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How Does Market Cap Play Its Role in Returns during COVID-19? The Case of Norway

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Abstract: This research investigates the role of the large, medium, and small market cap portfolios in returns during the COVID-19 pandemic, around the 'lockdown' policy in March 2020 based on the Norwegian market. The main results suggest that during the event window, the medium and small portfolios are impacted more negatively than the large. During the before-event days, the large portfolio is slightly negatively affected, but it tends to be better after the event. The medium and small portfolios are not adversely affected during before the event, but they are considerably negatively affected after the event. The small portfolio is affected more severely negatively than the medium. The small portfolio is the most volatile of the three during the event window. In addition, there are opportunities to earn extremely positive abnormal returns (from 2.5%) after the event by holding the small and medium portfolios, but not for the large. It seems that more opportunities to earn extremely positive abnormal returns for the small portfolio than the medium.

Keywords: market cap; COVID-19; event study; stock returns; stock market

JEL Classification: G01; G10; G11; G14

1. Introduction

During the COVID-19 crisis, stock markets around the world crashed. In March 2020, the New York Stock Exchange Dow Index went down by 4.06%; and the S&P500 and NASDAQ indexes also fell by 3.37 and 3.79%, respectively. European stock markets had the same problem, as the German DAX index, the French CAC40 index, and the British FTSE100 index dropped by between 3.5% and 5%, and the Norway stock-market index (the Oslo Bors) declined by 3.64%. Figure 1 presents the performance of the Olso Bors against the other major indices, showing that the Oslo Bors' performance was close to them during this period.

Although stock markets severely crashed during the COVID-19 crisis, there were still many stocks gaining high returns, because stocks perform differently between and within different industries, as illustrated in previous research. The study by the authors in Mazur et al. (2021), based on the US stock market, illustrated that not all stocks experienced detrimental effects. They indicated that stocks in some industries (natural gas, food, healthcare, and software) made positive returns, but other industries (petroleum, real estate, entertainment, and hospitality) fell dramatically. The authors in Dharani et al. (2023) found that, in India, the chemical, technology, and food and beverage industries earned higher returns, but the banking and finance, automotive, services, and cement and construction industries earned lower returns. All industry groupings in their study yielded a positive return during the lockdown period. However, research by the authors in Al-Awadhi et al. (2020) suggested that, during the COVID-19 crisis, stock returns on the Chinese stock market were significantly negatively affected across all companies. The authors in Narayan et al. (2020) showed that Japanese stock returns had a positive effect because of the depreciation of the Yen against the US dollar during COVID-19. The

authors in Lee et al. (2023) found that in China, COVID-19 shocks affected macroeconomic fluctuations and hospitality stock returns, and the authors in Umar et al. (2023) stated no evidence of the effect of COVID-19 on the liquidity of the Chinese stock market. The authors in Størdal et al. (2021) investigated stock-market returns based on the Norwegian and Swedish markets during 2020. They found that non-pharmaceutical interventions had a positive effect on Sweden's stock market, but little or no effect on the stock market in Norway.
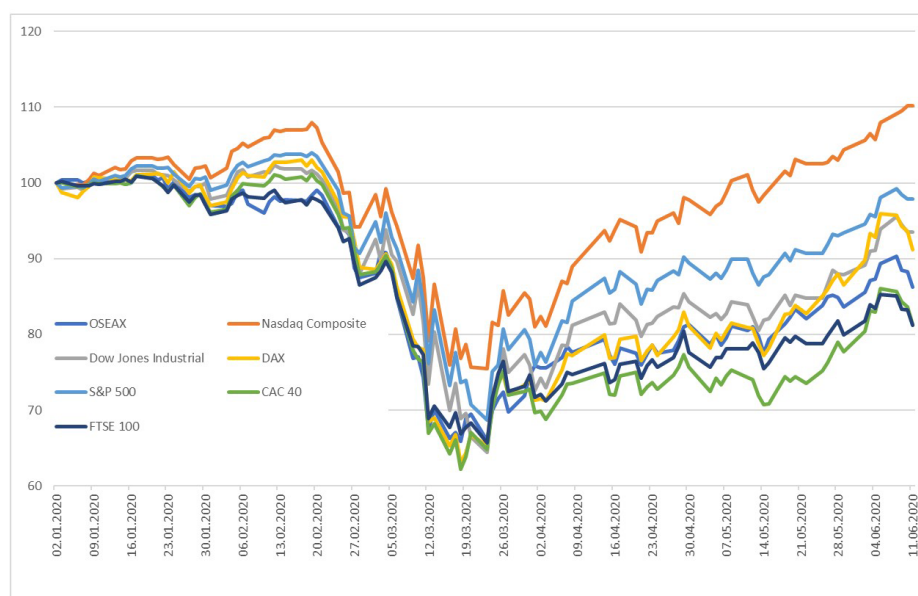

Figure 1. Performance of the Oslo Bors (OSEAX) against major indices. Adapted from Størdal et al. (2020).

In addition, other studies at the global level suggested different results; studies by the authors in Liu et al. (2020), Uddin et al. (2021), and Zhang et al. (2020) suggested stock returns were negatively impacted; the authors in Uddin et al. (2021) also suggested that resilience scores could significantly reduce the volatility of developed and emerging equity markets. Nonetheless, a study by the authors in Chang et al. (2021) found that stock returns had a positive effect on the government responses to COVID-19 (the "lockdown" policy). Beer et al. (2023), indicating that the responses of governments mitigate the negative stock-market effect, while the authors in Scherf et al. (2022) found that lockdown restrictions led to different reactions; there was a negative impact resulting from the increase in lockdown restrictions, but under-reaction during the lockdown announcement and then followed by overreaction. The authors in Cervantes et al. (2022) suggested that changes in panic indexes because of the COVID-19 crisis had no significant relationship with raw stock-market returns. The authors in Zhang et al. (2023) stated that RCEP economies showed better risk resistance to COVID-19 shocks.[1]

Stock-market capitalization (or market cap) of a company refers to how highly the market values a company; the higher the market value, the larger the company. Market cap also has an important relationship with risk and return. Historical analysis reveals that large-market-cap stocks have low risk, but usually grow slowly; small-market-cap stocks have high risk but also have high potential growth, i.e., small-market-cap stocks expect to generate higher returns than large-market-cap stocks, but they are riskier than large-market-cap stocks. Research by the authors in Banz (1981) indicated that smaller firms had higher risk-adjusted returns than larger firms, on average.

Market cap therefore plays a vital role in risk and return. The question is how market cap plays its role in risk and return during crisis time. Research by the authors in Harjoto et al. (2021) found that in the US, large firms had positive abnormal returns during the

COVID-19 crisis, but not small firms. Following that research, we will investigate the role of market cap during the COVID-19 crisis based on Norwegian circumstances, which have not yet been investigated in the Norwegian market. We construct three market-cap portfolios—a large market cap, a medium market cap, and a small market cap—from the most liquid stocks listed on the Euronext stock exchange, particularly on the Oslo market, and conduct an event study around the "lockdown" policy during the crash of March 2020 in Norway.

The results of this research suggest that during the event window, medium and small-market-cap portfolios were impacted more negatively than large-market-cap portfolio. During the before-event days, the large-market-cap portfolio was slightly negatively affected, but it tended to do better after the event. The medium and small-market-cap portfolios were not adversely affected before the event but were considerably negatively affected after the event. The small-market-cap portfolio was affected more severely negatively than the medium one. The small-market-cap portfolio was the most volatile of the three during the event window.

Interestingly, the research also found that there were opportunities to earn extremely positive abnormal returns (from 2.5%) from the small and medium-market-cap portfolios after the event, but not for the large-market-cap portfolio. There are more opportunities to earn extremely positive abnormal returns from the small-market-cap portfolio than from the medium-market-cap portfolio.

The remainder of this paper is structured as follows: Section 2 describes the methodology, data and variables, and samples. Section 3 discusses the empirical results of the event study, conducts a robustness check, and examines the extremely positive and negative abnormal returns. The last section presents conclusions on the research.

2. Methodology, Data and Variables, and Samples

2.1. Methodology

The "event study" method is widely used in economics and finance to examine security price behavior around an event (see Binder 1998; Brown and Warner 1985; MacKinlay 1997). Additionally, this method has been widely applied to crises, such as the bankruptcy of Lehman Brothers that caused the financial crisis of 2007–2008, an announcement that affected security performance during the U.S. subprime crisis, and others (see Aizenman et al. 2016; Becchetti and Ciciretti 2011; Cimini 2015; Dimovski 2009; Dooley and Hutchison 2009; Fiordelisi et al. 2014; Miyajima and Yafeh 2007; Miyanoya 1999; Ranjeeni 2014; Ricci 2015; Wilson et al. 2000). In addition, the event study is used to examine the reaction of the stock market to the COVID-19 pandemic by Harjoto et al. (2021), Størdal et al. (2020), and Liu et al. (2020).

Following previous research, this research employs the "event study" method to examine the changes in returns of large, medium, and small-market-cap portfolios during COVID-19, around the "lockdown" policy. The "event study" method uses abnormal returns and cumulative abnormal returns to appraise the event's impact, as mentioned in MacKinlay (1997). We therefore calculate abnormal returns and cumulative abnormal returns for each portfolio for the event window, the before-event days, and the after-event days, using the following steps:

Step 1: calculating abnormal returns.

To estimate abnormal returns for the three portfolios, we employ the market model below:

$$R_{pt} = \alpha_p + \beta_p R_{mt} + \epsilon_{pt} \tag{1}$$

where R_{pt} is the return of the portfolios: large, medium, and small-market-cap portfolios. R_{mt} is the return on the market index.

We first use the estimation samples (or the samples for the estimation window) and the market model to predict α and β called normal α and normal β for each portfolio. Then,

we estimate abnormal returns for each portfolio for the event window, the before-event days, and the after-event days, as per Equation (2), below:

$$\hat{\epsilon}_p^* = R_{pt}^* - \hat{\alpha}_p - \hat{\beta}_p R_{mt}^* \tag{2}$$

where $\hat{\epsilon}_p^*$ is the abnormal return (or AR_i) of each portfolio calculated for the event window, the before-event days, and the after-event days. R_{pt}^* and R_{mt}^* are the actual portfolio returns and the actual market-index returns, respectively. $\hat{\alpha}_p$ and $\hat{\beta}_p$ are normal α and normal β estimated from Equation (1).

Step 2: calculating cumulative abnormal returns.

The abnormal returns are aggregated to infer the cumulative effect of the event. We therefore calculate the cumulative abnormal returns for each portfolio for the event window, the before-event days, and the after-event days, as below.

$$CAR_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{i\tau} \tag{3}$$

where $AR_{i\tau}$ is the abnormal return of portfolio i (or $\hat{\epsilon}_p^*$) during period τ_1 to τ_2 presenting the period of the event window (T1 < τ_1 < τ_2< T2), the before-event days (T1 < τ_1 < τ_2< Event day), and the after-event days (Event day < τ_1 < τ_2< T2) (see the *event timeline* below).

Event timeline

We define a timeline for the event study: "the event of lockdown policy during the crash of March 2020", as shown in Figure 2.
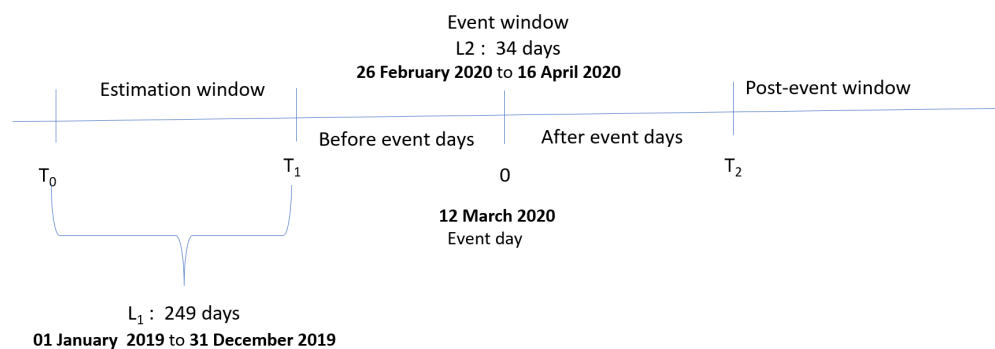

Figure 2. Timeline for event study.

In Figure 2, the event day is 12 March 2020 (i.e., "lockdown" policy is published); after 16 April 2020, lockdown restrictions were eased. There are three windows: the estimation window, the event window, and the post-event window. The estimation window—the period before COVID-19 started in Norway—considered to be a normal period, is used to predict normal returns. The event window from 26 February 2020 to 16 April 2020 (34 days) is chosen because it covers three events: the first day of COVID-19 being recorded in Norway, the day of the "lockdown" policy being published, and the days before the "lockdown" policy being eased. The event window has two periods: before-event days and after-event days. We investigate the changes in returns of the three market-cap portfolios during the event period, before-event days, and after-event days.

Testing cumulative abnormal returns

We conducted a Student's *t*-test to test for cumulative abnormal returns for the three portfolios.

Null hypothesis H0: $E(CAR(\tau_1, \tau_2)) = 0$

Test statistic: $t = \dfrac{\overline{CAR}(\tau_1,\tau_2)}{\sqrt{var\overline{CAR}(\tau_1,\tau_2)}}$

where

$$\overline{CAR}(\tau_1, \tau_2) = \frac{1}{N} \sum_{i=1}^{N} CAR_i(\tau_1, \tau_2) \tag{4}$$

2.2. Data and Variables

We selected daily data from the most liquid stocks[2] and Oslo Bors benchmark (index_GI) listed on the Euronext stock exchange, particularly on the Oslo market, as our samples.

We first calculated equal-weighted returns for three portfolios sorted by market capitalization: large-market-cap portfolio, medium-market-cap portfolio, and small-market-cap portfolio.

This article defines market sizes as follows: Large-cap companies have a market value of USD 9 billion or greater; medium-cap companies have a market value between USD 2 billion and USD 9 billion; and small-cap companies have a market value between USD 76 million and USD 2 billion. The classification of the market value was based on the capitalization classification shown on the Euronext stock exchange.

Information on each market-cap portfolio is summarized in Table 1.

Table 1. Market-cap portfolios (millions USD).

	N	**Mean**	**St.dev**	**Median**	**Min**	**Max**
Large portfolio	7	19, 590.61	14,297.70	10,563.30	9705.55	52,047.88
Medium portfolio	9	4280.42	1570.01	3727.08	2434.10	7053.25
Small portfolio	9	1073.16	719.11	598.38	76.16	1980.37

Notes: the market values are converted from Norwegian currency (NOK) to USD (Exchange rate = 0.1138).

Portfolios' equal-weighted returns are computed as follows:

$$R_{pt} = \frac{1}{n} \sum_{1}^{n} R_{it} \tag{5}$$

$$where R_{it} = ln(P_{it}) - ln(P_{i(t-1)}) \tag{6}$$

R_{it} is log return of stock *i* at date *t*; P_{it} is daily stock price; R_{pt} is equal-weighted portfolio return for three portfolios: large, medium, and small-market-cap portfolios. Please note that R_{it} is sorted by market cap and divided into three groups: large market cap, medium market cap, and small market cap before calculating R_{pt}.

Returns of the Oslo Bors benchmark (index_GI) as the market index in this research are then calculated.

2.3. Samples

We divided the samples according to the event timeline. The samples are therefore divided into four subsamples: estimation samples for the estimation window, before-event samples for the before-event days, after-event samples for the after-event days, and event samples for the event window.

The summary statistics of the three portfolios' daily returns and market index daily return are presented in Table 2.

Table 2. Summary statistics.

Statistic	*N*	**Mean**	**St. Dev.**	**Min**	**Max**
Estimation window					
Market index	249	0.000614	0.008	−0.024	0.026
Ri_largeport	249	0.000548	0.007	−0.022	0.024
Ri_mediumport	249	0.000577	0.011	−0.030	0.031
Ri_smallport	249	0.001156	0.018	−0.058	0.054

Table 2. *Cont.*

Statistic	N	Mean	St. Dev.	Min	Max
Event window					
Market index	34	−0.006086	0.035	−0.092	0.055
Ri_largeport	34	−0.003709	0.032	−0.082	0.057
Ri_mediumport	34	−0.008516	0.041	−0.121	0.076
Ri_smallport	34	−0.013623	0.057	−0.173	0.087
Before-event days					
Market index	11	−0.020650	0.032	−0.085	0.030
Ri_largeport	11	−0.016071	0.027	−0.061	0.030
Ri_mediumport	11	−0.024003	0.036	−0.098	0.031
Ri_smallport	11	−0.039975	0.064	−0.173	0.043
After-event days					
Market index	22	0.005089	0.029	−0.055	0.055
Ri_largeport	22	0.006023	0.029	−0.048	0.057
Ri_mediumport	22	0.004352	0.033	−0.054	0.076
Ri_smallport	22	0.003651	0.046	−0.104	0.087

Notes: Ri_largeport: daily returns on the large-market-cap portfolio, Ri_mediumport: daily returns on the medium-market-cap portfolio, Ri_smallport: daily returns on the small-market-cap portfolio, and market index: daily returns on the market index. The returns are calculated based on Norwegian currency (NOK).

In Table 2, the volatilities (or standard deviations) of the three portfolios and the market index in the estimation window are much lower than those in the event window, the before-event days, and the after-event days, i.e., returns on the three portfolios and returns on the market index in the event window, the before-event days, and the after-event days are more volatile than those in the estimation window. As the study by the authors in Li et al. (2022) suggests, the fear of COVID-19 causes stock-market volatility.

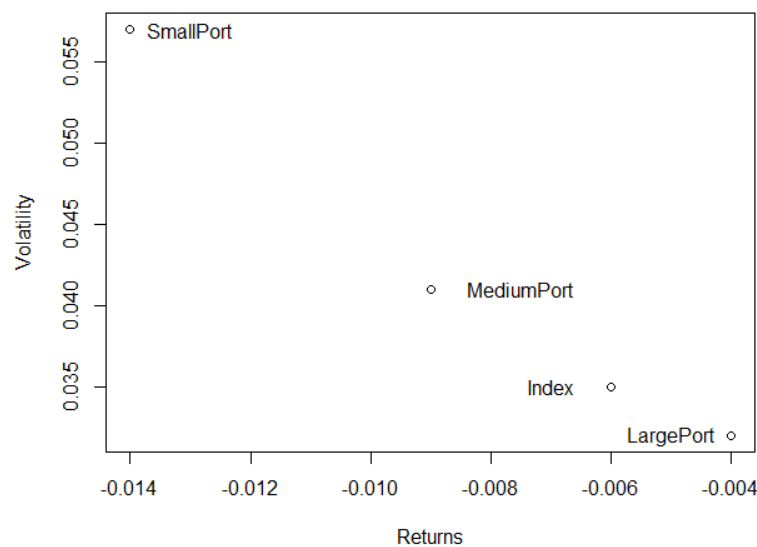Returns versus volatility of the three portfolios and market index during the even window are presented in Figure 3.

Figure 3. Returns vs. volatility during the event period. Notes: SmallPort, MediumPort, and LargePort are small, medium, and large portfolios, respectively.

In Figure 3, during the event window, the three portfolios and the market index have negative returns. The small-market-cap portfolio earns the lowest negative returns, but has

the highest volatility. Therefore, the small-market-cap portfolio is considerably negatively affected during this window.

3. