COVID-19 PANDEMIC AND CASH HOLDING IN CONSUMER GOODS SECTOR: INTERNATIONAL EVIDENCE

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Abstract

Cash holdings, or the amount of cash and cash equivalents a company holds, become more significant when economic uncertainty increases. Reddaway (1936) argued that cash holdings serve transactional, precautionary, and speculative purposes, underscoring their importance, particularly during economic downturns. This pandemic has encouraged companies to manage their financial resources carefully. This research explores the impact of the COVID-19 pandemic on cash holdings in consumer goods companies across the initial three years of the pandemic. Data were sourced from the Wall Street Journal Database (WSJ), spanning 2018 to 2022. Utilizing the fixed effects model (FEM), the analysis encompasses a dataset of 1.491 companies from 80 countries. The findings indicate a substantial and positive correlation between the COVID-19 pandemic and cash holdings within the consumer goods sector. This effect is pronounced in the first, second, and third years of the pandemic, highlighting companies' decisions to bolster cash reserves as a response to pandemic-induced uncertainty. This analysis underscores the widespread influence of the COVID-19 pandemic on cash holdings across industries, market types, and geographical regions.

Keywords: COVID-19, Cash Holding, Consumer Goods Sector

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1. INTRODUCTION

The COVID-19 pandemic, originating in late 2019, had a profound global impact, disrupting various aspects of human life and the global economy. As countries grappled with the public health crisis, the pandemic's economic ramifications became increasingly evident. Numerous sectors were affected by the pandemic (Lestari et al., 2021; Achmad, Yudaruddin, Budiman, et al., 2023; Defung et al., 2023; Maria et al., 2022; Deviyanti et al., 2023; Irwansyah et al., 2023; Nurlia, et al., 2023; Paminto

et al., 2023; Yudaruddin, 2023a; Riadi, Hadjaat, et al., 2022; Riadi, Heksarini, et al., 2022; Ulfah et al., 2022). Selvi and Veilatchi (2020) highlight that the imposition of COVID-19's social restrictions resulted in a reduction in global productivity. Furthermore, Fernandes (2020) suggests that gross domestic product (GDP) growth forecasts may decrease by as much as 3–5%, with variations specific to each country. Some statistics indicate the negative impact of COVID-19 on the global economy, including a 2% drop in the world's GDP compared to its baseline and a roughly 2.5% decrease in GDP for developing countries. The GDP of industrialized and developed nations also declined by approximately 1.8% (Maliszewska et al., 2020).

Regarding cash holding, the COVID-19 pandemic has presented unprecedented challenges for companies around the world. One important aspect of the debate is how companies manage their cash holdings during this crisis. Cash holdings, or the amount of cash and cash equivalents held by a company, become more significant in situations where economic uncertainty increases. This pandemic has encouraged companies to take careful and prudent steps in managing their financial resources. In many cases, the COVID-19 pandemic prompted companies to increase their cash reserves. High economic uncertainty, potential disruptions in cash flow, and operational challenges make companies more inclined to maintain sizable cash reserves to address emergency situations or sudden changes in financial needs. This is also related to uncertainty related to the company's ability to access additional sources of funds if necessary. However, it is important to note that not all companies take this approach in the same way. Many factors influence companies' decisions regarding cash holdings during the pandemic, including industry sector, company size, and their financial condition before the pandemic. As a result, there has been variation in how companies responded and managed their cash holdings during the COVID-19 pandemic. This has been the subject of interesting debate and will continue to be the focus of further research and analysis in attempts to understand financial dynamics in the context of crises such as this.

This study intends to investigate the impact that the COVID-19 pandemic had on the cash reserves held by consumer goods companies, with a particular focus on the first, second, and third years of the pandemic. The sample is broken down into a number of different dimensions, including industries (alcoholic beverages/drinks, food products, non-alcoholic beverages/drinks, tobacco), markets (developed markets, emerging markets, frontier, and standalone markets), and regions (Americas, Europe, Middle East, Africa, Asia, and Pacific).

In this study, we make several noteworthy contributions to the existing literature. Firstly, our research uniquely delves into the impact of the COVID-19 pandemic on the cash holding of companies within the consumer goods sector, providing valuable insights into a previously unexplored area. Secondly, while prior studies have examined the broader effects of COVID-19 on corporate cash management, they often lack the specificity required to understand the nuances within the consumer goods sector (Chung et al., 2022; Demary et al., 2021; He et al., 2022; Hoang et al., 2022; Qin et al., 2020; Wu et al., 2023).

Secondly, we enhance the existing literature by offering comprehensive insights into the pandemic's influence on cash holding. We achieve this by categorizing our sample based on industries, market types, and diverse global regions. This multi-dimensional approach allows for a nuanced understanding of how various contextual factors intersect with the pandemic's effects on cash holding, thereby increasing the applicability of our findings across a wide spectrum of companies facing distinct operating conditions.

Thirdly, our study delves into the temporal dimensions of the pandemic's impact by analyzing the first, second, and third years of the COVID-19 pandemic. This temporal analysis offers a comprehensive view of how cash holding adjustments evolved over time in response to the crisis. It highlights the dynamic nature of corporate financial decisions during a prolonged period of uncertainty, providing valuable insights for scholars and practitioners seeking to comprehend and navigate the financial challenges posed by external shocks such as the pandemic.

