Original Research Article
J.F. Mkt. Gov. (2024) Vol. 3, Issue-1
DOI:https://doi.org/10.54728/JFMG.202408.00080

Dung Viet Tran
Banking Academy of Vietnam
Hanoi, Vietnam
Email: dungtv@hvnh.edu.vn

M. Kabir Hassan
University of New Orleans
Email: kabirhassan63@gmail.com

Mohammad Dulal Miah*
College of Banking and Financial Studies, Muscat, Oman
Email: dulal@cbfs.edu.om

Keywords
Pandemic, Cash holdings, Investment Emerging economies, Dividend

JEL Classification
G21, G28

Manuscript Number:
JFMG-202408-00080

Received: 19 August, 2024
Accepted: 05 September, 2024
Published Online: 09 September, 2024
Published in Print: 20 September, 2024

ISSN (Online): 2958-9290
ISSN (Print): 2958-9282

***Corresponding author**
©Bangladesh Institute of Capital Market

Corporate "dash-for-cash" amidst the Covid-19 Pandemic: Evidence from an Emerging Economy

Abstract

This paper seeks to examine the impact of Covid-19 pandemic on corporate cash holding. The research collects data from 531 listed Vietnamese firms for the period 2020Q1-2021Q1. The data are analyzed using panel Fixed Effect model. Results show that corporations hoard more cash in response to the Covid-19 pandemic. This can be attributed to firms' precautionary purpose and investment delays to a limited extent. Firms' increased cash holdings are channeled through conservative payout policy. The results further reveal that hoarding cash amid the pandemic alleviates the adverse impacts of the Covid-19 outbreak on investment. Previous studies identified various determinants that affect firms' cash holding. Our study adds another critical factor, a rare disaster, as an important determinant of corporate cash policy.

Acknowledgement: Dung Viet Tran gratefully acknowledges the financial support from the Banking Academy of Vietnam.

1.0 Introduction

The Covid-19 pandemic emerged in 2020 and spread at a frightening speed, causing a severe damage to the global economy (Goodell, 2020; 2020). Countries across the world implemented nationwide lockdown and suspension of production and distributions of goods and services for a considerable period. This has resulted in a fatal disruption in the stream of corporate cash flow, drowning out firms into liquidity crisis which consequently increases the bankruptcy risk (Acharya and Steffen, 2020; Wang et al., 2020). The elevated uncertainty induced by the pandemic rises the external financing costs (Ke, 2021), aggravating firms' financial constraint (Brogaard and Detzel, 2015). Moreover, the pandemic-imposed financial hardships are more pronounced for firms which experienced tighter financial budget before the pandemic (Ding et al., 2021). These negative consequences of the pandemic on firms have motivated them to be cautious and hoard more cash to soften financial shocks and ensure the continuity of operations. Additionally, the real options mechanism reveals that firms find it advantageous to delay investments amid elevated uncertainty, resulting in higher cash holdings. Accordingly, we hypothesize that a firm would tend to hoard more cash amid the pandemic.

Literature provides limited evidence as to the effect of Covid-19 on firms' cash behavior. Acharya and Steffen (2020) and Tawiah and Keefe (2022) for US firms, Qin et al. (2020) for firms listed in Shanghai and Shenzhen stock exchanges, show that firms increased cash holdings during the early phase of the pandemic (first quarter of 2020). Such behavior is driven by firms' precautionary motive to safeguard against future uncertainties (Pettenuzzo et al.,

2021). This strand of literature provides early evidence and lays the foundation for further study that covers an extended period of time and different countries. We build upon this literature to examine the impact of Covid-19 pandemic on firms' cash holding. We further explore the purpose behind firms' tendency of large cash holding and investigate the channel through which firms accumulate cash.

We analyze quarterly data of 531 listed Vietnamese firms for the period 2020Q1-2021Q1. Updated quarterly data allows us to identify in a timely manner how the Covid-19 outbreak affects corporate cash holdings. Our study documents that firms hold more cash during the pandemic. We unfold the motives behind the dash for cash amidst the pandemic: (i) the precautionary purposes, and (ii) investment delays, to a limited extent. Our results also suggest that firms hoard more cash amid the pandemic by reducing their payout. We document the dash for cash during the pandemic alleviates the adverse impacts of the Covid-19 outbreak on investment.

Our study contributes to the nascent literature which aims to assess the impacts of Covid-19 on corporate behavior, and to a large literature of corporate cash holdings. Acharya and Steffen (2020) and Qin et al. (2020) cover only the first quarter of 2020, which was just the beginning of the pandemic. Our study covers the peak of the pandemic and can be considered an important extension to this stream of scarce literature.

