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Factors influence corporate cash holdings - Empirical evidence from the textile industry of Bangladesh

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ABSTRACT

Cash holdings are immaterial in a world of efficient capital markets because corporations may readily raise cash to finance lucrative investment projects at low transaction costs. This paper investigates the factors determining corporate cash holdings in Bangladesh's textile sector. The study used a longitudinal cross-sectional panel data set of 53 Bangladeshi textile companies from 2012 to 2021, analyzed using multiple discriminant regression. The findings imply that corporate cash holding is influenced by firm-level (i.e., profitability, capital expenditure, fund flow from operation, net working capital, growth opportunity, leverage, dividend, firm age, and firm size) and macroeconomic factors (i.e., GDP, inflation). From an academic standpoint, this paper adds to our understanding of the cash holding level in emerging markets like Bangladesh. The study's findings may have significant practical implications for creditors, governments, regulators, and other stakeholders to create reliable credence about a company's financial condition.

Keywords: corporate cash holdings, profitability, net working capital, leverage.
JEL Classification: G3, G4, L1, L6.

1.0 Introduction

Cash is the most readily available asset that is the lifeblood that keeps businesses running (Arfan et al., 2017). The more uncertainty or inconsistency of the company's cash flow, the greater the probability of operational cash deficits, and companies are urged to store more cash (Dittmar & Mahrt-Smith, 2007). Given the significance of cash, all businesses preserve a percentage of their current assets in cash form, which is the transaction motto of maintaining cash (Keynes, 1936). Empirical research from various economies worldwide reveals that cash holdings are significant in total assets. To mention a few, the cash ratio on average in the United States is 17% (Pinkowitz, Stulz, & Williamson, 2006), in the United Kingdom is 9.9% (Ozkan & Ozkan, 2004), in Spain 8% (Garca-Teruel & Martnez-Solano, 2008), and 9.1% in Turkey (Uyar & Kuzey, 2014).

Furthermore, the advantages of retaining cash include facing financial difficulty, giving a more optimal investment policy in financial distress, and facilitating external finance (Jamil, Anwar, Afzaal, Tariq, & Asif, 2016). This is also consistent with Ferreira and Vilela (2004) beliefs that retaining cash in a company can lessen the likelihood of financial trouble due to unanticipated losses. On the other hand, holding too much cash for the company can indicate agency issues between management and shareholders (Jensen, 1986). (Subramaniam, Tang, Yue, & Zhou, 2011) discovered in their research that there is no ideal amount of cash holding policy

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because it is continually changing. As a result, there is no fixed limit to the optimal level of capital that the corporation must hold (Arfan et al., 2017).

Cash holdings are immaterial in a world of efficient capital markets because corporations may readily raise cash to finance lucrative investment projects at low transaction costs. As a result, shareholder wealth remains unaffected as the corporation invests in liquid assets. Recent studies, however, suggest that corporations capitalize on liquid assets by keeping significant cash reserves. (Dittmar, Mahrt-Smith, & Servaes, 2003), (Ferreira & Vilela, 2004) (Gao & Kling, 2012) found significant assets in cash or adjacent to cash instruments. An abundance of studies have investigated the determining factors of cash holdings in corporations and found that specific factors of firms influence cash holding decisions (Al-Najjar & Clark, 2017; Ferreira & Vilela, 2004; Guizani, 2017; Lozano & Yaman, 2020; T. C. Opler & Titman, 1994). Furthermore, recent research indicates that corporate cash-holding behavior differs between organizations (Foley, Hartzell, Titman, & Twite, 2007; Gao & Kling, 2012).

The remainder of the chapter is as follows: The "Literature Review" segment provides a review of prior literature on the research topic; "Hypotheses Development" describes our hypotheses; "Conceptual Framework" describes the framework of the models; "Research Methodology" describes the procedure used for sample selection and data collection; "Analysis and Findings" reports the results and further analysis, and the "Conclusions" segment includes the recommendations.

2.0 Significance of the study

By examining cash holdings from the perspective of Bangladesh, a small, developing country, this study adds to the work on determining cash holdings. For instance, businesses rarely obtain extra external financing through the stock market in Bangladesh. Therefore, it is anticipated that businesses will strongly desire to turn their cash into capital, which may be used for potential financing needs. Understanding the factors that influence company cash holdings is important for economic reasons. Cash reserves are critical to a company's operational flexibility, investment decisions, risk management, and overall financial health (Guizani, 2017). This research sheds light on how businesses manage liquidity in response to internal and external forces. Corporate cash management also has macroeconomic implications for investment levels, employment, and economic growth. Firms with significant cash holdings may underinvest, reducing economic growth, whereas firms with insufficient liquidity may experience financial difficulties during downturns, exacerbating economic volatility (Shabbir, Hashmi, & Chaudhary, 2016).