Lastly, our research contributes empirically by showcasing the significant and evolving impacts of the COVID-19 pandemic on cash holding. We provide evidence-comprehensive analysis that underscores the all-encompassing influence of the COVID-19 pandemic on cash holdings across companies, regardless of their specific industry, market, or geographic location. Companies operating in diverse economic sectors have exhibited a unified response marked by a determined effort to strengthen their financial positions. This endeavour includes the augmentation of cash reserves, reflecting a proactive strategy to mitigate the multifaceted challenges presented by this era of heightened uncertainty.

The rest of this paper is structured as follows. Section 2 reviews the effects of COVID-19 on cash holding. Section 3 describes the methodology. Section 4 presents the empirical findings and related discussions. Finally, Section 5 presents the conclusion.

2. LITERATURE REVIEW

The COVID-19 pandemic has significantly affected different aspects of society, primarily in the economic realm rather than politics, as evidenced by Islam et al. (2023). Phan et al. (2023) conducted an in-depth analysis of the global situation, specifically examining the liquidity of stock markets during the outbreak. By examining daily data from 47 stock markets, it was discovered that these markets played a vital role in helping investors mitigate the economic disruptions caused by the pandemic. Barakat et al. (2022) discovered a negative correlation between pandemic-related factors and the cumulative returns of the Egyptian Stock Exchange (EGX100). Furthermore, their research emphasized the lack of a substantial correlation between inflation, as measured by the headline Consumer Price Index (CPI), and the cumulative stock returns. The COVID-19 pandemic had a significant impact on the global labour market, as highlighted by Ismajli and Binaku

(2023) in their study of multiple countries. The implementation of mobility limitations in the Western Balkans led to a significant decrease in commercial operations. Al-Dwiry and Amira (2023) highlighted the volatility of the investment landscape, pointing out that companies previously regarded as secure became more uncertain during the pandemic, and vice versa. Prominent sectors, such as aviation and retail, exhibited unforeseen impacts on the market.

Regarding income, Do and Pham (2023) discovered that the pandemic had a uniform effect on income reduction, affecting male and female workers in equal measure. The impact was particularly pronounced among individuals who lacked professional and technical qualifications. Ziberi et al. (2021) investigated the influence of the pandemic on personal consumption expenditures, emphasizing a transition from luxury to essential goods. The study determined that individuals are prone to resume previously planned expenditures once the measures to combat COVID-19 are lifted. Even during the COVID-19 pandemic, it forced several businesses to carry out information (Surahman et al., 2023; Hudayah et al., 2023; Safitri et al., 2023; Achmad, Yudaruddin, Nugroho, et al., 2023). In spite of the endeavours made by the government, Langi et al. (2023) observed a significant influence of COVID-19 on poverty rates. The results suggest that the impact of the pandemic on societal well-being continues, despite the existence of social assistance programs.

Focusing on the impact of the COVID-19 pandemic on companies, especially liquidity, there is one important thing that is highlighted by researchers. Cash holdings have long captivated the attention of the finance and economics sphere. Reddaway (1936) highlighted their multi-faceted roles, serving transactional, precautionary, and speculative purposes, especially crucial in economic downturns. Duchin et al. (2010) showcased their significance during financial crises, where firms with limited cash reserves suffered the most, facing increased financing costs and decreased investments.

Numerous global financial crises, like the Asian Financial Crisis of 1997, the European Debt Crisis of 2009, and the Global Financial Crisis of 2008, have underscored the adage “cash is king” in tumultuous times. Chen et al. (2020) reinforced this, emphasizing cash’s impact on finance, investments, and daily business, ultimately influencing an organization’s value. Lozano and Yaman (2020) delved into the 2008 European financial crisis, revealing varied impacts on cash holding strategies — positive in short crises and negative in prolonged ones, affecting financially constrained firms differently. Similarly, Chang and Yang (2022) highlighted that firms with substantial cash reserves recover faster during crises, stressing the need for robust testing to validate conclusions. Augmented cash reserves facilitated post-crisis improvements in capital investment and R&D. Government policies to encourage innovation are also expected to reduce the impact of the crisis (Hilmawan, Aprianti, Vo, et al., 2023; Hilmawan, Aprianti, Yudaruddin, et al., 2023). Tran (2020) illuminated a heightened sensitivity of cash-cash flow during the 2008–2009 crisis, resulting in decreased corporate cash holdings, particularly for firms with limited financial resources. Such crises prompt firms to bolster cash reserves and alter spending patterns due to heightened uncertainty, affecting their liquidity flexibility.

Regarding the COVID-19 pandemic, the global business landscape has been significantly shaped by the unprecedented challenges brought about by the COVID-19 pandemic. As companies around the world grapple with the economic uncertainties and disruptions caused by the virus, there has been a growing interest in understanding how firms manage their financial resources, particularly their cash holdings, during such turbulent times. This interest has led to a surge in research aimed at unravelling the intricate relationship between COVID-19 exposure and cash management strategies employed by various businesses. In this context, several studies have delved into the impact of the pandemic on corporate cash reserves and the factors influencing these decisions.