Moreover, we use Vietnam as a laboratory for our study because firms in emerging markets experience costlier external financing due to the market imperfections stemming from their underdeveloped financial systems (Love, 2003). Additionally, the investors' protection in Vietnam is among the weakest group in the world, hence it makes Vietnamese firms difficult to access external financing (La Porta et al., 1998). This further leads to a costlier external financing, implying firms to rely more on internal financing. Considering the limited availability of hedging instruments, Vietnam presents as an ideal case to examine the corporate cash holding behavior.

Second, previous studies identif ied financial constraint (Denis, 2011), corporate governance (Dittmar and Mahrt-Smith, 2007), corporate culture (Chen et al., 2015), and policy uncertainty (Phan et al., 2019) as important elements that affect firms' cash holding. Our study adds another critical factor, a rare disaster, as critical determinant of corporate cash policy.

Third, our timely evidence has prominent implications for managers. Corporate managers should pay more attention for cash management to buffer against business shutdown and maintain smooth operations since these rare disasters are completely out of reach of corporations and cannot be adequately eliminated through hedging strategies. While excess cash-holding at present delays long-term investments and obstructs firms' future growth, a shortage of cash during the pandemic may intensify the risk of being a fallen angel (Acharya and Steffen, 2020). Thus, our research provides an important insight by investigating if managers' precautionary motive outweighs firms' long-term sustainability.

2.0 Literature review and hypothesis development

2.1 The precautionary motive of firm cash holding

Hyman P. Minsky, a renowned American economist, provided valuable insights into the different reasons for retaining cash, one of which is the precautionary motive (Minsky, 1975). The cautious motive is a

factor that motivates individuals and corporations to retain liquid cash reserves instead of investing in assets that are less easily converted to cash. Minsky's viewpoint on the precautionary motive can be comprehended by considering the concept of financial instability and the inherent uncertainties present in economic contexts.

Minsky highlighted that the economic milieu is essentially unpredictable and susceptible to abrupt fluctuations. Given this ambiguity, it is advisable for firms to retain cash as a precautionary measure against unforeseen circumstances that may necessitate rapid expenditures (Fazzari et a., 2008). Examples of such circumstances could encompass abrupt income reduction, unforeseen exigencies (such as Covid-19 pandemic), or unanticipated investment prospects. Moreover, Minsky also further highlighted that financial markets are prone to volatility, which can lead to unpredictable fluctuations in asset prices (Minsky, 1977). Having cash on hand serves as a safeguard against these changes, enablingnfirms to refrain from selling assets at a disadvantageous price during a downturn or financial crisis.

In essence, Minsky's incorporation of the precautionary motive in his comprehensive analysis of financial instability underscores the significance of being prepared for the inherent unpredictability and probable downturns in financial systems. By retaining cash, both individuals and institutions can effectively mitigate risk and uphold stability when confronted with unexpected economic difficulties.

2.2 Review of relevant literature

The literature on cash holdings indicates that firms hoard cash for two main reasons: a precautionary motivation, which is driven by the anticipation of future financial constraints, and an agency motive, which is influenced by the defects in the dispersed ownership structure of public firms (Amess et al., 2015). Hong and Liu (2023) analyze d the influence of regional diversification on company cash reserves and present supporting evidence for the precautionary saving motive. By diversifying their operations over several geographic locations, firms can minimize their vulnerability to risks that are peculiar to individual states. This allows firms to stabilize their cash flows and thus, reduces their need to hold excess capital as a precautionary measure (Fernandes and Gonenc, 2016). The regional diversification and cash reserves becomes more prominent for financially constrained firms and companies with active internal capital markets (Dimitrov and Tice, 2006).

Prior studies provide evidence of the motive and determinants of corporate cash holding in different country settings. For example, Weidemann (2018) reviewed the literature of corporate cash holding research and mentioned eleven general characteristics that had been discovered to influence corporate cash holdings. Notable drivers among them include business size, growth possibilities, leverage, liquidity substitutes, and corporate governance. However, most studies focus on the US and China. For example, Magerakis et al. (2023) docu-mented that uncertainty in policies leads to a cautious reason for keeping more cash in US firms. They further showed that They further show ed that the relationship between cash flow and cash holdings is more noticeable among financially constrained firms. Similarly, Jayakody et al. (2023) examine d the relationship among local political corruption, political uncertainty, and corporate cash holdings in the United States. They illustrate d strong evidence indicating that companies situated in states with higher corruption

scores respond to heightened local political uncertainty by increasing their cash reserves. Das et al. (2024) studied the combined influence of economic policy uncertainty and inflation risk on the corporate cash holdings of US companies between 2011 and 2021. The findings indicate d that both economic policy uncertainty and inflation risk had a positive effect on corporate cash holdings. In another relevant study, Marwick et al. (2020) exhibit ed a correlation between organization capital and higher levels of cash holdings by analyzing a large dataset of U.S. listed corporations spanning from 1981 to 2017. They further demonstrate d that the impact of organization capital on corporate cash reserves is more pronounced for firms facing significant financing constraint and cash flow uncertainty.

In the context of China, Gao and Gao (2023), reveal ed that the adoption of low-carbon practices leads to a decrease in firms' cash reserves. Their channel analysis demonstrated that the process of transitioning to a low-carbon economy leads to a decrease in financing cost and an increase in government subsidies. Likewise, Legesse et al. (2023) analyze d Chinese nonfinancial firm for the period 1997 to 2018 and demonstrate that economic policy uncertainty leads to an increase in corporate cash holdings. Additionally, the growth of financial institutions and markets reduces the sensitivity of corporate cash flow. Zhang and Zhou (2022), using data from the Chinese stock market between 1998 and 2019, show ed that market competition has a negative impact on cash holdings. They further found that business innovation somewhat mediates this effect, whereas financial constraint fully mediates it.

Apart from the single country context, studies also provide evidence from international and regional data. El Ghoul et al. (2023) analyzed a large sample of 73,828 firm-year observations from 19 countries for the period 1988 to 2015. Their findings provide d convincing evidence that there is a negative relationship between economic policy uncertainty and corporate cash holdings. Ezeani et al. (2023) draw evidence analyzing 2,805 observations from UK, France, and Germany throughout the period of 2009 to 2019. They found that the characteristics of a company's board influence the amount of cash that enterprises hold. In the context of six Gulf Cooperation Council (GCC) countries, Bugshan et al. (2021) demonstrate d that the adherence to Shariah principles by non-financial listed enterprises has a noteworthy impact on their decisions about cash holdings. Farooq et al. (2024), for a large sample collected from listed firms in BRICS countries, show ed that firms that actively participate in sustainable practices tend to have lower cash levels.

The above discussion postulates that firms hoard more cash during the time of uncertainty resulting from political or natural events. The COVID-19 pandemic significantly amplified the precautionary motive for corporate cash holdings, with firms boosting their liquidity as a strategic response to unprecedented uncertainty (Elamer and Utham, 2024). The uncertainty surrounding the availability of credit and potential tightening of financial markets further motivated firms to accumulate cash, ensuring they could meet immediate financial obligations without relying heavily on external financing (Jung and Choi, 2024). Consequently, the pandemic marked a pivotal shift in corporate cash management strategies, underscoring the critical role of liquidity in navigating severe global disruptions.

Based on the above discussion, we formulate the following hypothesis.

H1: firms tend to hoard more cash during

the Covid-19 pandemic.

3.0 Data and variables

We use financial data of listed Vietnamese firms for the period 2020Q1-2021Q1 collected from Thomson Reuters Eikon. All missing firm-quarter observations are removed. Our proxy for cash is the ratio of cash and cash equivalent to assets (CASH). We use the natural logarithm of total cases infected (CVD) as our proxy for the Covid-19 pandemic. We control for size (SIZE), leverage (LEV), performance (ROA), trade credit (TRADE), growth opportunities (GROWTH), Tobin' Q (TQ), and macroeconomic conditions (GDPGR). The definitions are in Table A1 (Appendix). All ratios are winsorized at 1% and 99% levels. We report the summary statistics in Table (1).

Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CASH	2547	0.14	0.156	0.001	0.675
TOTAL CASES INFECTED	2547	1138.58	862.87	212	2603
CVD	2547	6.668	0.927	5.357	7.864
SIZE	2547	13.631	1.562	9.942	17.171
LEV	2547	0.223	0.193	0.00	0.753
GROWTH	2547	0.026	0.699	-2.33	2.317
ROA	2547	0.056	0.109	-0.308	0.469
TRADE	2547	0.162	0.151	-0.03	0.606
TQ	2547	1.149	1.392	0.093	37.696

Source: Authors' calculation

4.0 Empirical results

4.1. Baseline models

We apply the following regression:

$$\varsigma_{it}=CVD_{it}+\varphi_{(it-1)}+\theta_{(it-1)}+\propto_i+\theta_t+\varepsilon_{it} \quad (1)$$

where ς_{it} is the proxy for cash holding (CASH) of firm i in time t. We use the natural logarithm of total cases infected as our main proxy for Covid-19 pandemic (CVD). $\theta_{(it-1)}$ is the vector of control variables. To alleviate endogeneity concerns, we lag all explanatory variables of one period. All specifications include firm-, and time-fixed-effects. We use the heteroscedasticity -robust standard errors clustered by firms for statistical inference.

Our main results are shown in Table (2), Panel A. Our baseline model (Model 1) document a positive and statistically significant (at 1% level) coefficient on CVD, suggesting firms tend to hold more cash during the pandemic. This supports our primary hypothesis (H1). Our baseline results support the finding of Acharya and Steffen (2020) and confirm that cash behavior of corporation in emerging market is akin to that of advanced economies. Leverage and Tobin's Q show a statistically significant negative reaction to cash, whereas firms' profitability, trade credit, and GDP growth positively effect cash holding during the Covid-19. In Model (2), we augment our specification with additional variables such as investment (CAPEX), dividend payout (DIVIDEND), inflation rate (INF). Our results remain unchanged.

Table 2: Main results (PANEL A)

This table reports the regression results of Equation (1). Robust t-statistics are reported in parentheses. ***, **, and * denote statistical significance at 1%, 5%, and 10% level, respectively.

	Baseline model	Additional variables	Low IIR	High IIR	Y=D.CASH+D.CAPEX
	(1)	(2)	(3)	(4)	(5)
CVD	0.004***	0.011***	0.005**	0.003**	0.004*
	(0.001)	(0.003)	(0.002)	(0.002)	(0.002)
SIZE	-0.014	-0.015	-0.015	0.002	-0.123***
	(0.018)	(0.024)	(0.028)	(0.020)	(0.025)
LEV	-0.088**	-0.096**	-0.048	-0.066**	-0.117**
	(0.042)	(0.044)	(0.068)	(0.034)	(0.051)
GROWTH	-0.001	-0.004	-0.001	-0.001	0.006*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
ROA	0.051**	0.045*	0.037	0.056***	-0.026
	(0.024)	(0.027)	(0.044)	(0.021)	(0.026)
TRADE	0.129***	0.120***	0.141***	0.103***	0.327***
	(0.038)	(0.044)	(0.053)	(0.040)	(0.058)
TOBIN' Q	-0.012*	-0.016*	-0.014	-0.010	-0.033***
	(0.007)	(0.009)	(0.014)	(0.008)	(0.010)
GDPGR	0.007***	-0.003	0.007***	0.007***	0.019***
	(0.001)	(0.003)	(0.002)	(0.002)	(0.003)
CAPEX		-0.024*			
		(0.015)			
DIVIDEND		-0.004			
		(0.003)			
INF		-0.010***			
		(0.003)			
Constant	0.314	0.304	0.333	0.076	1.725***
	(0.245)	(0.338)	(0.382)	(0.274)	(0.342)
Obs	2,558	1,903	1,252	1,306	1,696
Adj R2	0.060	0.069	0.057	0.075	0.141
BFE	Yes	Yes	Yes	Yes	Yes
QFE	Yes	Yes	Yes	Yes	Yes

Source: Authors' calculation

It should be emphasized that since our specification generally controls for firm investment via growth opportunities (GROWTH), Tobin' Q (TQ), investment (CAPEX), therefore our specification reflects (i) the direct effect of the pandemic on firms' cash holdings related to precautionary motives via CVD variable, as well as (ii) the indirect effect on firms' cash holdings related to investment delays via investment proxies. Since firms tend to delay investment during the pandemic (Zheng, 2021), the negative effect of investment proxies on cash holdings in Model (2)

reflects the indirect and positive impact of the pandemic on the level of cash holdings via the investment channel. To decipher the economic impacts of the pandemic on cash holdings related to the precautionary purposes and investment delays in perspective, Model (2) suggests that one standard deviation increase in the cases infected implies an increase of 9.48% in cash holdings after controlling for the impacts of investment, whereas one standard deviation increase in CAPEX (TQ) implies a decrease of 2.2 (0.2) bps in cash holdings. This evidence suggests the precautionary cash holding outweighs the investment delays.

In Models (3)-(4), we conduct further investigation to document the motives after holding cash amid uncertainty by performing our specification for subsamples of firms based on the investment irreversibility (IIR) proxied by the ratio of fixed to total assets. We suggest that amid the pandemic, firms subject to higher degree of IIR tend to hold more cash to avoid investment delays, whereas firms subject to lower degree of IIR hold more cash for precautionary motives. In each quarter, we rank firms based on IIR, and assign to the high (low) IIR subsample as those firms in the top (bottom) 50 percentiles of IIR. The findings in Models (3)-(4) indicate a positive and significant effect of CVD on CASH for both subsamples. The finding confirms the evidence from Model (2), suggesting that amid uncertainty, firms hold more cash both for precautionary purposes and to avoid investment delays, but with more emphasis on the former motive.

We take further step by regressing the sum of change of cash and investment (D.CASH + D.CAPEX) on CVD. We postulate that if the investment delay results in higher cash, the sum of change of cash and change of investment should not differ from zero. The coefficient on CVD consequently is not statistically different from zero. The results in Model (5) document the statistically positive coefficient on CVD, suggesting the cash-holdings-increasing effects of the pandemic regardless of the investment variation.