3.0 Research gap

While the determinants of corporate cash holding have been extensively investigated in industrialized economies (Al-Najjar, 2013; Alnori, Bugshan, & Bakry, 2022; Arfan et al., 2017), there is still a huge vacuum in knowing how these factors function in emerging countries, particularly in Bangladesh. Most of the available work has focused on companies in the advanced economies (Opler, Pinkowitz, Stulz, & Williamson, 1999), where financial systems, corporate governance structures, and market dynamics diverge significantly from those in underdeveloped countries. As a result, the conclusions of this research may not apply directly to the Bangladeshi corporate context. In Bangladesh, distinctive institutional factors such as restricted access to external finance, significant ownership concentration, and underdeveloped capital markets may impact enterprises' cash holding behavior differently. This study seeks to fill this gap by thoroughly examining the internal and external factors impacting corporate cash holding decisions among Bangladeshi enterprises. Doing so will contribute to the larger literature by providing insights into how emerging market characteristics influence company liquidity decisions and guide policy-making and financial management practices in similar economies.

4.0 Objective of the study

This study's first goal is to provide empirical data on the factors that affect cash holdings among Bangladeshi listed textile companies, which is unique compared to other countries studied in the literature.

4.1 Literature review

Two components make up the literature review for this subject. The first part, which emphasizes theories directly relevant to the topic, is the theoretical background. The part on empirical evidence that follows emphasizes pertinent studies, various explanations, and the development of hypotheses.

5.0 Theoretical background

5.1.1 Trade-off theory

Firms choose their optimal cash levels by weighing marginal advantages against marginal costs of retaining cash (Ferreira & Vilela, 2004; Jamil et al., 2016; T. Opler, Pinkowitz, Stulz, & Williamson, 1999).

5.1.2 Pecking order theory

According to Myers (1984), corporations follow a sequence when determining which funds to use for investment funding. First, businesses prefer to fund projects with internal finances. Second, they will change their dividend levels, even though dividends have a sticky policy. Firms then prefer to sell liquid assets before resorting to external funding as a last option. If external financing is required, corporations choose debt, followed by hybrid securities such as convertibles, and ultimately equity issuance (Myers, 1984).

5.2 Empirical evidence

Profitability, capital expenditure, fund flow from operation, net working capital, growth opportunity, dividend, firm age, firm size, and leverage were identified as influencing factors of corporate cash holdings in listed textile firms. Some of the studies reviewed are included in Appendix 1.

5.3 Hypothesis development

5.3.1 Profitability and corporate cash holdings

According to the pecking order hypothesis, enterprises with more robust financial performance retain higher liquidity because profitable enterprises accumulate the cash flow generated for investment purposes (Sari & Ardian, 2019). However, High-return businesses can keep cash on hand to influence future investments (Guizani, 2017). According to Opler et al. (1999), there is a positive link between cash flows and cash levels. The research hypothesizes that:

H1: *"Ceteris paribus," cash holdings are positively associated with profitability*.

5.3.2 Capital expenditures and corporate cash holdings

The finance hierarchy approach predicts that enterprises that spend more on capital expenditures have fewer internal resources and accrue less cash. (Guney, Ozkan, & Ozkan, 2007), and (R. R. Chen, Guedhami, Yang, & Zaynutdinova, 2020) find a negative affiliation between capital expenditures and cash holdings. The research hypothesizes that:

H2: *"Ceteris paribus," cash holdings are negatively associated with capital expenditure.*

5.3.3 Fund flow from operations and Corporate Cash Holdings

C.-S. Kim, Mauer, and Sherman (1998), Hardin, Highfield, Hill, and Kelly (2009), Subramaniam et al. (2011), and Wang, Ji, Chen, and Song (2014) all find a negative association between cash flow and cash holdings, which is consistent with this hypothesis. Pecking order theory holds that firms that generate more cash flow from operations tend to amass more cash balances than firms that generate less cash flow. The research hypothesizes that:

H3: "*Ceteris paribus," cash holdings are positively associated with fund flow from operations.*

5.3.4 Net working capital and corporate cash holdings

Opler et al. (1999) discovered that net working capital had a negative impact on cash holding. The bigger a corporation's net working capital, the less cash is held by the company. C.-S. Kim et al. (1998) discovered that firms with substantial net working capital held cash in small amounts. The research hypothesizes that:

H4: *"Ceteris paribus," cash holdings are negatively associated with net working capital.*

5.3.5 Growth opportunities and corporate cash holdings

Myers (1984) points out that they have enormous knowledge asymmetries that cause serious organizational conflicts linked with increased external finance costs and debt, which may lead to less investment. As several empirical studies (Al-Najjar & Clark, 2017; Ferreira & Vilela, 2004; S. H. Kim & Haque, 2002) have demonstrated, the presence of growth prospects in organizations is a crucial element that favorably affects cash levels. The research hypothesizes that:

H5: *"Ceteris paribus," cash holdings are positively associated with growth opportunities.*

5.3.6 Dividend payments and corporate cash holdings

Most studies, including those by Chen, Schipper, Xu, and Xue (2012) and Hill, Fuller, Kelly, and Washam (2014), discover a positive relationship between dividend payments and company cash levels. According to the shareholder power theory, dividends can signify an alignment of the interests of shareholders and managers, and as a result, shareholders allow management to amass financial reserves. The research hypothesizes that:

H6: *"Ceteris paribus," cash holdings are positively associated with dividend payments.*

5.3.7 Firm's age and corporate cash holdings

The firm's age is projected to be inversely connected to cash holdings (T. Opler et al., 1999). Age is predicted to have a negative connection with cash holdings because established, older businesses are less likely

to experience information asymmetry and can raise capital via the market more affordably than younger ones. Because of this, it is anticipated that the new enterprises will store more capital to cover their investment requirements (Wang et al., 2014). The research hypothesizes that:

H7: *"Ceteris paribus," cash holdings are negatively associated with the firm's age.*

5.3.8 Firm size and corporate cash holdings

Kim et al. (1998) indicate a negative association, while Opler et al. (1999) discover that large companies with high credit ratings maintain less cash. Furthermore, a 2012 study by Ogundipe et al. of Nigerian businesses found no connection between cash holdings and firm size. The economies of scale may cause a negative relationship between cash holdings and corporate size. (2013) Anjum and Malik. The research hypothesizes that:

H8: *"Ceteris paribus," cash holdings are negatively associated with firm size.*

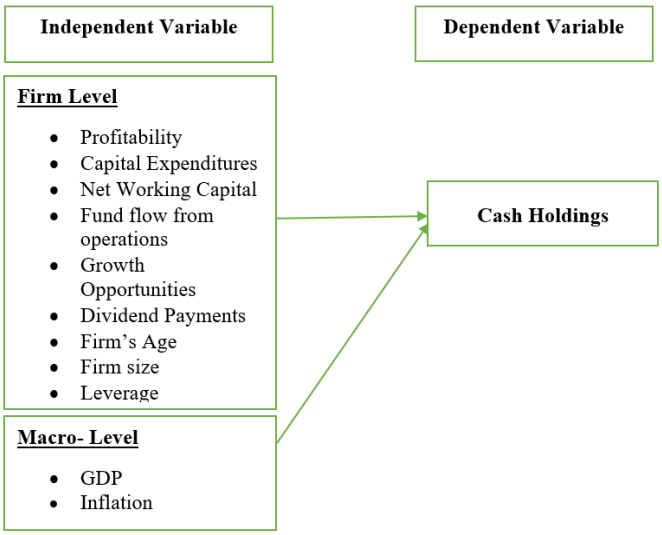
5.3.9 Leverage and corporate cash holdings

Couderc (2005) discovered that financial leverage hurts cash flow. Saddour (2006) discovered that financial leverage had a negative impact on cash holding. This finding is also confirmed by Indardi (2020) study in Indonesia. Their research found that financial leverage had a negative impact on cash holding; that is, the larger the financial leverage, the lower the cash holding.

H9: *"Ceteris paribus," cash holdings are negatively associated with leverage.*

6.0 Conceptual model development

This study's data analysis methods included dividing the data into dependent and independent variables. This study employs two dependent variables, nine independent variables, and two macroeconomic factors. As a result, the conceptual model for the study is as follows:



Source: Author Construction

7.0 Research methodology

7.1 Data and sample

Annual reports, DSE journal articles, and the company website were secondary data sources. The sample consists of 53 manufacturing enterprises listed on the Dhaka Stock Exchange and was picked from the population between 2012 and 2021.

7.2 Definition of operational variables

Table 1.

Definitions and expected sign operationalized variables.

Variables	Symbolic Code	Measurement	Expected Sign	Source	References
Cash Holdings	CH_1	Cash and cash equivalents / (Total Assets - Cash and cash equivalents)	N/A	Annual Report	Alnori, Bugshan, and Bakry (2022)
	CH_2	Natural Logarithm of Cash and Cash Equivalents	N/A	Annual Report	Foley et al. (2007)

	CH_3	Operational cash flow is divided by current liabilities	N/A	Annual Report	Zeller and Stanko (1994)
Profitability	ROA	Net income / Total assets	(+) ve	Annual Report	Arfan et al. (2017)
Capital Expenditures	CAPEX	capital expenditure / total asset	(-) ve	Annual Report	Bates, Kahle, and Stulz (2009)
Fund flow from operations	FFO	Cash flow from operations / net assets	(+) ve	Annual Report	Stone and Gup (2015)
Net Working Capital	NWC	(current assets minus current liabilities)/ net total assets	(-) ve	Annual Report	Mugumisi and Mawanza (2014)
Growth Opportunities	GWO	(Sales Year 2- Sales Year 1)/ Sales Year 1	(+) ve	Annual Report	Chauhan, Pathak, and Kumar (2018)
Leverage	LEV	Debt / Total Assets	(-) ve	Annual Report	Sun, Yung, and Rahman (2012)
Dividend Payments	DIV	Dummy variable (1 for dividend payers, zero otherwise)	(+) ve	Annual Report	Islam (2012)
Firm's Age	FA	Logarithm of Firm Age	(-) ve	Annual Report	Wang et al. (2014)
Firm Size	FZ	Logarithm of Total Assets	(+) ve	Annual Report	Hu, Li, and Zeng (2019)
GDP	GDP	Average inflation	(+) ve	World Bank data	Mesfin (2016)
Inflation	INF	Gross domestic product growth rate	(-) ve	World Bank data	Mesfin (2016)

Source: Author Construction

7.3 Research method

The study employed panel data estimates and then analyzed the relationships using FGLS panel techniques, such as fixed and random effects approaches.

7.4 Model specification

This study employs the FGLS model throughout the entire equation. The following regression model assesses the cause-and-effect relationship on the corporate cash holdings environment in Bangladesh:

Basic Model:

$$CH_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 FZ_{it} + \beta_3 CAPEX_{it} + \beta_4 NWC_{it} + \beta_5 FFO_{it} + \beta_6 GWO_{it} + \beta_7 DIV_{it} + \beta_8 FA_{it} + \beta_9 LEV_{it} + \beta_{10} GDP_{it} + \beta_{11} INF_{it} + \varepsilon_{it}$$

Where,

i =1; 2; 3…….53 n = 53 (Companies)

t = 2012……2021 t = 10 (Years)

$$\varepsilon_{it} = v_{it} + u_{it}$$

ε_{it} is the random error term, with v_{it} capturing the unobserved firm-specific effect and u_{it} being independently identically distributed (i.i.d.), eit N (0, σ^2).

Where; Cash= Cash Holdings, ROA= Return on asset, ROE = eturn on equity, FZ = Firm Size, ROA=Return on Assets, ROE= Return on Equity, FZ=Firmsize, CAPEX= Capital Expenditures, NWC= Net Working Capital, FFO= Fund flow from operations, GWO= Growth Opportunities, DIV= Dividend Payments, FA= Firm's Age, LEV = Leverage, GDP = Gross Domestic Product, INF = Inflation.

Thus, the specific models are,

Model-1:

$$CH\_1_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 FZ_{it} + \beta_3 CAPEX_{it} + \beta_4 NWC_{it} + \beta_5 FFO_{it} + \beta_6 GWO_{it} + \beta_7 DIV_{it} + \beta_8 FA_{it} + \beta_9 LEV_{it} + \beta_{10} GDP_{it} + \beta_{11} INF_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (Eq-1)$$

Model-2:

$$CH\_2_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 FZ_{it} + \beta_3 CAPEX_{it} + \beta_4 NWC_{it} + \beta_5 FFO_{it} + \beta_6 GWO_{it} + \beta_7 DIV_{it} + \beta_8 FA_{it} + \beta_9 LEV_{it} + \beta_{10} GDP_{it} + \beta_{11} INF_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (Eq-2)$$

Model-3:

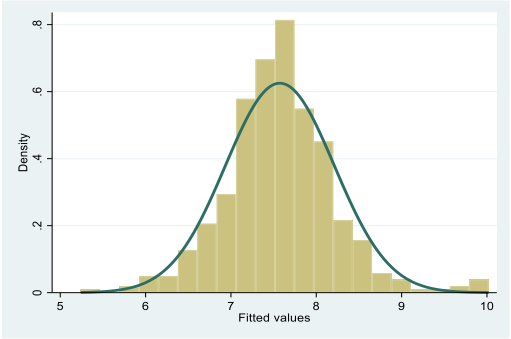
$$CH\_3_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 FZ_{it} + \beta_3 CAPEX_{it} + \beta_4 NWC_{it} + \beta_5 FFO_{it} + \beta_6 GWO_{it} + \beta_7 DIV_{it} + \beta_8 FA_{it} + \beta_9 LEV_{it} + \beta_{10} GDP_{it} + \beta_{11} INF_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (Eq-3)$$

8.0 Analysis and findings

8.1 Jarque-Bera (JB) test for normality

The Jarque-Bera (JB) test determines if the variables are normally distributed. The receiving of the null hypothesis (H0) implies that the data are normally distributed, whereas the alternative hypothesis verifies the dataset is not normality. The data in Chart 1 are normally distributed at the 1% significance level.

Chart 1: Normality test for the dataset from the year 2012 to 2021



Source: Author Construction

8.2 Univariate analysis

Table 2.

Descriptive statistics.

	N	Minimum	Maximum	Mean	Standard deviation
CH_1	448	0.000	0.461	0.052	0.088
CH_2	448	5.445	9.341	7.573	0.890
CH_3	448	-0.165	0.356	0.043	0.078
ROA	448	-0.265	0.589	0.036	0.095
CAPEX	448	-0.568	0.909	0.481	0.208
FFO	448	-0.225	0.934	0.104	0.172
NWC	448	-2.496	-0.021	-0.375	0.336
GWO	448	-0.935	1.525	0.038	0.343
LEV	448	0.000	2.079	0.272	0.331
DIV	448	0.000	4.880	0.607	0.835
LNFA	448	0.778	1.623	1.285	0.207
FZ	448	8.054	10.278	9.418	0.464
GDP	448	3.448	7.882	6.489	6.104
INF	448	5.514	7.530	6.104	0.681

Source: Author Construction

Legend: Where; CH= Cash Holdings, ROA= Return on asset, ROE = Return on equity, FZ = Firm Size, ROA=Return on Assets, ROE= Return on Equity, FZ=Firmsize, CAPEX= Capital Expenditures, NWC= Net Working Capital, FFO= Fund flow from operations, GWO= Growth Opportunities, DIV= Dividend Payments, FA= Firm's Age, LEV = Leverage, GDP = Gross Domestic Product, INF = Inflation.

Table 2 shows the statistical information produced using the winsorizing process. Table 2 summarizes the statistical measures for the variables. There have been 448 observations. The analysis discovered that the minimum value of CH_1 is 0000, and the largest value is 0.461. According to the cash asset ratio, companies hold a very negligible amount of cash. Where it is found that the average CH_1 is 0.052, indicating that most of the company's cash holdings are low. The standard deviation is .088, showing the CH_1 score's variability. Again, the most negligible value in CH_2 is detected as 5.445, while the largest value observed is 9.341. It indicates that a company's cash holding score, calculated using the logarithm approach, reveals a scenario with moderate cash holdings. The average CH_2 value is 7.573, indicating that most of the company's cash holdings are moderate. The standard deviation is 0.890, showing the variability of CH_2. However, again, the lowest value of CH_3

detected is -0.165, while the most significant value observed is 0.356. It denotes that corporations are maintaining an inferior cash amount in their operational activities in terms of their current liability. The average CH_3 value is 0.043, indicating that most of the company's financial state is moderate. The standard deviation is 0.078, showing the variability of CH_3. The minimal value observed for the independent variables ROA, CAPEX, FFO, NWC, GWO, LEV, DIV, FA, FZ, GDP, and INF is -0.265, -0.568, -0.225, -2.496, -0.935, 0.000, 0.000, 0.778, 8.054, 3.448, and 5.514. The largest values observed, on the other hand, are 0.589, 0.909, 0.934, -0.021, 1.525, 2.079, 4.880, 1.623, 10.278, 7.882, and 7.530, respectively. Furthermore, the standard deviations show moderate variability.

8.3 Bivariate correlation

Table 3.

Pearson's correlation.

Variables	CH_1	CH_2	CH_3	ROA	CAPEX	FFO	NWC	GWO	LEV	DIV	FA	FZ	GDP	INF
CH_1	1.000													
CH_2	0.592	1.000												
	(0.000)													
CH_3	0.216	0.123	1.000											
	(0.000)	(0.009)												
ROA	0.146	0.152	0.208	1.000										
	(0.002)	(0.001)	(0.000)											
CAPEX	-0.248	-0.160	-0.062	-0.250	1.000									
	(0.000)	(0.001)	(0.187)	(0.000)										
FFO	0.584	0.447	0.633	0.134	-0.119	1.000								
	(0.000)	(0.000)	(0.000)	(0.004)	(0.012)									
NWC	-0.052	0.199	0.009	0.153	0.239	0.069	1.000							
	(0.270)	(0.000)	(0.746)	(0.001)	(0.000)	(0.144)								
GWO	0.052	0.174	0.034	0.130	-0.047	0.067	0.111	1.000						
	(0.270)	(0.000)	(0.474)	(0.006)	(0.323)	(0.155)	(0.019)							
LEV	-0.068	-0.229	-0.026	-0.114	-0.175	-0.090	-0.461	-0.038	1.000					
	(0.152)	(0.000)	(0.577)	(0.016)	(0.000)	(0.058)	(0.000)	(0.421)						
DIV	0.225	0.332	0.204	0.069	-0.043	0.271	0.011	0.083	0.002	1.000				
	(0.000)	(0.000)	(0.000)	(0.145)	(0.368)	(0.000)	(0.718)	(0.078)	(0.673)					
FA	-0.047	-0.059	-0.085	-0.159	0.060	-0.034	-0.322	-0.017	0.209	0.088	1.000			
	(0.317)	(0.215)	(0.072)	(0.001)	(0.204)	(0.472)	(0.000)	(0.720)	(0.000)	(0.064)				
FZ	-0.125	0.454	-0.109	-0.049	0.246	-0.029	0.475	0.165	-0.334	0.148	-0.113	1.000		
	(0.008)	(0.000)	(0.021)	(0.302)	(0.000)	(0.544)	(0.000)	(0.000)	(0.000)	(0.002)	(0.017)			
GDP	0.021	0.014	-0.052	0.028	-0.009	-0.017	0.031	-0.041	0.281	-0.014	-0.030	0.005	1.000	
	(0.655)	(0.764)	(0.272)	(0.551)	(0.745)	(0.720)	(0.507)	(0.384)	(0.000)	(0.775)	(0.528)	(0.614)		
INF	-0.142	-0.065	-0.159	-0.199	0.001	-0.203	-0.017	-0.135	-0.262	-0.063	0.173	0.092	-0.279	1.000
	(0.003)	(0.169)	(0.001)	(0.000)	(0.689)	(0.000)	(0.719)	(0.004)	(0.000)	(0.183)	(0.000)	(0.052)	(0.000)	

Source: Author Construction

Legend: *** p<.01, ** p<.05, * p<.1; Where; Cash= Cash Holdings, ROA= Return on asset, ROE = Return on equity, FZ = Firm Size, ROA=Return on Assets, ROE= Return on Equity, FZ=Firmsize, CAPEX= Capital Expenditures, NWC= Net Working Capital, FFO= Fund flow from operations, GWO= Growth Opportunities, DIV= Dividend Payments, FA= Firm's Age, LEV = Leverage, GDP = Gross Domestic Product, INF = Inflation

Table 3 demonstrates the Pearson correlation between dependent (Cash Holdings) and independent variables. The correlation coefficient between CH_1 and ROA is "0.146", whereas between CH_2 and ROA is "0.152", although between CH_3 and ROA is "0.208". Furthermore, variables FFO, GWO, DIV, and GDP have a significant positive relationship, with 0.584, 0.052, 0.225, and 0.021 being statistically significant (P 0.01) with CH_1. Furthermore, the variables CAPEX, NWC, LEV, FA, FZ, and INF have a significant negative relationship with CH_1, with -0.248, -0.052, -0.068, -0.047, -0.125, and -0.142 being significant. Furthermore, factors CAPEX, FFO, NWC, GWO, LEV, DIV, FA, FZ, GDP, and INF significantly correlate with CH_2, with 0.152, -0.160, 0.447, 0.199, 0.174, -0.229, 0.332, -0.059, 0.454, 0.014, and -0.065 statistically significant (P 0.01). Similarly, CAPEX, FFO, NWC, GWO, LEV, DIV, FA, FZ, GDP, and INF significantly correlate with CH_3, with -0.062, 0.633, 0.009, 0.034, -0.026, 0.204, -0.085, -0.109, -0.052, and -0.159 statistically significant (P 0.01).

8.4 Test for multicollinearity (Variance inflation factor)

Table 4.

Variance inflation factor.

	VIF	1/VIF
NWC	1.731	.578
LEV	1.646	.608
FZ	1.475	.678
INF	1.376	.707
CAPEX	1.261	.703
LNFA	1.229	.713
ROA	1.226	.715
GDP	1.188	.741
FFO	1.187	.742
DIV	1.143	.775
GWO	1.086	.792
Mean VIF	1.323	.

Source: Author Construction

Variance inflation factors (VIF) results for all of the coefficients in this model are less than 10, indicating no multicollinearity (Gujarati, 2021).

8.5 Test for autocorrelation

Table 5.

Wooldridge test for autocorrelation in panel data.

F (150)	10.944
Prob > F	0.0017

Source: Author Construction

The test statistic (F-statistic) is 10.944, and the degrees of freedom of the F-distribution are 150. A very low p-value (0.000) proves the model contains first-order autocorrelation. As a result, the study employed first differencing to address this issue.

8.6 Test for heteroskedasticity

Table 6.

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity.

chi^2 (1)	42.62
Prob > chi^2	0.0000

Source: Author Construction

According to the test results, the chi-squared test statistic is 42.62, with 1 degree of freedom. The study concludes that the model is highly heteroskedastic. Therefore, the study must use FGLS to fix this issue.

8.7 Multivariate analysis

Table 7.

FGLS regression outcomes.

		Model-1	
CH_1	FGLS	FEM	REM
ROA	.006 (.034)	.004 (.038)	.016 (.035)
CAPEX	-.06 (.016)***	-.033 (.02)*	-.056 (.017)***
FFO	.326 (.018)***	.279 (.02)***	.307 (.019)***

NWC	-.025 (.011)**	-.055 (.017)***	-.032 (.013)**
GWO	.004 (.009)	.001 (.009)	.002 (.009)
LEV	-.031 (.011)***	-.008 (.013)	-.026 (.012)**
DIV	.006 (.004)*	.004 (.005)	.006 (.004)*
LNFA	-.014 (.016)	-.006 (.052)	-.017 (.019)
FZ	-.015 (.008)**	-.035 (.015)**	-.017 (.009)*
GDP	.006 (.003)*	.004 (.003)	.005 (.003)*
INF	-.001 (.005)	-.001 (.006)	-.001 (.005)
Constant	.171 (.082)**	.317 (.136)**	.186 (.091)**
Number of obs	448	448	448
F-test	42.388	24.366	
Prob > F	0	0	0
R-squared	0.517	0.410	0.514
Chi-square test value		22.019	
P-value		.024	

*** p<.01, ** p<.05, * p<.1
Source: Author Construction

Table 7 presents the empirical findings of the effects of Bangladeshi textile enterprises' firm-level (profitability, capital expenditure, fund flow from operation, net working capital, growth opportunity, leverage, dividend, firm age, firm size) and macroeconomic factors (i.e., GDP, inflation). Table 7 shows that profitability and cash holdings are positively associated. This finding is supported by Arfan et al. (2017). This positive association shows that profitable textile enterprises in Bangladesh are better able to accumulate cash, increasing their financial adaptability and endurance. Meanwhile, at the 1% significance level, capital expenditure was found to have an adverse effect on cash holding. This finding aligned with the findings of Riddick and Whited (2009). It implies that businesses use their available cash to fund their investments rather than leaving it idle to show on the balance sheet. Further, fund flows from operations were found to have a positive effect on cash holdings. This finding aligned with the findings of García-Teruel and Martínez-Solano (2008) and Tayem (2017). It indicates that companies that create more cash via normal business operations tend to have higher cash. Again, Table 7 shows a negative association between net working capital and cash holdings of enterprises in Bangladesh. Hence, the study finding is supported by Wasiuzzaman (2014) and Ferreira and Vilela (2004). It refers to a situation where a corporation has increased net working capital from operations; it usually holds less cash. Moreover, the study discovered that the growth opportunity positively and significantly influenced the cash holdings of Bangladeshi textile enterprises. The results of this study are consistent with the findings of studies by Ferreira and Vilela (2004), Jinkar (2013). This means that businesses with more future investment opportunities tend to have more resources to fund those prospects. According to Table 7, financial leverage was found to have a negative effect on the companies' cash holdings. This finding is consistent with the findings of studies by Wijaya (2011). It suggests that companies with more debt tend to have less cash, potentially because they rely more on external funding or are under pressure to minimize idle funds. Additionally, the results demonstrate a positive link between dividend yield and cash holdings. This result is consistent with Bigelli and Sánchez-Vidal (2012) and Wasiuzzaman (2014). It indicates that companies with greater dividend payouts tend to keep more cash on hand to ensure that dividends are paid to shareholders consistently. Firm age is negatively associated with cash holdings. This finding is aligned with Shipe (2015), La Rocca, Cambrea, La Rocca, and Casciaro (2015). It implies that older enterprises store less capital, presumably due to steadier cash flows and better access to external finance. Again, the study discovered that the firm size negatively influences the cash holdings of Bangladeshi textile enterprises. This finding is consistent with the findings of studies by Ali and Yousaf (2013) and Jamil et al. (2016). It suggests that larger companies tend to store less cash, most likely because they have more consistent cash flows and greater access to external capital. The GDP coefficient is positive, N. Chen and Mahajan (2010) discovered that GDP positively and significantly affected the cash holdings. It suggests that corporations prefer to save more cash as GDP rises due to better economic conditions and more investment opportunities. In the regression result, the inflation coefficient is negative, and a previous study conducted by Mesfin (2016) found the same effect. Higher inflation causes corporations to hold less cash because cash loses value over time, and enterprises prefer to invest or spend it. Table 7 also displays fixed and random effect results. These fixed and random effects models are used to investigate how diverse factors consistently influence corporate cash holdings across enterprises over time. The Hausman test found that the fixed effect model is more appropriate for the model. The Hausman test revealed that the fixed effect model

better captures firm-specific characteristics, making it more appropriate for examining the determinants of corporate cash holdings.

8.8 Robustness checking

Table 8.

FGLS regression outcomes.

	Model-2			Model-3		
	FGLS	FEM	REM	FGLS	FEM	REM
ROA	0.448	0.316	0.37 (0.318)	0.118	0.056	0.096
	(0.351)	(0.326)		(0.033)***	(0.036)	(0.033)***
CAPEX	-0.954	-0.681	-0.79	-0.035	-0.038	-0.029
	(0.162)***	(0.173)***	(0.163)***	(0.015)**	(0.019)**	(0.016)*
FFO	1.948	1.436	1.52	0.278	0.298	0.286
	(0.19)***	(0.173)***	(0.17)***	(0.018)***	(0.019)***	(0.018)***
NWC	-0.189	-0.065	-0.029	-0.009	-0.006	-0.009
	(0.118)	(0.15)	(0.133)	(0.011)	()0.016	(0.012)
GWO	0.101	0.035	0.033	0.001	0.01 (0.008)	0.003
	(0.091)	(0.075)	(0.075)	(0.008)		(0.008)
LEV	-0.334	-0.201	-0.257	-0.012	-0.017	-0.012
	(0.116)***	(0.112)*	(0.108)**	(0.011)	(0.012)	(0.011)
DIV	0.147	0.06	0.093	0.005	0.001	0.003
	(0.038)***	(0.04)	(0.038)**	(0.004)	(0.004)	(0.004)
LNFA	-0.13	-1.292	-0.463	-0.034	-0.035	-0.036
	(0.161)	(0.448)***	(0.266)*	(0.015)**	(0.049)	(0.019)*
FZ	-0.947	-0.565	-0.788	-0.015	-0.07	-0.024
	(0.079)***	(0.133)***	(0.106)***	(0.007)**	(0.015)***	(0.009)***
GDP	0.04 (0.032)	0.026	0.035	0.004	0.005	0.004
		(0.026)	(0.025)	(0.003)	(0.003)*	(0.003)
INF	-0.048	-0.102	-0.061	-0.002	-0.001	-0.002
	(0.052)	(0.05)**	(0.045)	(0.005)	(0.005)	(0.005)
Constant	1.309	1.257	0.094	0.183	0.635	0.271
	(0.842)	(1.177)	(1.008)	(0.078)**	(0.128)***	(0.089)***
Number of obs	448	448	448	448	448	448
F-test	40.201	12.605	-	31.138	28.708	-
Prob > F	0	0	0	0	0	0
R-squared	0.504	0.264	0.493	0.44	0.45	0.436
		Hausman (1978) specification test				
Chi-square test value		83.885			18.37	
P-value		0.000			0.073	

*** p<.01, ** p<.05, * p<.1

Source: Author Construction

Studies by Fley et al. (2007) and Chung, Kim, Kim, and Zhang (2015) employ log-off as a proxy for corporate cash holdings. For robustness checking, the study conducted the primary analysis using the previously described alternative cash holding measure. Table 8 displays the regression findings from the remaining two (2) distinct models used to validate the baseline model, and found a constant result.

