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Do investors react differently? Evidence from hospitality sector during the covid-19 pandemic

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ABSTRACT

Focusing on publicly traded U.S. eating & dining and lodging firms from 01July2019 to 30October2020, this paper examines investor reaction to restaurant and hotel firms throughout the Covid-19 pandemic. Results show that there is no consensus on buying or selling shares of different hospitality firms in the beginning. Consistent with the behavioral theory, the market reaction is mainly negative to restaurant firms matching with investors' negative sentiments while investors are indifferent towards lodging firms. In later stages, investors trade less stocks, and the buy pressure in the market leads to a positive reaction to both types of firms.

1. Introduction

As one of the toughest crisis in last decades, Covid-19 (henceforth, Covid) has severe economic consequences (Donthu and Gustafsson, 2020). In the initial stage of any crisis, companies try to assess the ongoing situation and make short-term adjustments. Differently in the later stage, firms critically re-evaluate the prospect, develop crisis management strategies, and engage in contingency management (Sawalha et al., 2013). Similarly, firms in hospitality sector had diverse operations and policies at different stages of Covid. This paper investigates investors' reaction and stock market activity. Particularly, it asks whether investors trade differently throughout Covid with respect to individual firms in hospitality sector. It focuses on two dimensions, i.e. the timeline of the pandemic and the cross-section of hospitality firms specifically.

The behavioral theory of DeLong et al. (1990) suggests that investors are subject to sentiment. Their mood, e.g. pessimistic or optimistic, influences their reaction in stock markets (Lu and Lai, 2012; Shu, 2010). Nicholas et al. (1998) argue that uncertainty in businesses exacerbates sentimental reaction of investors. In fact, Smales (2021) shows that investor attention increased remarkably during the pandemic. Consistent with the behavioral theory, investors initially reacted in pessimism, panic, and fear (Ortmann et al., 2020; Tosun et al., 2021). They avoided trading shares of those firms or sell those stocks to disassociate themselves from hospitality firms. Subsequently, stock markets declined substantially. However, good news about recovery of businesses in later stages improved investors' sentiments and they behaved more optimistically (Liu et al., 2020). They demanded more shares of recovering firms and increased trading leads upwards trending markets. This paper investigates further whether there are differences in investors' trading

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Table 1
Descriptive statistics.

Panel A: Eating & drinking firms					
	Mean	St Dev.	25*th*	Median	75*th*
Excess Return	−0.378	4.064	−2.018	−0.492	1.130
Traded Volume (in million)	1.167	1.774	0.080	0.506	1.453
Market Value (in $ billion)	10.308	27.556	0.144	0.828	4.993
Total Assets (in $ billion)	3.825	6.758	0.112	0.801	2.953
Panel B: Lodging Firms					
	Mean	**St Dev.**	**25*th***	**Median**	**75*th***
Excess Return	−0.430	3.831	−2.054	−0.584	0.994
Traded Volume (in million)	1.371	1.870	0.246	0.654	1.695
Market Value (in $ billion)	6.019	11.209	0.730	2.006	4.549
Total Assets (in $ billion)	6.088	6.709	1.359	3.976	8.417

This table reports descriptive statistics for the characteristics of Eating & Drinking firms (Panel A) and Lodging firms (Panel B), separately. Mean, standard deviation, and quartiles are reported. The overall sample is from July 2019 to October 2020.

activity throughout Covid, as the first dimension in the analyses, while their constituent firms in hospitality sector change their operations.