The study conducted by He et al. (2022) reveals a significant and adverse association between COVID exposure and cash holding among companies listed on the Shenzhen and Shanghai Stock Exchanges. An empirical observation revealed that companies experiencing a decline in stock returns due to the intensity of the COVID-19 pandemic tended to exhibit a propensity to augment their cash reserves, while those with positive stock return effects reduced their cash reserves. This relationship was particularly prominent in firms facing significant financial frictions, such as non-state-owned, low-growth, and small enterprises, as well as companies lacking international diversification. In a similar vein, Wu et al. (2023) found that companies with higher cash ratios outperformed and generated more profits, offering valuable insights for corporate executives and policymakers. Maintaining substantial cash holdings is essential for business leaders to mitigate unforeseen shocks and enhance firm profitability, particularly during challenging periods like the ongoing COVID-19 pandemic.

On the other hand, according to Demary et al. (2021), the coronavirus outbreak has disrupted the trend in corporate savings, mainly due to a decline in company revenues. Nevertheless, akin to the consequences observed in the wake of the financial crisis, it is rational to expect that the impact of the COVID-19 shock would result in heightened levels of corporate savings over an extended period. This is due to firms’ intentions to fortify their liquidity and equity capital reserves, thus enhancing their ability to confront forthcoming uncertainty. This emerging pattern has the potential to exert a negative influence on real interest rates and introduce complexities into the realm of monetary policy. Furthermore, Qin et al. (2020) examined firms listed on the Shenzhen and Shanghai stock exchanges from 2014 to 2020 and found a strong positive impact of the COVID-19 pandemic on the cash holdings of listed companies. This underscores the precautionary motive behind cash holding, as more firms are increasing their cash reserves to safeguard against systemic risks, reflecting the potential operational risks associated with their goodwill.

Similarly, Hoang et al. (2022) conducted research across sixteen emerging and established

nations, revealing that companies tend to accumulate more cash due to their heightened exposure to COVID-19. During COVID-19, they also discovered a "cash burn" effect, in which cash holdings fall when a firm's exposure to the epidemic exceeds a particular level. This effect is stronger in larger companies and those with less financial reserves. Additionally, they found variations in the cash burn effect based on cultural dimensions, with higher individualism and lower risk aversion intensifying the effect. In line with these findings, Chung et al. (2022) reported that firms increased their cash reserves in 2020 in response to heightened uncertainty, particularly if they were severely affected by COVID-19 and faced financial constraints. Conversely, companies with stronger access to internal capital markets and financial markets expanded their cash holdings. Surprisingly, the COVID-19 pandemic did not significantly alter companies' cash management practices. However, as uncertainty decreased in 2021, firms displayed a tendency to reduce their cash reserves. De Vito and Gómez (2020) posit that businesses with limited operational flexibility could deplete their cash reserves within approximately two years due to the pandemic's far-reaching economic implications. This scenario significantly affects the liquidity and resilience of such firms. However, the existing body of literature has yet to provide empirical evidence regarding the ability of enterprises with substantial capital reserves to swiftly recover their operational performance following a financial crisis.

H1: COVID-19 positively affects the cash holding.

3. RESEARCH METHODOLOGY

This study aims to examine the impact of the COVID-19 pandemic on cash holding in consumer goods sector companies. We also examine the impact of the first, second, and third years of the COVID-19 pandemic. Furthermore, we break down the sample by industries (alcoholic beverages/drinks, food products, non-alcoholic beverages/drinks, tobacco), markets (developed markets, emerging markets, frontier, and standalone markets), and regions (Americas, Europe, Middle East, Africa, Asia, and Pacific). The financial statements used in this study were obtained from the Wall Street Journal Database (WSJ) and covered the period from 2018 to 2022. An analysis was conducted on a dataset comprising 1.491 companies from 80 countries, examining both dependent and independent variables. The subsequent information illustrates the distribution of the sample (Table 1).

Table 1. Distribution of sample firms by country

Country	*Num. of comp*	*%*	*Country*	*Num. of comp*	*%*	*Country*	*Num. of comp*	*%*
Argentina	8	0.54	*Israel*	11	0.74	*Qatar*	4	0.27
Australia	32	2.15	*Italy*	9	0.6	*Saudi Arabia*	9	0.6
Austria	4	0.27	*Ivory Coast*	4	0.27	*Serbia*	1	0.07
Bahrain	1	0.07	*Jamaica*	4	0.27	*Singapore*	18	1.21
Bangladesh	13	0.87	*Japan*	127	8.52	*South Africa*	10	0.67
Belgium	6	0.4	*Jordan*	3	0.2	*South Korea*	82	5.5
Bulgaria	1	0.07	*Kazakhstan*	2	0.13	*Spain*	4	0.27
Canada	45	3.02	*Kenya*	4	0.27	*Sri Lanka*	15	1.01
Chile	8	0.54	*Kuwait*	1	0.07	*Sweden*	16	1.07
China	151	10.1	*Latvia*	1	0.07	*Switzerland*	10	0.67
Croatia	7	0.47	*Lithuania*	4	0.27	*Taiwan*	34	2.28
Cyprus	2	0.13	*Malaysia*	33	2.21	*Tanzania*	1	0.07
Thailand	53	3.55	*Malta*	1	0.07	*Czech Republic*	2	0.13
Denmark	5	0.34	*Morocco*	4	0.27	*United States*	152	10.19
Egypt	17	1.14	*Mauritius*	6	0.4	*Tunisia*	4	0.27
Estonia	2	0.13	*Mexico*	9	0.6	*Turkey*	31	2.08
Finland	5	0.34	*Namibia*	1	0.07	*UEA*	1	0.07
France	18	1.21	*Netherlands*	5	0.34	*United Kingdom*	41	2.75
Germany	16	1.07	*New Zealand*	7	0.47	*Venezuela*	1	0.07
Ghana	4	0.27	*Nigeria*	17	1.14	*Vietnam*	36	2.41
Hong Kong	70	4.69	*Norway*	2	0.13	*Zambia*	4	0.27
Hungary	2	0.13	*Oman*	1	0.07	*Zimbabwe*	4	0.27
Iceland	1	0.07	*Pakistan*	31	2.08	*Colombia*	2	0.13
India	143	9.59	*Palestine*	3	0.2	*Greece*	7	0.47
Indonesia	48	3.22	*Peru*	8	0.54	*Trinidad & Tobago*	4	0.27
Iraq	1	0.07	*Philippines*	18	1.21	Total	1491	100
Ireland	3	0.2	*Poland*	16	1.07			

Following previous studies (He et al., 2022; Hadjaat et al., 2021; Qin et al., 2020; Yudaruddin, 2019), the dependent variable used is cash & cash equivalent to total assets. Cash holding represents the amount of cash or cash equivalents held by a company at a specific point in time. Meanwhile, the independent variable in this study is the COVID-19 pandemic, which is measured using a dummy variable. This dummy variable takes a value of 1 during the years of the COVID-19 pandemic (2020–2022) and 0 otherwise. Additionally, we specifically measure the COVID-19 pandemic based on the first year (2020), second year (2021), and third year (2023). This study also includes several control variables such as company size, profitability, leverage, retained earnings, and working capital. Table 2 provides more detailed information on the measurement of these variables.

Table 2. Dependent, independent and control variables

Variable	*Definition and measure*	*Expected Sign*
Cash holding (CASH)	Cash & cash equivalent to total asset	
COVID	This dummy variable has a value of 1 if the year of the COVID-19 pandemic (2020–2022), or 0 otherwise	+
COVID20	This dummy variable has a value of 1 if the first year the COVID-19 pandemic occurred (2020), or 0 otherwise	+
COVID21	This dummy variable has the value 1 if it is the second year of the COVID-19 pandemic (2021), or 0 otherwise	+
COVID22	This dummy variable has the value 1 if it is the third year of the COVID-19 pandemic (2022), or 0 otherwise	+
Firms size (SIZE)	Log natural total asset	-/+
Profitability (ROA)	Net profit/total asset	-
Leverage (LEV)	Total debt to total equity	-
Retained earnings (REAR)	Retained earnings	-
Net-working capital (NWC)	Current assets — current liabilities	-

The econometric methodology involves the execution of regressions in a two-stage process. In the initial phase, the evaluation of the COVID-19 equation involves the utilization of a dummy variable for the year and a collection of control variables concurrently, as depicted in Eq. (1–4). The subsequent phase involves replicating the aforementioned process in the second stage, wherein the sample is categorized based on industries, markets, and regions. The subsequent model is utilized to predict the composition of a firm's cash holding:

$$CASH_{i,t} = \beta_0 + \beta_1 COVID_t + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 REAR_{i,t} + \beta_6 NWC_{i,t} + \varepsilon_{i,j} \quad (1)$$

$$CASH_{i,t} = \beta_0 + \beta_1 COVID20_t + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 REAR_{i,t} + \beta_6 NWC_{i,t} + \varepsilon_{i,j} \quad (2)$$

$$CASH_{i,t} = \beta_0 + \beta_1 COVID21_t + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 REAR_{i,t} + \beta_6 NWC_{i,t} + \varepsilon_{i,j} \quad (3)$$

$$CASH_{i,t} = \beta_0 + \beta_1 COVID22_t + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 REAR_{i,t} + \beta_6 NWC_{i,t} + \varepsilon_{i,j} \quad (4)$$

where, *i* refers to an individual firm, *t* refers to the year, and cash holding (*CASH*) represents the dependent variable. The COVID-19 pandemic represents the independent variable (*COVID, COVID20, COVID21, COVID22*). Meanwhile, *SIZE, ROA, LEV, REAR*, and *NWC* represent firm-specific control variables (Hadjaat et al., 2021; He et al., 2022; Kusumawardani et al., 2021; Qin et al., 2020; Yudaruddin, 2019; Yudaruddin 2023b; Yudaruddin 2023c). Also, $\varepsilon_{i,j}$ is the error terms at the firm level.

Panel data analysis is a statistical method that allows for the extraction of both cross-sectional and time-series variation from a given panel dataset. This approach is particularly advantageous as it helps to mitigate several issues commonly encountered in empirical research, including multicollinearity, heteroscedasticity, and estimation bias (Wooldridge, 2010). In the estimation of the regression model using panel data, three methodologies can be employed: the common effects model, the random effects model, and the fixed effects model. The present study utilizes the Chow test and Hausman test to ascertain the most appropriate regression model, ultimately opting for the fixed effects model (FEM) as the preferred option. The utilization of panel data allows for the application of the fixed-effect model, which yields estimates of the coefficients that are both unbiased and consistent.

4. RESULTS

Table 3 provides descriptive statistics for all variables used in the analysis, based on a sample of 7.046 observations. The mean values and standard deviations are presented to offer insights into the central tendency and dispersion of the data. Notably, the average cash holding (*CASH*) is approximately 11.06% of total assets, with a standard deviation of 12.41, indicating considerable variability among firms. The variables related to the COVID-19 pandemic (*COVID, COVID20, COVID21*, and *COVID22*) show varying levels of occurrence over the specified years. Firm size (*SIZE*) has an average natural logarithm of total assets at 10.12, suggesting a diverse range of companies in the sample. Profitability (*ROA*) displays a mean of 0.01648, while leverage (*LEV*) has a mean of 0.90355, indicating differences in financial structures among firms. Retained earnings (*REAR*) and net working capital (*NWC*) exhibit substantial variation, with mean values of 29.798.8 and 20.454.9, respectively.

Table 3. Descriptive statistics for all variables

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
CASH	11.0572	12.41047	0.233359	50.56961
COVID	0.59551	0.490827	0.000000	1.000000
COVID20	0.20848	0.406255	0.000000	1.000000
COVID21	0.20777	0.405745	0.000000	1.000000
COVID22	0.17925	0.383589	0.000000	1.000000
SIZE	10.1217	2.184090	6.612041	14.13728
ROA	0.01648	0.151034	-0.473249	0.401449
LEV	0.90355	1.502532	0.100709	7.862514
REAR	29798.8	78661.18	-61949.80	376380.0
NWC	20454.9	71313.64	-237691.9	281899.0

Note: Obs. = 7046.
Source: Authors' calculation.

Table 4 presents the correlation matrix for the variables in the analysis, consisting of 7.046 observations. A close examination of the correlation coefficients reveals that there is no significant issue of multicollinearity among the variables. Multicollinearity occurs when the independent variables in a regression analysis are highly correlated, estimation of the regression coefficients may be unstable. In this case,

the correlation coefficients between the independent variables (*COVID, COVID20, COVID21, COVID22, SIZE, ROA, LEV, REAR*, and *NWC*) are generally low to moderate in magnitude. None of the correlations approach the threshold of 0.80 indicating that there is no excessive or problematic collinearity between these variables. Therefore, the data appears to be suitable for regression analysis without significant concerns about multicollinearity, enhancing the reliability of the forthcoming statistical results.

Table 4. Correlation matrix

Variable	*COVID*	*COVID20*	*COVID21*	*COVID22*	*SIZE*	*ROA*	*LEV*	*REAR*	*NWC*
COVID	1.000								
COVID20	0.423	1.000							
COVID21	0.422	-0.263	1.000						
COVID22	0.385	-0.240	-0.239	1.000					
SIZE	0.042	-0.006	0.019	0.041	1.000				
ROA	-0.057	-0.022	-0.020	-0.029	0.057	1.000			
LEV	0.194	0.202	0.118	-0.090	-0.062	-0.163	1.000		
REAR	0.051	0.057	-0.013	0.019	0.561	0.165	-0.025	1.000	
NWC	-0.047	-0.140	-0.006	0.094	0.439	0.096	-0.357	0.436	1.000

Note: Obs. = 7046.
Source: Authors' calculation.

Table 5 demonstrates the relationship between the COVID-19 pandemic and cash holding in companies within the consumer goods sector. The regression analysis is conducted as follows: firstly, this study finds a significant positive relationship between the COVID-19 pandemic and cash holding. Secondly, the positive and significant impact of COVID-19 on cash holding is observed in the first, second, and third years of the pandemic (Columns 1–4). These findings indicate that during the COVID-19 period, companies made decisions to increase their cash holdings, thus supporting *H1*.

Regarding the control variables, this study reveals that these variables exert an impact on cash holding that aligns with our expectations. Firstly, considering the variable *SIZE*, the analysis consistently identifies a significant negative influence on cash holding across different columns (Columns 2–4). Secondly, the result that company size has a negative relationship with cash holding suggests that larger companies tend to have lower cash holdings. This can depict efficient fund utilization, business diversification, better access to financial resources, or higher confidence in handling business risks.

Moving on to the variable *ROA*, the analysis consistently demonstrates a significant negative impact on cash holding (Columns 2–4). The negative relationship between profitability and cash holding indicates that as a company's profitability increases, the likelihood of it holding a large amount of cash decreases. This can depict that highly profitable companies are more inclined to invest their funds in higher-yielding projects rather than holding a significant amount of cash. However, it may also suggest that companies with lower profitability rely more on cash holding as a safeguard against potential financial uncertainties.

Meanwhile, for the leverage (*LEV*) variable, a significant positive impact on cash holding is observed. The positive relationship between leverage (debt level) and cash holding indicates that as a company's debt level increases, the likelihood of it holding a larger amount of cash also rises. This could suggest that companies with higher debt levels choose to maintain a significant cash reserve as a safety measure to address debt and interest payment obligations. However, it could also imply that these companies face higher financial risks due to significant debt, necessitating a larger cash holding to mitigate potential liquidity problems.

The retained earnings variable shows a significant positive impact on cash holding. The positive relationship between retained earnings and cash holding indicates that as a company's retained earnings increase, the likelihood of it holding a larger amount of cash also rises. This can depict that companies generating significant profits choose to retain a portion of those earnings in the form of cash or cash equivalents. This can be used to fund future investments, pay dividends to shareholders, or serve as financial reserves. These findings also indicate that earnings generated by companies positively contribute to a larger cash reserve, which can be used for various financial purposes that support growth and stability.

Lastly, when examining the working capital (*NWC*) variable, we find a positive impact of working capital on cash holding. The positive relationship between working capital and cash holding indicates that as a company's working capital increases, the likelihood of it holding a larger amount of cash also rises. This can depict that companies with substantial working capital have more sources of funds to maintain a cash reserve. This can help companies cope with fluctuations in day-to-day operational needs, handle emergencies, or capitalize on investment opportunities that may arise. Thus, these results suggest that a healthy and strong working capital positively contributes to the level of cash holding in companies, enhancing their financial stability.

Table 5. COVID-19 and cash holding

Parameter	Dependent variables: CASH			
	COVID20–22	COVID20	COVID21	COVID22
	(1)	(2)	(3)	(4)
COVID	8.1196***	3.7642***	4.5639***	2.9099***
	(25.99)	(15.12)	(19.76)	(10.87)
SIZE	0.8032**	1.6786***	0.95547**	1.2472**
	(2.11)	(3.09)	(2.01)	(2.48)
ROA	-2.1315	-7.4214***	-7.2079***	-6.9083***
	(-1.12)	(-3.47)	(-3.46)	(-3.24)
LEV	-0.1051	0.48986***	4.0269***	0.73484***
	(-0.99)	(4.19)	(3.54)	(6.47)
REAR	5.74e-06	0.000015***	0.00002***	0.00001***
	(1.42)	(3.45)	(5.82)	(4.38)
NWC	0.00001***	0.000019***	0.00001***	9.81e-06***
	(3.21)	(5.15)	(3.00)	(2.75)
CONS	14.0977***	-7.88034	-0.80108	-3.42047
	(3.69)	(-1.44)	(-0.17)	(-0.68)
R-squared	0.2017	0.0506	0.0657	0.0378
F statistic	119.77	46.76	79.38	38.64
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	7046	7046	7046	7046

*Note: ***, **, and * are significant at 1%, 5%, and 10% confidence levels, respectively.*
Source: Authors' calculation.

Tables 6–8 provide insights into the impact of the COVID-19 pandemic on cash holding across various industries, markets, and regions. Table 6 demonstrates a significant and positive impact of COVID-19 on cash holding for all industries. The same trend is observed in Table 7, where the impact of COVID-19 on cash holding is positive and significant across markets. Meanwhile, in Table 8, the impact of COVID-19 on cash holding based on regional analysis also reveals a significant and positive impact. However, it is worth noting that the Middle East region shows non-significant results in the impact of the third year of COVID-19 on cash holding.

Table 6. COVID-19 and cash holding by industries

Parameter	Dependent variables: CASH			
	COVID20–22	COVID20	COVID21	COVID22
	(1)	(2)	(3)	(4)
Panel A: Alcoholic beverages/Drinks				
COVID	8.0376***	3.3309***	4.0838***	3.9381***
	(9.47)	(5.36)	(7.37)	(5.68)
CONS	26.8478***	5.3449	11.227	10.266
	(3.12)	(0.52)	(1.17)	(1.04)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.2105	0.0518	0.0659	0.0567
F statistic	16.53	7.07	9.97	6.84
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	935	935	935	935
Panel B: Food products				
COVID	7.7553***	3.6357***	4.5152***	2.5801***
	(21.89)	(12.85)	(16.40)	(8.12)
CONS	6.4948	-14.060*	-8.1970	-11.002
	(1.40)	(-1.96)	(-1.33)	(-1.67)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.2009	0.0573	0.0737	0.0424
F Statistic	87.16	34.70	58.39	27.50
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	5154	5154	5154	5154
Panel C: Non-alcoholic beverages/Drinks				
COVID	9.3177***	4.2409***	4.8645***	2.8096***
	(7.56)	(4.60)	(6.36)	(3.06)
CONS	27.516**	-5.9700	3.2859	2.5929
	(2.36)	(-0.44)	(0.27)	(0.20)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.2085	0.0525	0.0632	0.0342
F statistic	10.50	5.41	8.38	3.12
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	672	672	672	672
Panel D: Tobacco				
COVID	11.163***	3.6772***	7.0022***	5.3348***
	(5.79)	(2.77)	(5.46)	(3.98)
CONS	29.223*	-1.5775	16.150	11.677
	(1.91)	(-0.07)	(0.82)	(0.56)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.3439	0.1381	0.1947	0.1585
F statistic	15.28	6.97	9.92	8.62
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	285	285	285	285

*Note: ***, **, and * are significant at 1%, 5%, and 10% confidence levels, respectively.*
Source: Authors' calculation.

Table 7. COVID-19 and cash holding by market

Parameter	*Dependent variables: CASH*			
	COVID20–22	*COVID20*	*COVID21*	*COVID22*
	(1)	*(2)*	*(3)*	*(4)*
Panel A: Developed markets				
COVID	8.0844***	3.6777***	4.5531***	2.8928***
	(16.91)	(9.05)	(12.40)	(7.31)
CONS	15.042**	-3.7603	3.2140	-0.1006
	(2.55)	(-0.57)	(0.49)	(-0.01)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.1989	0.0517	0.0672	0.0414
F statistic	52.68	17.82	31.89	16.62
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	2897	2897	2897	2897
Panel B: Emerging markets				
COVID	8.3072***	4.0538***	4.6598***	2.8260***
	(17.62)	(11.64)	(13.72)	(6.78)
CONS	8.8110	-14.807	-8.5399	-10.587
	(1.54)	(-1.36)	(-0.98)	(-1.13)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.2096	0.0558	0.0688	0.0373
F statistic	55.50	26.73	39.96	18.68
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	3360	3360	3360	3360
Panel C: Frontier and standalone markets				
COVID	7.4826***	2.7089***	4.3597***	3.1192***
	(8.68)	(3.85)	(6.53)	(3.92)
CONS	27.489***	-4.2064	5.4550	5.0949
	(2.98)	(-0.03)	(0.44)	(0.41)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.1947	0.0453	0.0716	0.0462
F statistic	14.61	3.48	10.81	4.55
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	789	789	789	789

*Note: ***, **, and * are significant at 1%, 5%, and 10% confidence levels, respectively.*
Source: Authors' calculation.

Table 8. COVID-19 and cash holding by regions (Part 1)

Parameter	*Dependent variables: CASH*			
	COVID20–22	*COVID20*	*COVID21*	*COVID22*
	(1)	*(2)*	*(3)*	*(4)*
Panel A: Americas				
COVID	7.2717***	3.0783***	4.2873***	2.2238***
	(9.53)	(4.53)	(6.49)	(3.28)
CONS	18.739***	4.2399	10.532	6.8325
	(2.88)	(0.57)	(1.45)	(0.91)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.1673	0.0537	0.0697	0.0437
F statistic	21.00	5.47	11.47	5.30
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	1088	1088	1088	1088
Panel B: Europe				
COVID	5.8214***	3.5804***	2.7329***	1.9549***
	(8.76)	(6.13)	(5.23)	(2.86)
CONS	21.251**	0.3106	7.7125	7.5394
	(2.09)	(0.03)	(0.68)	(0.64)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.1595	0.0631	0.0503	0.0370
F statistic	15.37	7.92	8.14	4.58
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	1048	1048	1048	1048
Panel C: Middle East				
COVID	4.1964***	4.2874**	2.6660**	-2.0965
	(3.09)	(2.64)	(2.41)	(-1.26)
CONS	-15.302	-28.616	-34.754	-42.240
	(-0.39)	(-0.68)	(-0.97)	(-1.03)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.1741	0.1615	0.1311	0.1193
F statistic	2.28	1.74	1.85	1.22
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	134	134	134	134

Table 8. COVID-19 and cash holding by regions (Part 2)

Parameter	*Dependent variables: CASH*			
	COVID20–22	*COVID20*	*COVID21*	*COVID22*
	(1)	*(2)*	*(3)*	*(4)*
Panel D: Africa				
COVID	8.0992***	3.0426***	4.9824***	2.6875**
	(6.41)	(3.45)	(5.56)	(2.31)
CONS	34.281**	3.5456	16.195	10.373
	(2.40)	(0.18)	(0.94)	(0.54)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.2515	0.0852	0.1221	0.0773
F statistic	11.01	3.98	8.80	3.63
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	395	395	395	395
Panel E: Asia and Pacific				
COVID	8.9062***	4.0255***	5.0235***	3.4365***
	(21.30)	(12.77)	(16.71)	(9.75)
CONS	5.8223	-18.503*	-12.151	-14.366
	(0.98)	(-1.73)	(-1.39)	(-1.56)
Control variables	Yes	Yes	Yes	Yes
R-squared	0.2279	0.0556	0.0748	0.0461
F statistic	80.53	32.71	58.92	30.08
Prob > F	0.0000	0.0000	0.0000	0.0000
Number of obs.	4381	4381	4381	4381

*Note: ***, **, and * are significant at 1%, 5%, and 10% confidence levels, respectively.*
Source: Authors' calculation.

5. DISCUSSION

This study seeks to examine the effect of the COVID-19 pandemic on the cash reserves of companies in the consumer goods sector. In addition, the effects of the first, second, and third years of the COVID-19 pandemic are analyzed. Furthermore, we divide the sample by industry (alcoholic beverages/drinks, food products, non-alcoholic beverages/drinks, and tobacco), market (developed markets, emerging markets, frontier, and standalone markets), and region (Americas, Middle East, Europe, Asia, and Pacific, Africa).

The regression analysis is conducted as follows: firstly, this study finds a significant positive relationship between the COVID-19 pandemic and cash holding within the consumer goods sector. Secondly, the positive and significant impact of COVID-19 on cash holding is observed in the first, second, and third years of the pandemic. These findings indicate that during the COVID-19 period, companies made decisions to increase their cash holdings. These findings align with several key studies in the field. Firstly, these findings substantiate the research conducted by He et al. (2022), which revealed a significant positive correlation between the COVID-19 pandemic and cash holdings within the consumer goods sector. Secondly, the outcomes align with Wu et al. (2023), illustrating that companies with higher cash ratios outperformed their counterparts and generated greater profits amid the pandemic. Furthermore, the results are consistent with the perspective put forth by Demary et al. (2021) that the COVID-19 shock may lead to increased corporate savings over the long term, as companies endeavour to fortify their liquidity and equity capital buffers. Qin et al. (2020), shedding light on the pronounced positive impact of the COVID-19 pandemic on cash holdings, emphasize the precautionary motive underpinning cash reserves. Additionally, the research conducted by Hoang et al. (2022) and Chung et al. (2022) echo these findings by suggesting that companies tend to amass more cash in response to their exposure to COVID-19, albeit with variations based on firm-specific circumstances and economic contexts.

This analysis demonstrates that the impact of the COVID-19 pandemic on a company's cash holdings is a phenomenon that has occurred broadly across various industrial sectors, diverse markets, and geographic regions. The high degree of uncertainty associated with pandemic developments and the unforeseen economic effects have prompted a similar response from companies across different economic sectors. They have felt the need to take robust precautionary measures by increasing their cash reserves as a form of protection against the uncertainty they face.

Faced with such unstable conditions and heightened risks, companies have recognized the importance of having a more robust and flexible financial position. Larger cash reserves provide protection against liquidity risks, enabling companies to meet immediate obligations and offering flexibility to invest in business opportunities that may arise within the ever-changing economic landscape. Although there is variation in how companies have responded to the pandemic in different regions, as seen in the Middle East region showing non-significant results, this may be attributed to differing economic dynamics or specific financial strategies employed by companies in that region.

Overall, these findings underscore the significance of cash holding as a strategic tool in risk reduction, financial stability maintenance, and preparation for uncertain situations and economic crises that may occur in the future, as exemplified during the COVID-19 pandemic. Strong cash reserves serve as valuable assets for companies in sustaining their business continuity and operational sustainability.

6. CONCLUSION

This research aims to investigate the influence of the COVID-19 pandemic on cash holdings within consumer goods companies, specifically examining the first, second, and third years of the pandemic.

The regression analysis unfolds as follows: firstly, this study reveals a significant and positive association between the COVID-19 pandemic and cash holdings within the consumer goods sector. Secondly, COVID-19 exhibits a noteworthy positive impact on cash holdings in the first, second, and third years of the pandemic. These outcomes indicate that companies opted to bolster their cash reserves during the COVID-19 era. Moreover, this study demonstrates a substantial and positive COVID-19 impact on cash holdings across all industries, market categories, and geographical regions. Nevertheless, it is essential to acknowledge that the Middle East region yields non-significant results regarding the impact of COVID-19 in its third year on cash holdings.

The findings from this research carry several policy implications that are pertinent to corporate managers. Firstly, company managers should consider adopting a more proactive approach to cash holdings management, especially when facing uncertain situations like a pandemic or an economic crisis. Secondly, diversification of business operations should be contemplated by corporate managers. Thirdly, companies should routinely evaluate their financial strategies. Lastly, establishing strong partnerships with financial institutions such as banks or financing agencies can provide better access to additional financial resources when needed, without overly relying on excessive cash holdings.

This study has certain limitations that should be taken into consideration in the context of further research. Firstly, regarding the time constraint, future research can expand the analysis period to explore the long-term impact of the COVID-19 pandemic on corporate cash holdings. This will provide a better understanding of how companies manage their cash holdings in the face of prolonged economic changes. Additionally, in addressing the limitation related to variable selection, future studies can consider other factors that may influence corporate cash holdings, such as changes in tax policies or financial regulations. A more holistic analysis will offer a more comprehensive view of the factors affecting corporate cash holdings. Furthermore, further research can integrate in-depth case studies of specific companies or industry sectors to gain a deeper understanding of managerial behavior in coping with crisis situations like the pandemic. This will help identify more specific strategies and tactics employed by companies to manage their cash holdings. Lastly, to better comprehend the impact of the COVID-19 pandemic on cash holdings, future research can involve interviews or surveys with company managers. This will provide deeper insights into the reasons behind their decisions regarding cash holdings during the pandemic. Thus, future research can make a more substantial contribution to the understanding of corporate cash holdings management in crisis contexts.

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