9.0 Limitations and future research

While this study sheds light on the factors that influence corporate capital holdings in Bangladesh's textile industry, it does have some limitations. First, the research is mostly based on secondary financial data, which may not completely capture firm-specific strategic considerations or management intentions that drive cash holding decisions. Second, the study solely considers publicly traded textile corporations, leaving out small and medium-sized enterprises (SMEs), other listed industry firms, and private firms, all of which play an important part in the sector. Third, the study focuses on traditional firm-specific variables (such as profitability, leverage, firm size, and growth opportunities) without taking into account more nuanced factors such as corporate governance quality and ownership structure, which may significantly impact cash holding behaviors. Future research can solve these limitations by widening the field of investigation. First, incorporating primary data from surveys or interviews with business executives may provide a more complete picture of the strategic motivations underlying cash holdings. Second, comparative studies across industries in Bangladesh or cross-country comparisons with other textile-exporting countries (such as Vietnam or India) may yield more generic

insights. Third, future research might investigate the influence of ownership concentration, board composition, or family ownership patterns in setting cash holding policies, which are especially important in emerging markets like Bangladesh. Finally, future research might look into how exogenous shocks, such as energy crises, exchange rate changes, or labor unrest, affect the cash management procedures of textile companies in Bangladesh.

10.0 Summary and conclusion

This study investigates the factors influencing cash holdings in developing countries like Bangladesh. The analysis results provide more insight into the decision to hold cash. According to the findings, profitability, fund flow from operations, growth opportunity, dividend, and GDP benefit cash-holding decisions. On the other hand, capital expenditure, net working capital, leverage, firm age, firm size, and inflation negatively impact cash-holding decisions. This is a clear signal to all Bangladeshi manufacturing enterprises that they cannot ignore firm-level and macroeconomic data when determining the optimal quantity of cash.

Appendix-1

No	Author(s)	Sample Countries	Period	Method/ Indicator	Findings
1.	Singh and Misra (2019)	India	1995–2016	weighted least-squares	firm size, debt, price-to-book value negatively, and capital expenditure, liquid asset, fund flow from operations, cash flow volatility, and dividend payment are positively determined by the corporate cash holdings
2.	Al-Najjar (2013)	Brazil, Russia, India, and China and	2002-2008	Instrumental Variables analysis	Their cross-country model results show that capital structure, dividend policy, and business size all affect cash holdings. Finally, they demonstrated that enterprises operating in countries with weak shareholder protection hoard more cash.
3.	Arfan et al. (2017)	Indonesia	2009-2013	Generalized Least Squares (GLS) panel regression	This study empirically discovered that the level of growth opportunity has a favorable effect. In contrast, networking capital has a negligible effect, and financial leverage has a negative influence on the companies' cash holdings. In terms of the controllable variables, profitability has a positive effect on the companies' cash holdings, whereas capital spending has an adverse effect.
4.	Tahir and Alifiah (2015)	Malasiya	-	-	The majority of the literature illustrates how important trade-off and pecking order theories are to organizations' cash management procedures. However, some theoretical and empirical investigations have also discussed the importance of free cash flow theory.
5.	Alnori et al. (2022)	Gulf Cooperation Council	2005-2019	panel regression	The findings demonstrate that the factors determining cash holdings for Shariah enterprises include leverage, profitability, capital expenditure, net working capital, and operating cash flow. The only meaningful indicators of cash holdings for non-Shariah-compliant enterprises are leverage, net working capital, and operating cash flow. The data imply that the pecking order hypothesis can best explain the cash holding decisions.
6.	Ali and Yousaf (2013).	German	2000-2010	panel regression	This study's findings support the predictions of the trade-off theory, pecking order theory, and agency cost theory. The findings provided strong evidence that business size, working capital, and leverage had a considerable impact on non-financial enterprises' cash holdings decisions, which is consistent with the current research on the drivers of corporate cash holdings.

7.	Hapsari and Norris (2022)	Indonesia	2016-2021	panel regression	The findings show that the investment opportunity set, net working capital, and profitability all have an impact on cash holding. Only the location of investment prospects has an impact on cash holding. Meanwhile, net working capital and profitability have no impact on cash holding.
8.	Wasiuzzaman (2014)	Malaysia	2000-2007	OLS	Significant disparities in cash holdings are discovered between firms and over time. Firms, it has been discovered, adjust to a goal level of cash holdings, albeit slowly. Furthermore, the importance of business characteristics and their interactions with cash holdings suggests that, in addition to the pecking order theory, the trade-off theory and the agency theory can assist in explaining the level of cash holdings of Malaysian firms.
9.	Mesfin (2016)	Eheopia	2009-2014	Multiple Regression Model	The study's findings demonstrated that growth opportunity, cash flows, and company size are statistically significant and have a beneficial impact on the cash holdings of manufacturing share businesses. Net working capital, capital expenditure, and inflation, on the other hand, have a negative and statistically significant impact on cash holdings. Aside from that, leverage, profitability, and real GDP are statistically unimportant cash holding choice factors determining for Ethiopian manufacturing share enterprises.
10.	Tayem (2017)	Jordan	2005-2013	GMM	According to the findings, cash flow as well as growth potential have a positive and considerable influence on cash holdings. Furthermore, the analysis shows that leverage is inversely related to cash holdings, but squared leverage is inversely associated with cash reserves. Finally, the results show that choosing cash holding targets has considerable dynamic consequences.

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