.09	0.913	1.21	0.824
P	1.13	0.884	1.29	0.776	1.49	0.671	1.29	0.774
GO	1.19	0.841	1.07	0.936	1.31	0.766	1.09	0.915
DP	1.01	0.990	1.18	0.850	1.09	0.914	1.13	0.881
FL	1.17	0.857	1.15	0.869	1.18	0.846	1.2	0.832
BC	1.03	0.975	1.04	0.964	1.14	0.874	1.02	0.983
Mean VIF	1.09		1.12		1.22		1.16	