Ottenbacher et al. (2009) describe hospitality as a big umbrella that incorporates convention, leisure, lodging, and food services. Among these, the U.S. Department of Labor categorizes bars, cafes, and restaurants as "Eating & Drinking (E&D)" firms while hotels, motels, and caravans are put in the group of "Lodging" firms. Despite regarded as hospitality, E&D and lodging firms have considerable differences in terms of operations, workforce, and customer base. Furthermore, Huo and Kwansa (1994) show that restaurants have higher financial leverage compared to hotels. Hsu and Jang (2008) reveal that leverage and dividends are less effective on firm risk for hotels while firm size and profitability are more influential on risk considering restaurants. Due to these distinct overall differences, investors' perception of hospitality firms may not be the same. Investors may prefer restaurants over lodging firms as they have higher leverage and more capital expenditures, and hence better growth prospects, during troubled times. On the other hand, high risk due to high leverage may drive investors away from E&D firms. Moreover, Frieder and Subrahmanyam (2005) and Oak and Dalbor (2008) indicate that investors sell stocks of firms with low capital expenditures relative to assets while they buy shares of larger firms with growth opportunities. Considering fundamental differences between E&D firms and lodging companies, this paper examines how investors' reaction towards those firms may differ. This cross-sectional investigation will serve as the second dimension with respect to potential differences in investors' trading activity.

Consistent with the behavioral theory, I find that the market reaction is mainly negative to E&D firms matching with investors' negative sentiments at the start of the pandemic while it is less so for lodging firms. Although investors trade a lot, there is no consensus on buying or selling hospitality firms' stocks. In later stages, investors trade less in general. While trading volume is higher for lodging firms, investors actually buy more shares of E&D businesses. This "buy pressure" leads to a positive reaction in the market.

Goodell and Huynh (2020) analyze the abnormal returns of 49 industrial sectors and study the market reactions of U.S. industries to several Covid news announcements. Huo and Qiu (2020) observe reversals at the industry level due to investors' overreaction to the pandemic. Harjoto et al. (2020) examine the relation between global markets and the Covid pandemic. Narayan et al. (2021) show that lockdowns and travel bans have a positive effect on the G7 stock markets. While these studies consider the whole market and concentrate on returns, building on these papers I focus on individual firms within hospitality sector and investigate deeper one of the hardest hit industries by Covid while I examine also various aspects of trading volume.

2. Data sample and variables

The study period runs from 01 July 2019 to 30 October 2020. Covid was declared a national emergency on 01 March 2020 in the U. S., i.e. start of "the Covid period". This period includes three parts. The first part is the "initial stage" from 02 March 2020 to 31 March 2020. It represents the early period of Covid where daily confirmed new deaths rose exponentially to 650. After Covid related deaths peaked at 2700, they dropped to 530 by 30 June 2020. This "4-month period" is the second part. The last part corresponds to an "8-month period" till 30 October 2020 including the next Covid wave. Since the post-period lasts eight months, the pre-period is matched accordingly from 01 July 2019 to 28 February 2020.

Following the U.S. Department of Labor's Standard Industrial Classification (SIC) codes, this paper examines businesses with SIC codes 5812 and 5813 as "Eating&Drinking" firms, and companies with SIC codes 7011 and 7041 as "Lodging" firms. The sample consists of 20,488 firm-day observations from 39 E&D and 23 Lodging firms.[1]

Table A.1 in Appendix describes the variables used in this paper. Daily data on publicly traded U.S. firms are from CRSP. Factor mimicking portfolios that proxy for risk factors (Fama and French, 2015) are from the Kenneth R. French online library. *Post* is a daily dummy variable equal to one for the Covid period; and zero between 01July2019 and 28February2020. *Excess Return* is daily stock return in excess of the risk-free rate (one month T-Bill rate). *Traded Volume* is amount of shares traded daily, in millions. *Signed Volume*

[1] Detailed list of firms is available in Table OA.1, Online Appendix.

Table 2
CAR of eating & drinking and lodging firms during Covid-19.