4.2. Alternative approaches and measures

We further verify the robustness of our findings with alternative approaches and measures. We perform our specification using Prais-Winstein approach in Model (1) to address the serial correlation, Newey-West in Model (2) to address the autocorrelation. Results are reported in Panel B of Table (2). The positive effect of Covid on cash holding in the modified models is economically more significant than the baseline regression. This confirms our hypothesis that firms hold more cash during the pandemic.

Table 3: Main results (PANEL B)

This table reports the regression results of Equation (1). Robust t-statistics are reported in parentheses. ***, **, and * denote statistical significance at 1%, 5%, and 10% level, respectively.

	Prais-Winstein	Newey-West	CASH_1	CASH_2	XCASH	DUM_CVD
	(1)	(2)	(3)	(4)	(5)	(6)
CVD	0.043***	0.037*	0.001*	0.008**	0.004***	0.016***
	(0.009)	(0.021)	(0.001)	(0.003)	(0.002)	(0.004)

	Prais-Winstein	Newey-West	CASH_1	CASH_2	XCASH	DUM_CVD
	(1)	(2)	(3)	(4)	(5)	(6)
SIZE	-0.006	-0.008***	-0.020***	-0.019	0.012	-0.006
	(0.004)	(0.003)	(0.007)	(0.040)	(0.019)	(0.012)
LEV	-0.137***	-0.239***	0.000	-0.188*	-0.074*	-0.109***
	(0.027)	(0.023)	(0.020)	(0.104)	(0.042)	(0.034)
GROWTH	0.000	-0.007*	-0.000	-0.001	-0.001	-0.000
	(0.001)	(0.004)	(0.001)	(0.003)	(0.002)	(0.001)
ROA	0.049***	0.332***	0.010	0.096*	0.045*	0.061***
	(0.014)	(0.039)	(0.011)	(0.052)	(0.026)	(0.021)
TRADE	0.135***	-0.161***	0.057***	0.251***	0.042	0.074**
	(0.032)	(0.024)	(0.021)	(0.073)	(0.042)	(0.029)
TOBIN' Q	0.003	0.008*	-0.005*	-0.026*	-0.035***	-0.005
	(0.003)	(0.005)	(0.003)	(0.015)	(0.008)	(0.006)
GDPGR	0.021***	0.022**	0.004***	0.010***	0.000	0.006***
	(0.004)	(0.009)	(0.001)	(0.003)	(0.002)	(0.002)
Constant	-0.093	0.030	0.293***	0.465	-0.151	0.235
	(0.087)	(0.156)	(0.097)	(0.545)	(0.266)	(0.173)
Obs	2,558	2,558	2,533	2,558	1,791	3,601
Adj R2	0.117	0.068	0.043	0.041	0.039	0.043
BFE	Yes	Yes	Yes	Yes	Yes	Yes
QFE	Yes	Yes	Yes	Yes	Yes	Yes

Source: Authors' calculation

Next, we verify whether our findings hold with alternative measures. We use the ratio of cash over assets (CASH_1) in Model (3), and the ratio of cash and cash equivalent over assets (CASH_2) in Model (4) of panel B. Following Dittmar and Mahrt-Smith (2007), Frésard and Salva (2010), in Model (5), we use excess cash (XCASH) as dependent variables since excess cash is defined as cash that is not needed for operations or investments. In all specifications, we obtain similar findings.

Finally, we create a dummy variable which is equal to one for the period from 2020Q1 to 2021Q1, and zero for the period from 2019Q1 to 2019Q4, then re-run our specification for the period 2019Q1-2021Q1. The results in Model (6) document that firms tend to hold more cash during the pandemic than the earlier period which supports our finding that pandemic has forced firms to hold more cash.

5.0 How do firms increase cash holding amid the pandemic?

We examine the origin of the increased cash holdings during the pandemic times. The elevated uncertainty due to the Covid-19 outbreak made it difficult for firms to plan their business. Managers by caution tend to ensure a certain level of liquidity to avoid the rescue for external financing (Opler et al., 1999). One of the prime targets of conserving cash is the suspension of dividend. Krieger et al (2021) show ed that US firms either substantially cut dividend payments or entirely omitted paying dividend in the second quarter of 2020. They further estimate d the cuts and omission to be three to five times larger than any quarter during the last five years preceding the pandemic. Similarly, Cejnek et al. (2021) drew evidence from index dividend futures to conclude that near-term dividend expectations dropped dramati

cally at the beginning of Covid-19. Thus, we investigate if Vietnamese firms limit their payout to create a cash buffer. We then regress dividend ratio on CVD. The results in Model (1), Table (3) suggest a negative and significant relation between CVD and DIVIDEND, confirming our postulation about the decreased payout amid the pandemic.

Table 4: Additional analyses

***, **, and * denote statistical significance at 1%, 5%, and 10% level, respectively.

	Y=DIVIDEND	Y=CAPEX
	(1)	(2)
CVD	-0.007*	-0.006*
	(0.004)	(0.003)
CASH		-0.191
		(0.131)
CVD*CASH		0.037**
		(0.017)
SIZE	0.135***	0.016
	(0.042)	(0.026)
LEV	-0.136**	-0.163**
	(0.069)	(0.082)
GROWTH	-0.013**	0.007*
	(0.006)	(0.004)
ROA	0.066	-0.024
	(0.045)	(0.038)
TRADE	-0.138*	0.042
	(0.075)	(0.046)
TOBIN' Q	0.057**	0.003
	(0.024)	(0.011)
GDPGR	0.000	0.010***
	(0.004)	(0.004)
Constant	-1.820***	-0.121
	(0.582)	(0.355)
Obs	1,183	1,811
Adj R2	0.043	0.030
BFE	Yes	Yes
QFE	Yes	Yes

Source: Authors' calculation

6.0 The benefits of cash holding amid the pandemic

Literature suggests a decrease in investment when firms face higher uncertainty (Gulen and Ion, 2016). Jiang et al. (2021) observe d Chinese firms' investment behavior during the Covid-19 and illustrate that excess cash reserve helped Chinese firms not only to better deal with adverse external shocks stemming from the Covid-19 but also to increase investment in fixed assets. Almeida (2020) developed a model to show that it is logical for firms to issue debt and preserve cash during the pandemic-like uncertain economic circumstances so that required investment can be financed in time. In commensuration with this proposition,

we investigate whether cash holdings mitigate the adverse effects of the pandemic on our sample firm's investment. We perform the following model:

$$CAPEX_{it}=CVD_{it}+CASH_{it-1}+CVD_{it}*CASH_{it-1}+\theta_{it-1}+\propto_i+\theta_t+\varepsilon_{it} \quad (2)$$

where CAPEX is the ratio of capital expenditure over assets. Our variable of interest is the interaction term CVD*CASH. We report the results in Model (2), Table (3). We document that firms decrease their investments during the pandemic; however, this effect is mitigated with cash-rich firms. This implies that cash-constraint firms tend to hoard cash for precautionary purpose, but they utilize extra cash for mitigating investment delay.

7.0 Conclusions

The Covid-19 pandemic have forced corporations to favor holding more cash during the pandemic than the business-as-usual. We thus, investigate the relation between the Covid-19 pandemic and corporate cash holdings in an emerging market setting. Using a noble dataset consisting of 531 Vietnamese listed firms for the period 2020Q1-2021Q1, we document consistent evidence of firms' dash for cash amid the pandemic. The purpose of accumulating cash during the pandemic can be attributed to the precautionary motive, and to a smaller extent, investment delays. We further document firms reduce dividends in order to build higher cash buffer against the pandemic shocks. Finally, we document the mitigating role of cash holding on the investment-decreasing effects of firms.

Our study contributes to the growing literature on the impacts of the Covid-19 pandemic and the large literature of corporate cash holdings. In addition, our findings provide valuable insights into the theories of corporate cash hoarding, with a special emphasis on the situations of high uncertainty. The pandemic situation highlighted the importance of having cash reserves as a crucial safeguard against economic disruptions, confirming the theories that connect the accumulation of cash to techniques for managing risks. This reinforces the perspective that companies give priority to maintaining sufficient cash flow in order to manage risks and ensure the continuity of their operations during times of crisis. Moreover, the observed delays in investment indicate a relationship between saving money as a precaution and making careful financial plans, where companies weigh their immediate need for cash with future investment prospects. These dynamics clarify the intricate connection between cash reserves, company investment behavior, and financial stability amid exceptional disturbances.

Our results provide managers of emerging economies with some practical implications. Government and regulatory authorities should contemplate implementing measures that offer provisional financial assistance or credit arrangements to mitigate the necessity for excessive accumulation of cash, which can impede wider economic recovery. Moreover, implementing policies that focus on stabilizing financial markets could help reduce the need for corporations to adopt excessively cautious payout policies. Enhancing the infrastructure for managing crises and promoting conditions that support sustainable investment can prevent the depletion of long-term development and innovation while maintaining sufficient liquidity reserves. In addition, we have shown that firms hold more cash by suspending dividend payments as well as delaying capital investment. This may have adverse consequences on firms' market performance and future prospect. To ease the pressure from stockholders for non-payment of dividends, the government can ensure the liquidity in the capital market so that stockholders who need

immediate cash can recourse to the markets with ease and minimum transaction cost. Our results further illustrate that cash rich firms did not compromise capital expenditure during the pandemic. This implies that cash-constraint firms may face growth decline in the future. To overcome this obstacle, governments in emerging markets can provide incentives through fiscal and monetary measures so that cash-deprived firms can resort to fund providers during uncertain economic circumstances like the Covid-19.

Our research, however, focus es on a small emerging country, Vietnam. Hence, it could be difficult to generalize the findings for other emerging economies Future research may focus on other developing countries and compare and contrast the results to this study.

8.0 References

Acharya, Viral V, and Sascha Steffen, 2020, The Risk of Being a Fallen Angel and the Corporate Dash for Cash in the Midst of COVID, The Review of Corporate Finance Studies 9, 430–471.

Almeida, H., 2021. Liquidity Management During the Covid-19 Pandemic. Asia-Pacific Journal of Financial Studies, 50(1), pp.7-24

Amess, K., Banerji, S., & Lampousis, A. (2015). Corporate cash holdings: Causes and consequences. International Review of Financial Analysis, 42, 421-433.

Brogaard, Jonathan, and Andrew Detzel, 2015, The Asset-Pricing Implications of Government Economic Policy Uncertainty, Management Science 61, 3–18.

Bugshan, A., Alnori, F., & Bakry, W. (2021). Shariah compliance and corporate cash holdings. Research in International Business and Finance, https://doi.org/10.1016/j.ribaf.2021.101383

Cejnek, G., Randl, O. and Zechner, J., 2021. The Covid-19 pandemic and corporate dividend policy. Journal of Financial and Quantitative Analysis, 56(7), pp.2389-2410.

Chen, Yangyang, Paul Y. Dou, S. Ghon Rhee, Cameron Truong, and Madhu Veeraraghavan, 2015, National culture and corporate cash holdings around the world, Journal of Banking & Finance 50, 1–18.

Das, B. C., Hasan, F., & Sutradhar, S. R. (2024). The impact of economic policy uncertainty and inflation risk on corporate cash holdings. Review of Quantitative Finance and Accounting, 62(3), 865-887.

Denis, David J., 2011, Financial flexibility and corporate liquidity, Journal of corporate finance 17, 667–674.

Dimitrov, V., & Tice, S. (2006). Corporate diversification and credit constraints: Real effects across the business cycle. The Review of Financial Studies, 19(4), 1465-1498.

Ding, Wenzhi, Ross Levine, Chen Lin, and Wensi Xie, 2021, Corporate immunity to the COVID-19 pandemic, Journal of Financial Economics, 141(2), 802-830.

Dittmar, Amy, and Jan Mahrt-Smith, 2007, Corporate governance and the value of cash holdings, Journal of Financial Economics 83, 599–634.

El Ghoul, S., Guedhami, O., Mansi, S., & Wang, H. H. (2023). Economic policy uncertainty, institutional environments, and corporate cash holdings. Research in International Business and Finance, https://doi.org/10.1016/j.ribaf.2023.101887

Elamer, A. A., & Utham, V. (2024). Cash is queen? Impact of gender-diverse boards on firms' cash holdings during COVID-19. International Review of Financial Analysis, https://doi.org/10.1016/j.irfa.2024.103490

Ezeani, E., Salem, R. I. A., Usman, M., & Kwabi, F. (2023). Board characteristics and corporate cash holding: evidence from the

UK, France and Germany. International Journal of Accounting & Information Management, 31(3), 413-439.

Farooq, U., Al-Gamrh, B., & Dai, J. (2024). Green drives greenbacks: The impact of sustainable innovation on corporate cash holdings in BRICS nations. Journal of Cleaner Production, https://doi.org/10.1016/j.jclepro.2023.140533

Fazzari, S., Ferri, P., & Greenberg, E. (2008). Cash flow, investment, and Keynes–Minsky cycles. Journal of Economic Behavior & Organization, 65(3-4), 555-572.

Fernandes, N., & Gonenc, H. (2016). Multinationals and cash holdings. Journal of Corporate Finance, 39, 139-154.

Frésard, Laurent, and Carolina Salva, 2010, The value of excess cash and corporate governance: Evidence from US cross-listings, Journal of Financial Economics 98, 359–384.

Gao, Y., & Gao, J. (2023). Low-carbon transformation and corporate cash holdings. Finance Research Letters, https://doi.org/10.1016/j.frl.2023.103842

Goodell, John W., 2020, COVID-19 and finance: Agendas for future research, Finance Research Letters 35, 101512.

Gulen, Huseyin, and Mihai Ion, 2016, Policy Uncertainty and Corporate Investment, The Review of Financial Studies 29, 523–564.

Hong, L., & Liu, S. (2023). Geographic diversification and corporate cash holdings. Journal of Empirical Finance, 72, 381-409.

Jayakody, S., Morelli, D., & Oberoi, J. (2023). Political uncertainty, corruption, and corporate cash holdings. Journal of Corporate Finance, https://doi.org/10.1016/j.jcorpfin.2023.102447

Jiang, J., Hou, J., Wang, C. and Liu, H., 2021. COVID-19 impact on firm investment-Evidence from Chinese publicly listed firms. Journal of Asian Economics, 75, p.101320.

Jung, S., & Choi, A. (2024). The value of cash around COVID-19: Insights from business activities. The North American Journal of Economics and Finance, https://doi.org/10.1016/j.najef.2024.102199

Ke, Y., 2021. The Impact of COVID-19 on Firms' Cost of Equity Capital: Early Evidence from US Public Firms. Finance Research Letters, 102242.

Krieger, K., Mauck, N. and Pruitt, S.W., 2021. The impact of the COVID-19 pandemic on dividends. Finance Research Letters, 42, https://doi.org/10.1016/j.frl.2020.101910

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1998, Law and Finance, Journal of Political Economy 106, 1113–1155.

Legesse, T. S., Guo, H., Wang, Y., Tang, J., & Wu, Z. (2023). The impact of economic policy uncertainty and financial development on the sensitivity of corporate cash holding to cash flows. Applied Economics, 55(32), 3728-3746.

Love, Inessa, 2003, Financial Development and Financing Constraints: International Evidence from the Structural Investment Model, The Review of Financial Studies 16, 765–791.

Magerakis, E., Pantzalis, C., & Park, J. C. (2023). The effect of proximity to political power on corporate cash policy. Journal of Corporate Finance, https://doi.org/10.1016/j.jcorpfin.2023.102448

Marwick, A., Hasan, M. M., & Luo, T. (2020). Organization capital and corporate cash holdings. International Review of Financial Analysis, https://doi.org/10.1016/j.irfa.2020.101458

Minsky, H. P. (1976). John Maynard Keynes. Springer, London and Basingstoke Minsky,

H. P. (1977). The financial instability hypothesis: An interpretation of Keynes and an alternative to "standard" theory. Challenge, 20(1), 20-27.

Opler, Tim, Lee Pinkowitz, René Stulz, and Rohan Williamson, 1999, The determinants and implications of corporate cash holdings, Journal of Financial Economics 52, 3–46.

Pettenuzzo, D., Sabbatucci, R., & Timmermann, A., 2021. How to outlast a pandemic: Corporate payout policy and capital structure decisions during Covid-19. Swedish House of Finance Research Paper. No. 21-10, retrieved from https://ssrn.com/abstract=3823258 on April 23, 2022

Phan, Hieu V., Nam H. Nguyen, Hien T. Nguyen, and Shantaram Hegde, 2019, Policy uncertainty and firm cash holdings, Journal of Business Research 95, 71–82.

Qin, X., Huang, G., Shen, H., & Fu, M., 2020. COVID-19 pandemic and firm-level cash holding—moderating effect of goodwill and goodwill impairment. Emerging Markets Finance and Trade, 56(10), 2243-2258.

Rizwan, Muhammad Suhail, Ghufran Ahmad, and Dawood Ashraf, 2020, Systemic risk: The impact of COVID-19, Finance Research Letters 36, 101682.

Tawiah, B., and Keefe, M., 2022. Cash Holdings and Corporate Investment: Evidence from COVID-19. Retrieved fro, http://dx.doi.org/10.2139/ssrn.3712767 on April 23, 2022

Wang, J., Yang, J., Iverson, B.C. and Kluender, R., 2020. Bankruptcy and the COVID-19 Crisis. Retrieved from http://dx.doi.org/10.2139/ssrn.3690398 on April 20, 2022

Weidemann, J. F. (2018). A state-of-the-art review of corporate cash holding research. Journal of Business Economics, 88, 765-797.

Zhang, X., & Zhou, H. (2022). The effect of market competition on corporate cash holdings: An analysis of corporate innovation and financial constraint. International Review of Financial Analysis, https://doi.org/10.1016/j.irfa.2022.102163

Zheng, Michael, 2021, Is Cash the Panacea of the COVID-19 Pandemic: Evidence from Corporate Performance, Finance Research Letters, 102151.

9.0 Appendix

Table A1: Variables definitions

Variables	Definitions
Dependent variables	
Cash	The ratio of cash and short-term investments to assets
Variable of interests	
CVD	Natural logarithm of total cases infected
Control variables	
SIZE	Natural logarithm of assets
LEV	The ratio of total debt to assets
GROWTH	Income before taxes, provisions recognized in income over total assets
ROA	Net income before taxes to assets
TRADE	Trade receivables to assets
TOBIN'Q	Market value to assets
INF	Inflation