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HOW DO CORPORATE SUSTAINABILITY AND PANDEMIC AFFECT CASH HOLDINGS IN MUSLIM COUNTRIES?

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ABSTRACT

We investigate how corporate sustainability (Environmental, Social, and Governance-ESG) influences cash holdings of non-financial firms in Muslim countries from 2003 to 2021. Using panel models, we find that firms with lower ESG hold more cash over the entire period, which aligns with the agency and precautionary motives of cash holdings. We also note that the negative relation between ESG and cash holding is not affected by the COVID-19 pandemic. Looking at individual countries in the sample, we note a positive relation between ESG and cash balances for Saudi Arabia. Meanwhile, similar to the full sample, their relation is negative for firms from Malaysia and Turkiye. Finally, the ESG and cash policies of firms in different industries tend to vary. Overall, firms in Muslim countries use cash holdings as a substitute for corporate sustainability without any changes in the COVID era.

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I. INTRODUCTION

While corporate social responsibility (CSR) and environmental, social, and governance (ESG) responsibilities have long been sidelined or even seen as a burden, recent developments in particular the adoption of United Nation's 17 Sustainable Development Goals in 2015 have made business firms to place ESG issues at the center of their agenda. ESG-related investments and activities increase significantly in recent years, especially with the increasing awareness of ESG and the pressure from investors and other stakeholders (Cort & Esty, 2020). ESG activities are accepted as an indicator of corporate social responsibility and used as a benchmark for the behavior and future financial potential of firms. Investors care about ESG-related investments mainly for two reasons: (i) Investing in ESG-related factors is ethical and the right thing to do and (ii) ESG investments are positively related to financial performance and thus reduce portfolio risk (Broadstock et al., 2021).

In the literature, there have been numerous studies on the association between ESG and firm performance. However, very little research has been carried out on the relation between corporate sustainability and cash policy. The recent research by Atif et al. (2022) shows that ESG score and environmental, social, and governance pillars are negatively related to cash holdings for the case of S&P 1500 indexed firms. That is, firms with lower corporate sustainability hold more cash. However, there has been no empirical evidence of how corporate sustainability affects cash holdings in developing countries, in particular Muslim countries.

In light of this, this study examines the relationship between ESG and cash holding in Muslim countries. The relationship between ESG and cash holdings is likely to differ, given the influence of culture on cash holding (Ramirez and Tadesse, 2007) and ESG level (Roy and Mukherjee, 2022; Wasiuzzaman et al., 2022), and the different cultural contexts of Muslim countries and businesses. Although there are various studies focusing on developed economies (Toledo and Bocatto, 2015; Cardillo et al., 2022; Harford et al., 2008; Gao et al., 2013) and emerging economies (Rafinda et al., 2018; Diaw, 2021; Al-Najjar, 2013; Xue, 2021), examining these relations specifically for Muslim countries will make an important contribution to the literature in terms of understanding ESG and cash holdings under different cultural setting.

Utilizing 1,600 firm-years from eleven Muslim countries over the period 2003-2021, we find that firms with lower ESG hold more cash. This aligns well with the agency and precautionary motive of cash and previous research (Atif et al., 2022). We further note that the development level does not affect the ESG-cash relationship. Further, we observe no changes in the negative impact of ESG on cash holdings during the COVID-19 period. Examining the issue by countries, we however note some differences. Namely, while the relation between ESG and cash holdings remain negative for Malaysia and Turkiye, it turns positive for firms in Saudi Arabia. Finally, looking across sectors, we continue to observe the negative relation between ESG score and cash holdings in all sectors except the energy sector.

We contribute to the literature in two ways. First, Atif et al. (2022) show that ESG is negatively associated with cash holdings for firms in the United States (US). We extend the literature by assessing the relation between ESG and cash holding

in developing countries, especially Muslim countries. We may summarize that the development level of countries has no influence on ESG-cash relationship. Then, Li et al. (2022) examine the association between environmental regulations and cash holdings for Chinese firms. Though their sample covers the period 2007-2020, they do not consider the likely effect of the COVID on this relationship. We extend the literature by considering the impact of the pandemic on this association.

The rest of the study proceeds as follows: Section II reviews the literature and presents the research question. Section III describes the empirical model data. Section IV presents empirical results, and Section V concludes.

II. LITERATURE REVIEW

In ESG, environmental factors include aspects of the business that can affect or be related to the environment (Li et al., 2021). For example, factors such as the use of water, carbon emissions, and recycling are considered under environmental factors. The measures taken by the enterprise by evaluating the environmental risks are also examined under this dimension. The social factor covers the firms' relations with society in general (Bender et al., 2017). The safety of the products and the workplace, the value of the employees to the firm, and the contribution of the firm to society are examples of societal factors. Finally, the governance dimension includes factors such as independence and diversity of the management and transparency (Li et al., 2021). These factors are critical in providing a control mechanism for investors and stakeholders as well as shareholders.

The effect of the ESG-related investments and activities of the firms on their general and financial performance and firm value has been examined by various studies. For example, Eccles and Krzus (2018) show that leading companies in sustainability have higher stock market values than others. Similarly, Khan et al. (2016) find that firms that care about ESG issues have better financial performance. In addition, there are some studies demonstrating that ESG-related activities contribute to the firm value (Branco and Rodrigues, 2006; Malik, 2015; Wong et al., 2021). Although there are results in the literature showing that there is a negative relationship or no relationship, Margolis et al. (2019) show a significant relationship between social responsibility activities and financial performance in their meta analysis. In addition, the meta analysis by Friede et al. (2015) reveals that investments made for sustainability provide long-term returns.

Another variable whose relationship with ESG needs to be examined is cash holdings, which have a significant share in companies' total assets. Cash holdings are an asset that companies can use for payments without using external financing or liquidating any asset. While cash holding is a precaution against shocks and provides flexibility, the return of this asset is low. Therefore, there is a trade-off for cash holdings, and it is expected to be kept at an optimum level. In a perfect market, the level of cash holdings has no effect. However, it is necessary to determine the optimum level for cash holding due to reasons such as real-world information asymmetries and transaction costs. Previous studies show that the level of cash holdings can be affected by factors such as firm size (Opler et al., 1999), profitability (Ozkan and Ozkan, 2004), growth opportunities (Tekin, 2020), and dividend policy (Dittmar et al., 2003).

One of the issues related to cash holdings is the agency problem. In some cases, managers can use cash holdings for their own private interests. According to this point of view, which is called the agency problem, in the absence of a control mechanism, managers may use business resources in the wrong places. Therefore, corporate governance becomes a vital factor in cash holdings. With the help of good governance, cash holdings in well-managed businesses can be utilized in activities that will add value. In this context, monitoring, one of the most effective ways to prevent agency problems, can be provided via ESG (Lu et al., 2017). For example, Atif et al. (2022) show in their study that ESG is beneficial for internal and external monitoring. In addition, Fama (1980) states that effective monitoring is vital in eliminating the agency problem.

Another issue in cash holdings is precautionary motive related to the liquidity of the firm and the cash held for investment purposes. Capital market imperfections are one of the main reasons behind this motive. Precautionary motive arises when firms have limited access to financial resources for investment (Amess et al., 2015). For this reason, this motive increases when companies' growth opportunities increase and access to capital becomes difficult (Opler et al., 1999). It is expected that the economic difficulties that emerged with the pandemic will affect the precautionary motive positively.

From this point of view, it can be expected that ESG applications will have an impact on the utilization of companies' cash holdings. Companies investing in ESG activities are trying to keep up with the changing environment. As resources become scarce and more expensive, the opinions of customers and investors about the company will play a decisive role.

There are some studies that show ESG investments reduce the risk for companies by increasing sustainability. For example, Hoepner et al. (2017) show that ESG investments reduce downside risk. In the study conducted by Ilhan et al. (2020), companies with low ESG scores have higher tail risk. Although studies on the effect of ESG in crisis periods are limited, some studies on the 2008-2009 financial crisis show that companies with high ESG scores are more resilient in such periods. For example, in the study by Lins et al. (2017) on non-financial firms in the United States, it is concluded that firms with high ESG investments show better financial performance during the crisis period. Similarly, Cornet et al. (2016) find that the performances of banks during the crisis period are positively related to their CSR scores.

In times of exogenous shocks, firms tend to hold more cash to minimize the adverse effects of unexpected and unforeseen events (Opler et al., 1999; Almeida et al., 2004). Considering cash holdings as a measure used to prevent transaction costs, companies increase their cash holdings when cash fluctuations are expected in the future (Acharya et al., 2012). Qin et al. (2020) indicate that the Covid-19 pandemic has significantly increased the cash holding levels of Chinese firms. Similarly, Dao (2021) mentions that cash holding levels increase and overinvestment decreases during the Covid-19 period in Vietnam.

It is generally accepted that there is a negative relationship between ESG and cash holding level. Because companies with higher moral capital with ESG can access cash more easily (Atif et al., 2022). Similarly, Dittmar and Mahrt-Smith (2007) demonstrate that the value of cash is higher in companies with good corporate

governance. In addition, cash holding tends to increase due to the uncertainties that exist during crisis periods such as the pandemic (Qin et al., 2020). However, how these relations and effects occur within Muslim countries is not yet certain.

Muslim countries differ from other cultures in many respects due to the influences of religion in the social, political, and business spheres. For example, Muslim countries show a lower level of individuality compared to the world average (Ararat, 2006). Therefore, individuals in these countries are expected to be more committed to the group they belong to and the extended family. Susec and Sardy (2021) mention that firms with higher levels of individualism have better financial performance and higher ESG scores. On the other hand, Muslim countries have high scores in the uncertainty avoidance dimension (Obeidat et al., 2012). This means preventing and minimizing uncertainty with strict rules, laws and policies. In addition, these countries show a low future orientation (At-Twaijri and Al-Muhaiza, 1996). Lemma et al. (2022) find that ESG engagements are more common in cultures with strong uncertainty avoidance and long-term orientation.

Cultural differences are also expected to have an impact on cash holding levels. Chang and Noorbakhsh (2009) observe that firms hold more cash in cultures with high uncertainty avoidance, masculinity, and long-term orientation. El-Halaby et al. (2021) reveal that there are significant relationships between cultural dimensions and cash holding levels in the Middle East and North African countries in their study.

Business culture in Muslim countries is influenced and shaped by Islamic values, among other factors. Therefore, it is expected that both ESG scores and cash holding levels will differ due to cultural differences. Firms' cash holding levels are affected by cultural factors such as individuality, uncertainty avoidance, long-term orientation, and masculinity (Hoang et al., 2022). Although Muslim countries may show different cultural characteristics, these cultural effects are expected to impact the cash holding levels. So far, the relationship between ESG and cash holdings in the context of Muslim countries during the pandemic age has not yet been empirically examined. Therefore, this study is looking for an answer to the research question as follows:

How does corporate sustainability affect cash holdings in Muslim countries during the pandemic?

III. EMPIRICAL MODELS AND DATA

This study investigates the role of corporate sustainability–CS proxying by Environmental (ENV-S), Social (SOC-S), Government (GOV-S), and EGS scores on cash holdings (CASH). The baseline model is as follows:

$$\begin{aligned} &CASH_{i,t} \\ &= \beta_0 + \beta_1 CS_{i,t} + \beta_2 SIZE_{i,t} + \beta_3\, DPAY_{i,t} + \beta_4 LEV_{i,t} \\ &+\ \beta_5 INV_{i,t} + \beta_6 NWC_{i,t} + \beta_7 CFLOW_{i,t} + \beta_8 RandD_{i,t} \\ &+ \alpha_i F_i + \alpha_t Y_t + \ \varepsilon_{i,t} \end{aligned} \tag{1}$$

Where i and t subscript firm and year respectively, CASH is cash holdings, CS is corporate sustainability score, SIZE is firm size, DPAY is dividend payers, LEV

is leverage, INV is investment, NWC is net working capital, CFLOW is cash flow, R&D is R-D expenses, Fiis: firm fixed effects, Yt is year fixed effects, and ε is the error term.

Then, we interact the right-hand variables with covid dummy (COV) to assess how the pandemic affects the relations between cash holdings and its determinants:

$$\begin{aligned} & CASH_{i,t} \\ & = \beta_0 + \beta_1 CS_{i,t} xCOV_t + \beta_2 CS_{i,t} + \beta_3 COV_t \\ & + \beta_4 SIZE_{i,t} xCOV_t + \beta_5\, DPAY_{i,t} xCOV_t + \beta_6 LEV_{i,t} xCOV_t \\ & + \beta_7 INV_{i,t} xCOV_t + \beta_8 NWC_{i,t} xCOV_t + \beta_9 CFLOW_{i,t} xCOV_t \\ & + \beta_{10} RandD_{i,t} xCOV_t + \beta_{11} SIZE_{i,t} + \beta_{12}\, DPAY_{i,t} + \beta_{13} LEV_{i,t} \\ & + \beta_{14} INV_{i,t} + \beta_{15} NWC_{i,t} + \beta_{16} CFLOW_{i,t} + \beta_{17} RandD_{i,t} \\ & + \alpha_i F_i + \varepsilon_{i,t} \end{aligned} \tag{2}$$

In addition to the full sample, we also perform the analysis for individual countries in the sample separately. In this case, we interact only CS and COV.

The main dependent variable of this study is cash holdings, which is measured by cash and short-term investments to total assets (Tekin and Polat, 2021). For robustness, we also use net cash by defining cash and short-term investments to total assets minus cash and short-term investments (Tekin, 2020). We measure corporate sustainability-CS by four proxies as in Atif et al. (2022):

a) Environmental pillar includes living and non-living natural systems (ENV-S),
b) Social pillar includes workforce, humanity and responsibility (SOC-S),
c) Governance pillar includes board and executive information (GOV-S), and
d) Environmental, Social, and Governance score (ESG-S) that is the average score of ENV-S, SOC-S, and GOV-S.

To evaluate the effect of the pandemic on cash holdings, we employ Covid dummy[1] (COV) (Hwang et al., 2021). We interact COV with ESG-S, ENV-S, SOC-S, and GOV-S to understand how corporate sustainability affects cash holdings during the pandemic. Also, we also interact COV with control variables to see how the determinants of cash holdings change during the COVID-19 pandemic.

Regarding the control firm-level variables, we add firm size (SIZE), dividend payers (DPAY), leverage (LEV), investment (INV), net working capital (NWC), cash flow (CFLOW), and R-D expenses (R&D) (Opler et al., 1999; Tekin, 2020). SIZE is the logarithm of total assets, which may be used as a proxy for transaction motives of cash holdings. DPAY is a dummy variable for dividend-paying firms and can be employed as a proxy for precautionary motive of cash. LEV is total debt to total assets. INV is capital expenditures to total assets. NWC is current assets minus current liabilities minus cash and short-term investments scaled by total assets. CFLOW is pre-tax income plus depreciation to total assets. R&D is R-D expenses to total assets. Table 1 provides the definition of the variables above.

We also present descriptive statistics and correlation matrices for the periods 2003-2019 and 2020-2021 in Table A1 and Table A2, respectively. As shown

1 Since we employ annual firm-level data and the effect of pandemic has been seen in our sampled countries observed in 2020, we start the pandemic period from 2020 (Hasan et al., 2022).

in Table A2, as the variance inflation factor (VIF) values smaller than five, the multicollinearity problem should not be a major concern.

Table 1.
Variable Descriptions

Variables	Symbols	Descriptions
Dependent		
Cash holdings	CASH	Cash and short-term investments / Total assets
Net cash	CNET	Cash and short-term investments / (Total assets – Cash and short-term investments)
Explanatory		
ESG score	ESG-S	Environmental, Social, and Governance (ESG) score (from 0 to 1)
Environmental score	ENV-S	Environmental pillar includes living and non-living natural systems (from 0 to 1)
Social score	SOC-S	Social pillar includes workforce, humanity and responsibility (from 0 to 1)
Governance score	GOV-S	Governance pillar includes board and executive information (from 0 to 1)
Covid	COV	Equals 1 for the years 2020 and 2021, otherwise 0
Controls		
Firm size	SIZE	The log of total assets
Dividend payers	DPAY	Equals 1 for the dividend payers, otherwise 0
Leverage	LEV	Total debt / Total assets
Investment	INV	Capital expenditures / Total assets
Net working capital	NWC	(Current assets – Current liabilities – Cash and short-term investments) / Total assets
Cash flow	CFLOW	(Pre-tax income + Depreciation) / Total assets
Research and Development	R&D	R-D expenses / Total assets

The cash measures and control variables are taken from Thomson Reuters Datastream over the period 2003-2021. The ESG data are retrieved from Thomson Reuters, which are available for firms in eleven Muslim countries, which are Bahrain, Egypt, Indonesia, Kuwait, Malaysia, Morocco, Oman, Qatar, Saudi Arabia, Turkiye, and United Arab Emirates. Table 1 presents the number of observations by country, industry and year.

Table 2.
The Composition of Sample

Country	Observation	Country	Observation	Country	Observation
Bahrain	13	Malaysia	386	Saudi Arabia	96
Egypt	39	Morocco	14	Turkiye	240
Indonesia	259	Oman	12	United Arab Emirates	457
Kuwait	34	Qatar	50	TOTAL	1,600

Table 2.
The Composition of Sample (Continued)

Industry	Observation	Industry	Observation	Industry	Observation
Basic material	131	Energy	133	Telecommunications	296
Consumer discretionary	277	Health care	90	TOTAL	1,600
Consumer staples	333	Industrials	330		
Year	**Observation**	**Year**	**Observation**	**Year**	**Observation**
2003	4	2010	82	2017	126
2004	9	2011	86	2018	154
2005	18	2012	89	2019	170
2006	21	2013	94	2020	196
2007	26	2014	100	2021	97
2008	46	2015	114	TOTAL	1,600
2009	52	2016	116		

Source: Thomson Reuters ESG and Datastream

United Arab Emirates and Malaysia have the largest observations while Bahrain and Morocco have the smallest. Observation numbers of consumer staples and industrials are the highest with 333 and 330 respectively, and those of health care and basic materials are the lowest with 90 and 131, respectively. Finally, the observation number increases over time.

IV. RESULTS AND ANALYSIS

4.1. Model Selection

We compare three panel estimators: (i) pooled ordinary least squares-POLS, (ii) fixed effects-FE, and (iii) random effects-RE in Table 3 to see which panel estimator is suitable for our regression analyses. First, as (i) higher R-squared, (ii) lower Akaike Information Criterion-AIC and Bayesian Information Criterion-BIC, and (iii) higher F test mean higher explanatory power of a model, FE (Model 2) is preferable to POLS (Model 1). Moreover, the Hausman test indicates that the FE is superior to RE (Model 3). Hence, the FE panel estimator is most suitable.

Table 3.
Model Selection

	Dependent variable: CASH					
	POLS		**FE**		**RE**	
	(1)		**(2)**		**(3)**	
CS	–0.021*	(0.012)	–0.033***	(0.011)	–0.033***	(0.010)
Controls						
SIZE	–0.001*	(0.001)	–0.012***	(0.005)	–0.003	(0.002)
DPAY	–0.017**	(0.007)	0.003	(0.006)	–0.002	(0.006)
LEV	–0.167***	(0.017)	–0.127***	(0.022)	–0.139***	(0.020)

Table 3.
Model Selection (Continued)

	Dependent variable: CASH					
	POLS		**FE**		**RE**	
	(1)		**(2)**		**(3)**	
INV	–0.356***	(0.061)	–0.320***	(0.051)	–0.335***	(0.050)
NWC	–0.116***	(0.018)	–0.195***	(0.021)	–0.181***	(0.019)
CFLOW	0.150***	(0.022)	0.190***	(0.024)	0.193***	(0.022)
R&D	1.299***	(0.436)	–0.302	(0.461)	–0.035	(0.430)
Constant	0.522***	(0.062)	0.474***	(0.079)	0.562***	(0.062)
Firm FE	Not		Included		Not	
Year FE	Included		Included		Included	
Industry FE	Included		Not		Included	
Firms	206		206		206	
Observations	1,600		1,600		1,600	
Diagnostic tests						
Adjusted R^2	0.236		0.739		0.305	
F test	14.68***		14.87***			
LM test					378.50***	
Hausman test			42.90***			
AIC	–2757.83		–4489.49			
BIC	–2574.99		–4344.29			

Note: This table presents the comparison of three panel methods. CASH is cash and equivalents to total assets. Corporate sustainability-CS is proxied by Environment, Social, and Governance Score-ESG-S. Diagnostic tests that are R-squared, F test, Lagrange Multiplier-LM test, Hausman test, Akaike Information Criterion-AIC, Bayesian Information Criterion-BIC show the explanatory power of models. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

4.2. Corporate Sustainability and Cash Holdings

Table 4 shows how corporate sustainability–CS affects cash holdings. The proxies of CS are ESG-S, ENV-S, SOC-S, and GOV-S. All proxies, excluding ENV-S are negatively and significantly associated with CASH This means that firms with lower ESG-S, SOC-S, and GOV-S hold more cash. These results are in line with the previous research (Atif et al., 2022). In line with transaction motives and the literature (Dittmar et al., 2003), smaller firms have higher cash holdings. While dividend payments and R-D expenses do not impact cash policy, cash flows positively and significantly influence cash holdings (Tekin, 2020). Finally, there is a negative and significant relationship between cash holdings and leverage–LEV (Ozkan and Ozkan, 2004), investment–INV (Tekin et al., 2021), and net working capital – NWC (Tekin, 2020).

Table 4.
How Does Corporate Sustainability Affect Cash Holdings?

	Dependent variable: CASH							
	ESG-S		ENV-S		SOC-S		GOV-S	
	(1)		(2)		(3)		(4)	
CS	-0.033***	(0.011)	-0.011	(0.009)	-0.025***	(0.009)	-0.032***	(0.010)
Controls								
SIZE	-0.012***	(0.005)	-0.012***	(0.005)	-0.012***	(0.005)	-0.012***	(0.005)
DPAY	0.003	(0.006)	0.003	(0.006)	0.003	(0.006)	0.002	(0.006)
LEV	-0.127***	(0.022)	-0.132***	(0.022)	-0.128***	(0.022)	-0.130***	(0.022)
INV	-0.320***	(0.051)	-0.323***	(0.051)	-0.323***	(0.051)	-0.316***	(0.051)
NWC	-0.195***	(0.021)	-0.197***	(0.021)	-0.195***	(0.021)	-0.194***	(0.021)
CFLOW	0.190***	(0.024)	0.188***	(0.024)	0.189***	(0.024)	0.191***	(0.024)
R&D	-0.302	(0.461)	-0.296	(0.463)	-0.313	(0.462)	-0.191	(0.461)
Constant	0.474***	(0.079)	0.467***	(0.079)	0.475***	(0.079)	0.466***	(0.079)
Firm FE	Included		Included		Included		Included	
Year FE	Included		Included		Included		Included	
Firms	206		206		206		206	
Observations	1,600		1,600		1,600		1,600	
Adjusted R^2	0.695		0.693		0.695		0.735	
Hausman test	42.90***		45.98***		42.73***		42.08***	

Note: This table reports the regression results examining the impact of corporate sustainability (CS), which is proxied by ESG-S, ENV-S, SOC-S, GOV-S, and COVID on cash holdings. Firm and year fixed effects-FE included in all models. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

4.3. Corporate Sustainability and Cash Holdings in the Pandemic Age

To assess whether the Covid pandemic alters the relations between sustainability, we interact COV with CS proxies: ESG-S, ENV-S, SOC-S, and GOV-S and present the results in Table 5. As may be observed from the Table, the interaction term of CS x COV is not significant for all cases. Thus, the negative impact of CS on cash holdings remains the same during the pandemic.

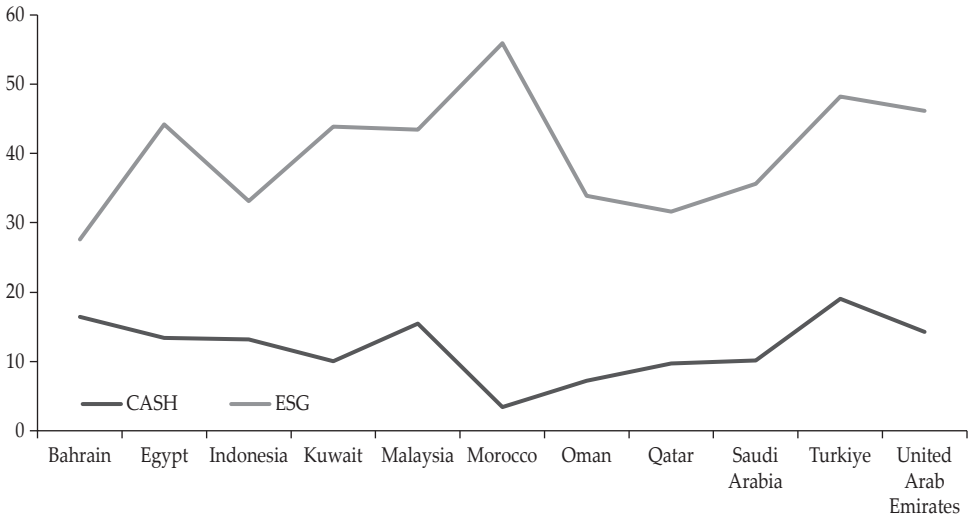
Also, we interact COV with control firm-level variables. The negative effect of SIZE becomes stronger during the COVID period. It seems that the transaction motive is intensified during the health crisis. Besides, the CFLOW x COV is positive and significant. Therefore, the positive influence of CFLOW on cash holdings becomes stronger during the pandemic. Though R-D expenses do not influence cash holdings, a positive impact of R-D expenses becomes significant during the COVID. Namely, firms with high R-D expenses start to hold more cash in the pandemic periods.

Table 5.
How Do Corporate Sustainability and Pandemic Affect Cash Holdings?

	Dependent variable: CASH							
	ESG-S		**ENV-S**		**SOC-S**		**GOV-S**	
	(1)		**(2)**		**(3)**		**(4)**	
CS x COV	0.016	(0.025)	0.014	(0.019)	0.022	(0.020)	0.009	(0.023)
CS	-0.034***	(0.011)	-0.011	(0.009)	-0.027***	(0.009)	-0.033***	(0.010)
COV	0.042	(0.029)	0.040	(0.028)	0.036	(0.029)	0.050*	(0.027)
SIZE x COV	-0.003**	(0.001)	-0.003***	(0.001)	-0.003**	(0.001)	-0.003**	(0.001)
DPAY x COV	0.003	(0.012)	0.002	(0.012)	0.002	(0.012)	0.001	(0.012)
LEV x COV	0.023	(0.031)	0.026	(0.031)	0.022	(0.031)	0.026	(0.031)
INV x COV	-0.223	(0.139)	-0.227	(0.139)	-0.221	(0.139)	-0.226	(0.138)
NWC x COV	-0.053	(0.033)	-0.054	(0.033)	-0.050	(0.033)	-0.064*	(0.034)
CFLOW x COV	0.120***	(0.042)	0.119***	(0.041)	0.116***	(0.042)	0.131***	(0.042)
R&D x COV	5.383***	(1.701)	5.534***	(1.702)	5.514***	(1.699)	5.339***	(1.682)
SIZE	-0.020***	(0.004)	-0.020***	(0.004)	-0.020***	(0.004)	-0.020***	(0.004)
DPAY	0.002	(0.006)	0.002	(0.006)	0.002	(0.006)	0.002	(0.006)
LEV	-0.143***	(0.022)	-0.149***	(0.022)	-0.144***	(0.022)	-0.145***	(0.022)
INV	-0.278***	(0.049)	-0.278***	(0.049)	-0.284***	(0.049)	-0.270***	(0.049)
NWC	-0.190***	(0.021)	-0.191***	(0.021)	-0.191***	(0.021)	-0.187***	(0.021)
CFLOW	0.183***	(0.025)	0.181***	(0.025)	0.182***	(0.025)	0.184***	(0.025)
R&D	-0.226	(0.461)	-0.209	(0.462)	-0.231	(0.461)	-0.195	(0.460)
Constant	0.515***	(0.064)	0.507***	(0.064)	0.517***	(0.064)	0.514***	(0.064)
Firms	206		206		206		206	
Observations	1,600		1,600		1,600		1,600	
Adjusted R^2	0.698		0.697		0.698		0.699	
Hausman test	77.26***		56.53***		59.19***		66.15***	

Note: This table reports the regression results examining the impact of corporate sustainability (CS), which are ESG-S, ENV-S, SOC-S, GOV-S, and COVID on cash holdings by the weighted sample. Firm FE included in all models. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

Figure 1 below shows that firms in Morocco and Bahrain have the highest and lowest ESG scores, respectively. On the other hand, Turkiye and Morocco have the highest and lowest cash levels, in that order. The observation that Moroccan firms have the highest ESG and lowest cash level is not surprising given our findings above.



Source: Thomson Reuters ESG and Datastream

Figure 1.
Means of Cash and ESG Score by Country

For brevity, we only use ESG-S to proxy CS in country- and industry-base analyses and the results are presented in Table 6 and Table 7, respectively. According to regression results in Table 6, firms with higher ESG in Saudi Arabia have more cash balances, the results that are opposite to those in Malaysia and Turkiye. Moreover, firms with lower CS in Bahrain and Oman hold more cash, but those with higher CS in Malaysia and Turkiye hoard more cash as shown in Figure 1. To sum, firms in Bahrain and Oman use cash holdings as a substitute for ESG disclosure. However, firms in Malaysia and Turkiye employ cash holdings as an outcome of ESG disclosure. In the pandemic time, firms with lower (higher) ESG hoard more cash in Bahrain (Turkiye).

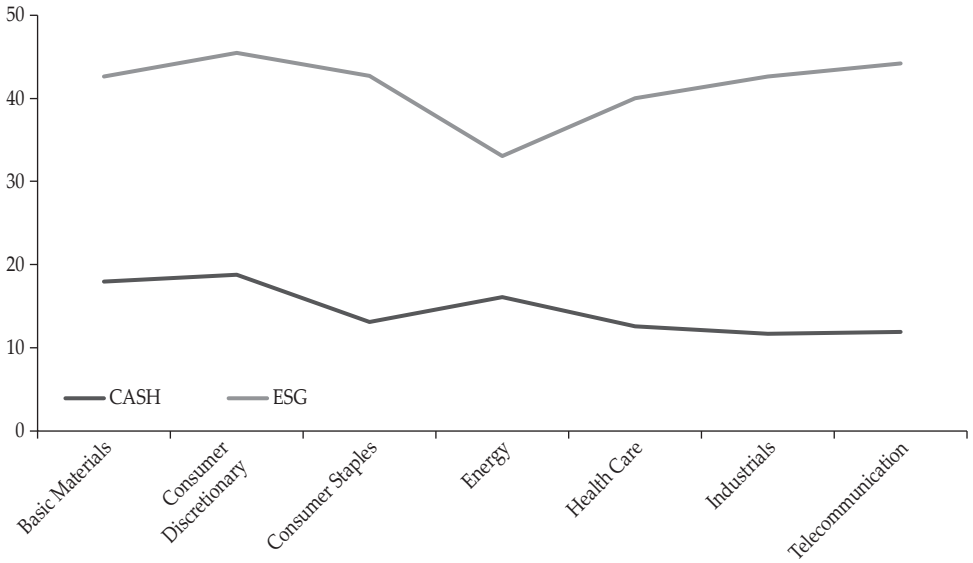
Regarding the firm-level controls across countries, smaller firms in Egypt, Indonesia, and UAE hold more cash, which is in line with transaction motive and the literature (Tekin, 2020). Firms with lower dividends in Kuwait also have higher cash holdings that is confirmed by the precautionary motive and previous research (Opler et al., 1999). Moreover, firms with lower cash flow and higher leverage, capital expenditures, and net working capital in Indonesia, Malaysia, Turkiye, and UAE have lower cash level (Tekin, 2020; Tekin et al., 2021). On the other hand, firms with lower R&D in Saudi Arabia and UAE hold more cash.

Table 6.
Corporate Sustainability, Pandemic and Cash Holdings by Country

	Dependent variable: CASH							
	Bahrain		**Egypt**		**Indonesia**		**Kuwait**	
	(1)		**(2)**		**(3)**		**(4)**	
CS x COV	**-2.494***	(0.620)	0.023	(0.191)	-0.078	(0.081)	0.083	(0.059)
CS	0.977	(0.454)	-0.024	(0.094)	-0.011	(0.025)	0.028	(0.026)
COV	**0.713***	(0.172)	0.006	(0.113)	0.032	(0.028)	-0.049	(0.033)
SIZE	-0.120	(0.105)	**-0.133*****	(0.047)	**-0.050*****	(0.012)	-0.014	(0.033)
DPAY			-0.061	(0.056)	0.003	(0.013)	**-0.100*****	(0.030)
LEV	**-1.904***	(0.621)	0.297	(0.239)	**-0.119****	(0.047)	**-0.272*****	(0.086)
INV	0.368	(0.143)	**-0.675****	(0.292)	**-0.455*****	(0.129)	0.090	(0.130)
NWC	**1.226***	(0.406)	-0.159	(0.121)	**-0.157*****	(0.044)	0.031	(0.123)
CFLOW	1.455	(0.821)	-0.033	(0.326)	**0.288*****	(0.057)	**-0.187***	(0.106)
R&D					1.234	(1.417)		
Constant	1.214	(0.064)	2.428***	(0.767)	1.361***	(0.293)	0.482	(0.437)
Firms	3		5		33		4	
Observations	13		39		259		34	
Adjusted R^2	0.923		0.645		0.754		0.844	
	Malaysia		**Morocco**		**Oman**		**Qatar**	
	(5)		**(6)**		**(7)**		**(8)**	
CS x COV	0.061	(0.050)			-0.043	(0.234)	0.014	(0.048)
CS	**-0.107*****	(0.028)	-0.036	(0.226)	-0.076	(0.205)	-0.058	(0.066)
COV	-0.015	(0.029)	-0.009	(0.044)	-0.011	(0.089)	-0.010	(0.018)
SIZE	0.014	(0.013)	-0.115	(0.182)	-0.062	(0.068)	0.034	(0.078)
DPAY	0.014	(0.011)					0.010	(0.022)
LEV	**-0.129*****	(0.040)	0.508	(0.485)	0.001	(0.720)	0.081	(0.137)
INV	**-0.261*****	(0.096)	0.231	(0.452)	-0.889	(1.415)	**-0.419****	(0.172)
NWC	**-0.140*****	(0.046)	-0.040	(0.213)	0.140	(0.444)	-0.193	(0.125)
CFLOW	**0.213*****	(0.036)	0.328	(0.676)	0.197	(1.731)	**0.447*****	(0.143)
R&D	-1.111	(4.457)						
Constant	-0.034	(0.198)	1.836	(3.349)	1.044	(0.850)	-0.488	(1.245)
Firms	45		2		2		18	
Observations	386		14		12		50	
Adjusted R^2	0.726		0.321		0.088		0.937	
	Saudi Arabia		**Turkiye**		**United Arab Emirates**			
	(9)		**(10)**		**(11)**			
CS x COV	-0.036	(0.045)	**0.115****	(0.053)	-0.021	(0.053)		
CS	**0.064*****	(0.029)	**-0.098*****	(0.023)	-0.022	(0.022)		
COV	-0.001	(0.020)	-0.038	(0.026)	0.036	(0.026)		
SIZE	-0.021	(0.030)	-0.002	(0.007)	**-0.029*****	(0.007)		
DPAY	-0.000	(0.019)	-0.013	(0.013)	0.002	(0.011)		
LEV	-0.098	(0.063)	-0.026	(0.040)	**-0.185*****	(0.050)		
INV	-0.146	(0.139)	**-0.619*****	(0.126)	**-0.241****	(0.101)		
NWC	**-0.185*****	(0.074)	**-0.247*****	(0.043)	**-0.215*****	(0.045)		
CFLOW	0.105	(0.097)	**0.168****	(0.065)	**0.186*****	(0.050)		
R&D	**-5.918****	(2.965)	-0.112	(0.353)	**-10.205****	(5.179)		
Constant	0.466	(0.528)	**0.280****	(0.114)	**0.598*****	(0.096)		
Firms	19		41		34			
Observations	96		240		457			
Adjusted R^2	0.763		0.857		0.611			

Note: This table reports the regression results examining the impact of corporate sustainability (CS), which is proxied by ESG-S, and COVID on cash holdings across countries. Firm FE and controls included in all models. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

In Figure 2, energy firms have the lowest ESG scores and averaged cash balances. Moreover, consumer discretionary and telecommunication firms have the highest ESG scores and industrials have the lowest cash levels.



Source: Thomson Reuters ESG and Datastream

Figure 2.
Means of Cash and ESG Score by Industry

From the industry-base regression analyses in Table 7, the relationship between ESG score and cash holdings for firms in all industries, except consumer discretionary, is insignificant. Since the interaction term of CS x COV is also insignificant for each industry, the role of CS on cash retention does not differ in times of the pandemic. In line with transaction motive and previous research (Dittmar et al., 2003), we confirm that firm size is negatively related cash holdings in consumer discretionary, health care and telecommunication sectors. However, the relation is reversed for basic materials. Dividend payer telecommunication firms have higher cash balances. LEV, INV, and NWC are negatively associated with cash for consumer discretionary and health care firms. CFLOW is positively linked to cash retention for all firms except industrial and telecommunication firms. Furthermore, telecommunication (consumer discretionary) firms with high (low) R&D hold more cash. Overall, determinants of cash holdings vary across industries.

Table 7.
Corporate Sustainability, Pandemic and Cash Holdings by Industry

	Dependent variable: CASH							
	Basic Materials		**Consumer Discretionary**		**Consumer Staples**		**Energy**	
	(1)		**(2)**		**(3)**		**(4)**	
CS x COV	0.056	(0.074)	0.008	(0.063)	0.042	(0.051)	0.047	(0.0)
CS	-0.025	(0.038)	**-0.083*** **	(0.026)	-0.043	(0.030)	-0.005	(0.0)
COV	-0.020	(0.033)	0.001	(0.030)	-0.004	(0.026)	-0.010	(0.0)
SIZE	**0.033****	(0.015)	**-0.027*** **	(0.008)	-0.014	(0.011)	-0.027	(0.0)
DPAY	**-0.046*** **	(0.016)	**-0.026***	(0.014)	-0.004	(0.017)	0.010	(0.0)
LEV	-0.031	(0.061)	**-0.292*** **	(0.046)	-0.095	(0.060)	-0.120	(0.0)
INV	**-0.332****	(0.139)	**-0.351*** **	(0.105)	**-0.348****	(0.134)	0.000	(0.0)
NWC	-0.096	(0.096)	**-0.398*** **	(0.056)	**-0.328*** **	(0.050)	**-0.174****	(0.0)
CFLOW	**0.364*** **	(0.077)	**0.300*** **	(0.064)	**0.142****	(0.058)	**0.329*** **	(0.0)
R&D	1.452	(1.540)	**-7.030*** **	(2.396)	-3.639	(7.191)	18.090	(0.0)
Constant	-0.411	(0.290)	0.740***	(0.124)	0.403**	(0.179)	0.672*	(0.0)
Firms	22		36		43		14	
Observations	131		277		333		133	
Adjusted R^2	0.902		0.761		0.577		0.609	
	Health Care		**Industrials**		**Telecommunication**			
	(5)		**(6)**		**(7)**			
CS x COV	-0.055	(0.079)	0.023	(0.054)	-0.059	(0.047)		
CS	0.029	(0.046)	-0.030	(0.020)	-0.024	(0.021)		
COV	0.063	(0.038)	0.015	(0.028)	0.018	(0.024)		
SIZE	**-0.061*** **	(0.019)	-0.014	(0.006)	**-0.048*** **	(0.009)		
DPAY	0.041	(0.027)	0.014	(0.010)	**0.024****	(0.011)		
LEV	**-0.202****	(0.097)	**-0.112****	(0.047)	-0.058	(0.045)		
INV	**-0.599*** **	(0.199)	0.081	(0.098)	**-0.544*** **	(0.099)		
NWC	**-0.284*** **	(0.103)	-0.066	(0.042)	**-0.103****	(0.040)		
CFLOW	**0.327*** **	(0.049)	0.075	(0.060)	0.084	(0.055)		
R&D	-1.058	(1.612)	-0.099	(0.460)	**34.056*** **	(9.830)		
Constant	1.096***	(0.295)	0.358***	(0.100)	1.009***	(0.157)		
Firms	16		39		31			
Observations	90		330		296			
Adjusted R^2	0.754		0.430		0.667			

Note: This table reports the regression results examining the impact of corporate sustainability (CS), which is proxied by ESG-S, and COVID on cash holdings across countries. Firm FE and controls included in all models. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

4.4. Robustness Analyses

We repeat the analyses in Table 5 in our robustness analyses in Table 8 and Table 9. First, we employ net cash–CNET as the dependent variable. The coefficients of CS x COV are insignificant like in Table 5. In other words, the negative impact of ESG-S, SOC-S, and GOV-S on cash holdings do not change. Besides, all control factors excluding DPAY an R&D significantly influence cash holding. Overall, the role of corporate sustainability on cash holdings slightly differs depending on the measures of cash holdings.

Table 8.
Robustness Analysis I: Alternative Dependent Variable

	Dependent variable: CNET							
	ESG-S		ENV-S		SOC-S		GOV-S	
	(1)		(2)		(3)		(4)	
CS x COV	0.045	(0.038)	0.032	(0.030)	0.044	(0.031)	0.014	(0.000)
CS	-0.053***	(0.018)	-0.123	(0.015)	-0.042***	(0.015)	-0.046***	(0.000)
COV	-0.200***	(0.059)	-0.196***	(0.058)	-0.198***	(0.058)	-0.182***	(0.014)
SIZE	-0.029***	(0.008)	-0.028***	(0.008)	-0.029***	(0.008)	-0.029***	(0.009)
DPAY	-0.001	(0.009)	-0.001	(0.009)	-0.001	(0.009)	-0.002	(0.018)
LEV	-0.205***	(0.036)	-0.211***	(0.036)	-0.207***	(0.036)	-0.208***	(0.050)
INV	-0.509***	(0.083)	-0.513***	(0.084)	-0.515***	(0.083)	-0.502***	(0.040)
NWC	-0.321***	(0.034)	-0.323***	(0.034)	-0.322***	(0.034)	-0.320***	(0.034)
CFLOW	0.304***	(0.039)	0.302***	(0.039)	0.303***	(0.039)	0.306***	(0.055)
R&D	-0.808	(0.753)	-0.788	(0.757)	-0.820	(0.756)	-0.758	(1.828)
Constant	0.922***	(0.129)	0.906***	(0.130)	0.925***	(0.129)	0.911***	(0.129)

Note: This table reports the regression results examining the impact of corporate sustainability (CS), which are ESG-S, ENV-S, SOC-S, GOV-S, and COVID on net cash (CNET). Firm FE included in all models. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

Next, we rerun our primary analysis employing both dependent variables (CASH and CNET) by the weighted sample in Table 9. While CS negatively influences both cash measures, the CS x COV is positively significant. The negative effect of CS loses its significance during the Covid. Namely, ESG-certified firms in Muslim countries respond to the pandemic by using cash holdings as the hedging instrument because of precautionary issues (Opler et al., 1999; Tekin, 2020; Tekin et al., 2021). Control variables are qualitatively similar to results in Table 5, except NWC and CFLOW. Therefore, the relationship between CS and cash level slightly depends on the sample composition.

Table 9.
Robustness Analysis II: Weighted sample

	Dependent variable: CASH							
	ESG-S		ENV-S		SOC-S		GOV-S	
	(1)		(2)		(3)		(4)	
CS x COV	0.137***	(0.025)	0.042**	(0.020)	0.138***	(0.020)	0.078***	(0.020)
CS	-0.040**	(0.014)	-0.005	(0.010)	-0.047***	(0.012)	-0.034***	(0.010)
COV	-0.108***	(0.011)	-0.069***	(0.009)	-0.106***	(0.009)	-0.088***	(0.010)
SIZE	-0.004***	(0.001)	-0.005***	(0.001)	-0.004***	(0.001)	-0.004***	(0.001)
DPAY	-0.081***	(0.010)	-0.081***	(0.010)	-0.083***	(0.010)	-0.078***	(0.010)
LEV	-0.053***	(0.017)	-0.053***	(0.017)	-0.054***	(0.017)	-0.048***	(0.017)
INV	-0.332***	(0.030)	-0.326***	(0.030)	-0.350***	(0.030)	-0.315***	(0.030)
NWC	0.112***	(0.017)	0.120***	(0.017)	0.104***	(0.017)	0.117	(0.016)
CFLOW	-0.011	(0.026)	-0.004	(0.026)	-0.014	(0.026)	0.000	(0.026)
R&D	1.699*	(0.982)	1.740*	(0.990)	1.713*	(0.977)	1.633*	(0.987)
Constant	0.324***	(0.014)	0.321***	(0.015)	0.321***	(0.014)	0.321	(0.015)

Table 9.
Robustness Analysis II: Weighted sample (Continued)

	Dependent variable: CNET							
	ESG-S		ENV-S		SOC-S		GOV-S	
	(5)		(6)		(7)		(8)	
CS x COV	0.210***	(0.037)	0.075**	(0.030)	0.212***	(0.030)	0.110***	(0.030)
CS	-0.051**	(0.021)	-0.003	(0.015)	-0.067***	(0.018)	-0.042***	(0.015)
COV	-0.155***	(0.016)	-0.099***	(0.013)	-0.152***	(0.013)	-0.119***	(0.014)
SIZE	-0.005***	(0.006)	-0.006***	(0.001)	-0.004***	(0.001)	-0.006***	(0.001)
DPAY	-0.133***	(0.001)	-0.133***	(0.015)	-0.135***	(0.015)	-0.128***	(0.015)
LEV	-0.107***	(0.015)	-0.107***	(0.025)	-0.110***	(0.025)	-0.099***	(0.025)
INV	-0.453***	(0.045)	-0.445***	(0.045)	-0.480***	(0.045)	-0.429***	(0.045)
NWC	0.127***	(0.025)	0.140***	(0.025)	0.113***	(0.025)	0.133***	(0.025)
CFLOW	-0.051	(0.039)	-0.041	(0.039)	-0.056	(0.039)	-0.031	(0.039)
R&D	2.297	(1.461)	2.332	(1.473)	2.308	(1.453)	2.225	(1.470)
Constant	0.445	(0.022)	0.439***	(0.022)	0.440***	(0.021)	0.442***	(0.022)

Note: This table reports the regression results examining the impact of corporate sustainability (CS), which are ESG-S, ENV-S, SOC-S, GOV-S, and COVID on cash holdings by the weighted sample. Firm FE included in all models. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

V. CONCLUSION AND RECOMMENDATIONS

Employing 206 firms from eleven Muslim countries for the period 2003-2021, we find that firms with lower corporate sustainability–CS (ESG) hoard more cash, which is in line with the agency and precautionary motive of cash and previous research. However, the negative impact of ESG does not change during the COVID period. Moreover, firms with higher ESG in Saudi Arabia have more cash balances, while those with higher ESG in Malaysia and Turkiye have lower cash holdings. Also, the ESG score is negatively related to cash holdings for firms in all industries, except the energy industry.

Further research may employ Thomson Reuters ESG data and others to generalize the findings by comparing firms in developed and developing countries. Also, researchers and practitioners may consider how exogenous shocks shape other corporate finance decisions like payouts or capital structure for non-ESG and ESG-certified firms to open new insights on the implications of ESG commitments.

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APPENDICES

Table A1.
Descriptive Statistics

	2003-2019					2020-2021				
	Mean	**SD**	**Min**	**P50**	**Max**	**Mean**	**SD**	**Min**	**P50**	**Max**
CASH	0.144	0.112	0.001	0.120	0.915	0.146	0.133	0.001	0.117	0.933
CNET	0.186	0.176	0.001	0.136	1.000	0.193	0.208	0.001	0.132	1.000
ESG-S	0.422	0.214	0.019	0.410	0.923	0.432	0.203	0.033	0.430	0.924
ENV-S	0.360	0.262	0.000	0.338	0.984	0.381	0.266	0.000	0.362	0.940
SOC-S	0.409	0.262	0.000	0.393	0.972	0.445	0.253	0.013	0.448	0.972
GOV-S	0.495	0.220	0.010	0.495	0.987	0.455	0.218	0.010	0.466	0.942
SIZE	17.100	3.635	9.941	16.380	26.581	16.726	3.278	10.706	16.098	26.522
DPAY	0.816	0.387	0.000	1.000	1.000	0.753	0.432	0.000	1.000	1.000
LEV	0.251	0.176	0.000	0.250	1.000	0.269	0.180	0.000	0.264	0.785
INV	0.060	0.050	0.000	0.047	0.370	0.037	0.037	0.000	0.027	0.237
NWC	-0.034	0.171	-0.956	-0.035	0.601	-0.046	0.161	-0.647	-0.044	0.514
CFLOW	0.138	0.135	-0.620	0.111	0.998	0.116	0.132	-0.329	0.099	0.998
R&D	0.001	0.006	0.000	0.000	0.150	0.001	0.005	0.000	0.000	0.060

Note: This table presents descriptive statistics for the periods: 2003-2019 and 2020-2021. Variables are defined in Table 2. Source: Thomson Reuters EGS and Datastream.

Table A2.
Correlation Matrix

	Panel A. CASH								
2003-2019	**CASH**	**[1]**	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**[7]**	**VIF**
[1] ESG-S	-0.074								1.05
[2] SIZE	-0.050	-0.156							1.12
[3] DPAY	-0.033	0.026	0.112						1.08
[4] LEV	-0.262	0.085	0.146	-0.167					1.38
[5] INV	-0.112	0.028	0.081	0.005	0.002				1.10
[6] NWC	-0.044	-0.069	-0.037	0.136	-0.363	-0.170			1.25
[7] CFLOW	0.189	0.011	0.145	0.181	-0.288	0.261	-0.060		1.29
R&D	0.125	-0.080	0.054	0.017	-0.098	-0.008	0.138	0.107	1.04
2020-2021	**CASH**	**[1]**	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**[7]**	**VIF**
[1] ESG-S	0.049								1.11
[2] SIZE	-0.096	-0.176							1.10
[3] DPAY	-0.034	0.035	0.133						1.19
[4] LEV	-0.262	0.013	0.110	-0.218					1.34
[5] INV	-0.137	0.071	0.100	0.170	0.043				1.26
[6] NWC	0.025	-0.043	-0.017	0.185	-0.409	-0.213			1.29
[7] CFLOW	0.246	0.167	0.090	0.274	-0.260	0.355	0.076		1.35
R&D	0.210	-0.142	-0.041	-0.127	-0.063	0.013	0.026	0.036	1.06

Table A2.
Correlation Matrix (Continued)

Panel B. CNET									
2003-2019	**CNET**	**[1]**	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**[7]**	**VIF**
[1] ESG-S	-0.058								1.05
[2] SIZE	-0.052	-0.156							1.12
[3] DPAY	-0.051	0.026	0.112						1.08
[4] LEV	-0.266	0.085	0.146	-0.167					1.38
[5] INV	-0.097	0.028	0.081	0.005	0.002				1.10
[6] NWC	-0.050	-0.069	-0.037	0.136	-0.363	-0.170			1.25
[7] CFLOW	0.184	0.011	0.145	0.181	-0.288	0.261	-0.060		1.29
R&D	0.099	-0.080	0.054	0.017	-0.098	-0.008	0.138	0.107	1.04
2020-2021	**CNET**	**[1]**	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**[7]**	**VIF**
[1] ESG-S	0.064								1.11
[2] SIZE	-0.109	-0.176							1.10
[3] DPAY	-0.058	0.035	0.133						1.19
[4] LEV	-0.256	0.013	0.110	-0.218					1.34
[5] INV	-0.128	0.071	0.100	0.170	0.043				1.26
[6] NWC	0.024	-0.043	-0.017	0.185	-0.409	-0.213			1.29
[7] CFLOW	0.288	0.167	0.090	0.274	-0.260	0.355	0.076		1.35
R&D	0.154	-0.142	-0.041	-0.127	-0.063	0.013	0.026	0.036	1.06

Note: This table presents the correlation matrices across cash measures and its determinants. Variance inflation factor (VIF) values presented to check whether the sample face any multicollinearity problem. Since all VIF values smaller than 5, there is no multicollinearity problem. ESG-S represents the corporate sustainability. Variables are defined in Table 2.