Long-term:	4 Months			8 Months		
Event window	E & D firms	Lodging firms	*Difference*	E & D firms	Lodging firms	*Difference*
	I	II	III	IV	V	VI
1 Month	−0.123***	−0.004	*0.119***	−0.123***	−0.004	*0.119***
	(0.027)	(0.031)		(0.027)	(0.031)	
Long-Term	0.495***	0.426***	*0.069**	1.151***	0.969***	*0.182***
	(0.044)	(0.047)		(0.078)	(0.067)	
Difference	*0.618****	*0.430****		*1.274****	*0.973****	

This table presents the cumulative abnormal excess returns (CAR) for Eating & Drinking (E & D) and Lodging firms during the Covid Pandemic. Daily abnormal excess returns represent the return realized by investors in excess of sources of systematic risks. The table reports the results using Fama-French 5-Factor for an 8-month estimation period prior three months before the first official Covid case. The results are given for short-term (one month) and long-term (four months and eight months) after the first official Covid case. The differences between CAR values regarding E & D vs Lodging firms, and short-term vs long-term are also reported along with the statistical significance. Robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3
Excess return analyses for eating & drinking and lodging firms.

	Excess return					
	Eating & drinking firms			Lodging firms		
Post Period:	1-month	4-month	8-month	1-month	4-month	8-month
	I	II	III	IV	V	VI
Post	−0.296**	0.609***	0.654***	0.184	0.585***	0.605***
	(0.121)	(0.049)	(0.034)	(0.171)	(0.058)	(0.033)
Mktrf	0.787***	0.788***	0.804***	0.740***	0.747***	0.786***
	(0.020)	(0.034)	(0.031)	(0.032)	(0.029)	(0.027)
SMB	0.623***	0.669***	0.744***	0.550***	0.573***	0.755***
	(0.056)	(0.113)	(0.099)	(0.123)	(0.104)	(0.088)
HML	0.339***	0.530***	0.444***	0.753***	0.903***	0.783***
	(0.057)	(0.102)	(0.081)	(0.123)	(0.110)	(0.099)
RMW	0.550***	0.685***	0.738***	0.794***	1.128***	1.108***
	(0.111)	(0.173)	(0.166)	(0.131)	(0.109)	(0.095)
CMA	−1.332***	−1.456***	−1.347***	−1.808***	−1.967***	−1.605***
	(0.139)	(0.152)	(0.141)	(0.225)	(0.200)	(0.162)
Constant	−0.729***	−0.715***	−0.714***	−0.726***	−0.718***	−0.712***
	(0.038)	(0.020)	(0.019)	(0.019)	(0.020)	(0.018)
FE	YES	YES	YES	YES	YES	YES
Observation	7507	9838	13,020	4308	5653	7468
Adj. R^2	0.298	0.339	0.308	0.431	0.501	0.465

This table presents estimates for *Post* along with *Mktrf, SMB, HML, RMW,* and *CMA* as control variables. The analyses are conducted for Eating & Drinking firms and Lodging firms separately. *Excess Return* is the dependent variable. *Post* is the daily dummy variable that is equal to one for the post-period; and zero between 01 July 2019 and 28 February 2020. Three different post-periods are defined starting from 02 March 2020 and ending at 31 March 2020, 30 June 2020, and 30 October 2020 for 1-month, 4-month, and 8-month periods, respectively. *Excess Return* is the daily stock return in excess of the risk-free rate that is proxied by the 1-month T-Bill rate. Variable definitions are given in Table A.1. Firm fixed effects are included. Standard errors are clustered by firms and given in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

is amount of shares traded multiplied by daily stock return, in ten thousands. While the former denotes a proxy for the aggregate fund flows that come into the marketplace, the latter one gives a sense of the direction of trading activity. The signed traded volume takes a positive (negative) value if there is buy (sell) pressure in the market (Llorente et al., 2002; Tosun, 2021). All variables are winsorized at the 1st and 99th percentiles.

Table 1 gives descriptive statistics for E&D and lodging firms. While the average *Excess Return* is around −0.4% for both types of firms, highly right-skewed distribution of *Traded Volume* implies that the stocks of certain firms are traded excessively than the others. The right-skewed distribution of *Market Value* suggests that there are few big firms in both samples of E&D and lodging firms.

3. Methodology and results

3.1. Empirical approach

Bharadwaj et al. (2009) and Hendricks et al. (2020) use an event study approach while they investigate the stock market reaction to business disruptions. Following their approach, abnormal excess returns (AR) are measured using an 8-month estimation window prior three months before the Covid period, i.e. 02 March 2020. Event windows are 1-month, 4-month, and 8-month, starting 02 March 2020. Expected returns are estimated using the 5-factor specification (Fama and French, 2015) and cumulative abnormal excess

Table 4
Traded and signed volume analyses for eating & drinking and lodging firms.

Panel A: TraDED VOLUME ANAlyses						
	Eating & drinking firms			Lodging firms		
Post Period:	1-month	4-month	8-month	1-month	4-month	8-month
Post	1.224***	0.840***	0.503***	1.843***	1.322***	0.831***
	(0.218)	(0.153)	(0.0952)	(0.455)	(0.365)	(0.255)
Mktrf	−0.016***	−0.020***	−0.014***	−0.051***	−0.048***	−0.033***
	(0.006)	(0.006)	(0.004)	(0.013)	(0.010)	(0.008)
SMB	0.032***	0.005	0.028***	−0.034*	−0.035**	0.011
	(0.011)	(0.008)	(0.007)	(0.019)	(0.013)	(0.008)
HML	0.033***	0.038***	0.003	0.079***	0.081***	0.014
	(0.010)	(0.013)	(0.008)	(0.024)	(0.022)	(0.010)
RMW	−0.059*	−0.033	−0.016	−0.053	−0.001	0.008
	(0.033)	(0.023)	(0.020)	(0.039)	(0.022)	(0.025)
CMA	−0.197***	−0.124***	−0.047*	−0.275***	−0.180***	−0.031
	(0.049)	(0.036)	(0.024)	(0.069)	(0.055)	(0.019)
FE	YES	YES	YES	YES	YES	YES
Observation	7507	9838	13,020	4308	5653	7468
Adj. R^2	0.153	0.142	0.061	0.231	0.201	0.105
Panel B: Signed Volume Analyses						
	Eating & Drinking Firms			Lodging Firms		
Post Period:	1-month	4-month	8-month	1-month	4-month	8-month
Post	0.525	0.537***	0.364***	0.849	0.506**	0.261**
	(0.329)	(0.175)	(0.087)	(0.642)	(0.240)	(0.103)
Mktrf	1.375***	1.405***	1.414***	1.503***	1.498***	1.535***
	(0.219)	(0.044)	(0.230)	(0.239)	(0.060)	(0.246)
SMB	1.164***	1.159***	1.181***	0.943***	0.806***	1.167***
	(0.256)	(0.120)	(0.226)	(0.283)	(0.164)	(0.222)
HML	0.773***	0.931***	0.780***	1.828***	2.059***	1.760***
	(0.234)	(0.101)	(0.166)	(0.363)	(0.139)	(0.393)
RMW	0.155	0.802***	0.968***	1.077*	2.071***	1.933***
	(0.427)	(0.199)	(0.338)	(0.527)	(0.273)	(0.575)
CMA	−2.567***	−2.626***	−2.426***	−4.457***	−4.983***	−3.949***
	(0.507)	(0.283)	(0.411)	(0.915)	(0.389)	(0.798)
FE	YES	YES	YES	YES	YES	YES
Observation	7507	9838	13,020	4308	5653	7468
Adj. R^2	0.213	0.227	0.204	0.313	0.320	0.290

This table presents estimates for *Post* along with *Mktrf, SMB, HML, RMW,* and *CMA* as control variables. A constant is included in the regression, but is not reported in this table. The analyses are conducted for Eating & Drinking firms and Lodging firms separately. *Traded Volume* and *Signed Volume* are the dependent variables in Panels A and B, respectively. *Post* is the daily dummy variable that is equal to one for the post-period; and zero between 01 July 2019 and 28 February 2020. Three different post-periods are defined starting from 02 March 2020 and ending at 31 March 2020, 30 June 2020, and 30 October 2020 for 1-month, 4-month, and 8-month periods, respectively. *Traded Volume* is the amount of shares traded daily, in millions. *Signed Volume* is the amount of shares traded multiplied by the daily stock return, in ten thousands. Variable definitions are given in Table A.1. Firm fixed effects are included. Standard errors are clustered by firms and given in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

returns (CAR) are constructed for both types of firms in the Covid period.

To better examine the investor reaction to E&D and lodging firms separately, the paper conducts an event study by estimating a set of panel regressions of the form:

$$Investor\ reaction_{i,t} = \alpha + \beta Post_t + \gamma controls_{i,t} + \mu_t + \varepsilon_{i,t} \quad (1)$$

where $Investorreaction_{i,t}$ represents *Excess Return, Traded Volume,* and *Signed Volume* for firm *i* in day *t; controls*$_{i,t}$ are *Mktrf, SMB, HML, RMW,* and *CMA;* μ_t is firm fixed effects, respectively. Standard errors are clustered at the firm level. Three different post-periods are defined starting from 02 March 2020 and ending at 31 March 2020, 30 June 2020, and 30 October 2020 for 1-month, 4-month, and 8-month periods, respectively. This analysis is repeated for E&D and lodging firms, separately.

3.2. Findings

In Table 2, daily cumulative abnormal excess returns are calculated for three different event windows representing various stages of Covid, i.e. short-term (one month) and long-term (four months and eight months). The results indicate that investors respond differently to hospitality firms in later stages of the pandemic than the initial stage. Statistically significant differences at 1% level (see, the bottom raw of Table 2) show that there is an optimism towards hospitality businesses after four or eight months into the pandemic compared to the initial stage where investors perceive those companies more negatively.

Results in Table 2 reveal that investors react more negatively to E&D companies than lodging firms at first. Interestingly, investor perception towards restaurant firms changes as the pandemic progresses. In Columns III and VI, CAR have more positive values for E&D companies, i.e. 0.495% and 1.151%, than hotel firms, i.e. 0.426% and 0.969%, in later stages of Covid, respectively.

Table 5
Analyses with additional controls.

	Excess return				Traded volume				Signed volume			
	Eating & drinking firms		lodging firms		Eating & drinking firms		lodging firms		Eating & drinking firms		lodging firms	
Post Period:	1-month	8-month	1-month	8-month	1-month	8-month	1-month	8-month	1-month	8-month	1-month	8-month
Post	−0.032	0.573***	0.809	0.961***	0.157*	0.462***	0.479***	0.215*	1.068	1.002**	2.196	1.992***
	(0.313)	(0.160)	(0.529)	(0.131)	(0.094)	(0.147)	(0.133)	(0.122)	(1.072)	(0.506)	(1.977)	(0.697)
Covid Risk	0.565	0.338***	−0.205	0.641***	4.727***	−0.007	−0.877*	−0.277	−1.373	−0.651***	−2.029	−0.295
	(0.623)	(0.055)	(1.247)	(0.197)	(0.530)	(0.132)	(0.503)	(0.174)	(5.210)	(0.215)	(3.705)	(0.909)
VIX	−1.106***	−0.023***	−1.220***	−0.012**	0.994***	1.185***	0.865***	1.328***	−1.313*	0.017	−2.048***	0.020
	(0.208)	(0.004)	(0.232)	(0.004)	(0.075)	(0.224)	(0.093)	(0.060)	(0.683)	(0.010)	(0.681)	(0.018)
Market Value	0.023	−0.004	0.050**	0.028***	−0.012***	−0.098***	−0.230***	−0.181***	0.006***	0.109***	0.004***	0.100**
	(0.018)	(0.006)	(0.022)	(0.007)	(0.003)	(0.016)	(0.009)	(0.007)	(0.001)	(0.031)	(0.001)	(0.036)
Gov Index	0.034***	0.110**	0.037***	0.010	−0.004	−0.001	−0.007**	−0.013***	0.062***	−0.207	0.089***	−0.455**
	(0.007)	(0.044)	(0.007)	(0.047)	(0.024)	(0.003)	(0.003)	(0.002)	(0.019)	(0.129)	(0.022)	(0.196)
State & other Controls, FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observation	5527	9636	3676	6411	5527	9636	3676	6411	5527	9636	3676	6411
Adj. R^2	0.346	0.352	0.476	0.489	0.376	0.235	0.472	0.376	0.274	0.263	0.354	0.322

This table presents estimates for *Post* along with the regular controls and additional control variables, i.e. *Covid Risk, VIX, Market Value, Gov Index*, and *State* dummies. A constant is included in the regression, but is not reported in this table. Considering two different post-periods, the analyses are conducted for Eating & Drinking firms and Lodging firms separately. *Excess Return, Traded Volume,* and *Signed Volume* are the dependent variables. *Covid Risk* relies on word counts that condition on proximity to the use of synonyms for "risk" or "uncertainty". This measure counts the frequency of mentions of synonyms for risk or uncertainty particularly related to Covid, divided by the length of the transcript. *VIX* is the S&P500 volatility index. *Market Value* is the daily closing price multiplied by common shares outstanding, in billions USD. *Gov Index* records how the U.S. Government's response to Covid has varied over all policy indicators in the "Covid Government Response Tracker" database by the University of Oxford. *State* dummies are equal to one if a firm is in that particular state; and zero otherwise. Variable definitions are given in Table A.1. Firm fixed effects and the regular controls are included. Standard errors are clustered by firms and given in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Next, the paper implements an event study to disentangle the causal effect of Covid on daily excess returns. Table 3 reports the results for *Post*. fueled by panic, investors initially react negatively to E&D firms. The excess returns drop by −0.3% in the first month. However after four months, their perception of E&D firms changes possibly because those firms adjust to Covid conditions and improve their operations accordingly. Stock returns of E&D firms increase by 0.6%. Investor optimism towards E&D firms continues after eight months. Similar pattern applies for lodging firms, too. Investors recover from the initial Covid shock and *Excess Return* for lodging firms increases by about 0.6% after eight months.

Comparing E&D businesses to lodging firms, results for 1-month Covid period indicate that investors respond negatively to restaurant firms but there is no statistically significant evidence for hotel firms. It shows the confusion of investors for lodging firms. Nevertheless, traders act positively on business improvements made by both E&D and lodging firms in later stages of the pandemic.

In Table 4, the positive results for *Traded Volume* suggest that investors trade more at the beginning of Covid than eight months later. Furthermore, the magnitude of trading for lodging firms is always greater than the one for E&D firms throughout the pandemic. Investors prefer hotel firms over restaurant companies to trade shares.[2]

In Panel B of Table 4, statistically insignificant results for the initial stage regarding both types of hospitality firms indicate that there is no consensus among investors on trading. However, there is a buy pressure for stocks of all hospitality businesses later in the pandemic. Investors are indifferent regarding buying or selling shares of E&D and lodging firms at first. Yet, traders buy more shares of E&D firms after four and eight months in the pandemic. Specifically, coefficient of *Post* is greater and statistically more significant for E&D companies, i.e. 0.537 and 0.364, than lodging businesses, i.e. 0.506 and 0.261, respectively.

Oak and Dalbor (2008) suggest investors have a bias towards larger firms. Furthermore, there can be other Covid-related risk factors affecting investors' perception of businesses. Moreover, the sample contains hospitality businesses from 22 different states where each state handles the pandemic differently affecting hospitality sector. Therefore, I control firm size through *Market Value* as the daily closing price multiplied by common shares outstanding, in billions USD. *State Dummies* are introduced in the regressions. To control for any government intervention in hospitality sector during Covid, I include *Gov Index* which records how the U.S. Government's response to Covid has varied over all policy indicators in the "Covid Government Response Tracker" database by the University of Oxford. *VIX* as the S&P500 volatility index, and *Covid Risk* as a measure developed by Hassan et al. (2020), are used to address overall and Covid-related risk factors, respectively.[3] Overall, the results in Table 5 are robust considering additional risk, firm size, government intervention, and regional factors.[4]

4. Conclusion

Consistent with the behavioral theory, I find that the market reaction is negative to restaurant firms matching with investors' negative sentiments at the beginning of Covid. Although investors trade a lot, there is no consensus on buying or selling hospitality firms' stocks overall. In later stages of the pandemic, investors react positively to both E&D and lodging firms in line with their adjustments to Covid conditions and improvements of their operations. However, investors trade less in general. While trading volume is higher for lodging firms, investors actually buy more shares of E&D businesses. This "buy pressure" in the market leads to a positive reaction.

This study fills an important research gap in connecting different hospitality firms to investors in stock markets. It contributes to crisis literature by helping to understand investors' reaction through the lens of specific hospitality firms.

Author statement

I have no competing interests to declare. This is a solo paper; hence, all work is mine only.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.frl.2022.103099.

Appendix

Table A1

[2] In untabulated analyses, "Dollar Volume" is constructed as an alternative measure for trading activity. It is the daily average traded volume in U.S. dollars. Results stay robust.

[3] *Covid Risk* is a firm-level variable following Hassan et al. (2020). It controls for overall Covid risk in businesses and operations. For more details on this measure, see Hassan et al. (2020).

[4] In untabulated analyses, I control for underlying observable and unobservable systematic differences between months through macro-economic factors, i.e. unemployment growth, GDP growth, and PPI growth. I obtain similar and robust results. Further, correlations between control variables and potential issue of multicollinearity are checked through correlation and VIF tests. Correlations and VIF values are below 0.50 and 2.50, respectively, indicating no concerns in this study.

Table A1
Definition of variables.

Variables	Description
Post	The daily dummy variable that is equal to one for the Covid period; and zero between 01 July 2019 and 28 February 2020.
Excess Return	The daily stock return in excess of the risk-free rate that is proxied by the one month T-Bill rate.
Traded Volume	The amount of shares traded daily, in millions.
Signed Volume	The amount of shares traded multiplied by the daily stock return, in ten thousands.
Market Value	The daily closing price multiplied by common shares outstanding, in billions USD.
Mktrf	The daily market return in excess of the risk-free rate that is proxied by the one month T-Bill rate. (Fama and French, 2015)
SMB	SMB (Small Minus Big) is the average return on the nine small stock portfolios minus the average return on the nine big stock portfolios. (Fama and French, 2015)
HML	HML (High Minus Low) is the average return on the two value portfolios minus the average return on the two growth portfolios. (Fama and French, 2015)
RMW	RMW (Robust Minus Weak) is the average return on the two robust operating profitability portfolios minus the average return on the two weak operating profitability portfolios. (Fama and French, 2015)
CMA	CMA (Conservative Minus Aggressive) is the average return on the two conservative investment portfolios minus the average return on the two aggressive investment portfolios. (Fama and French, 2015)
Covid Risk	Following Hassan et al. (2020), this risk measure relies on word counts in quarterly earnings conference call scripts that condition on proximity to the use of synonyms for "risk" or "uncertainty". This measure counts the frequency of mentions of synonyms for risk or uncertainty particularly related to Covid, divided by the length of the transcript.
VIX	The S&P500 volatility index.
Gov Index	It records how the U.S. Government's response to Covid has varied over all policy indicators in the "Covid Government Response Tracker" database by the University of Oxford.

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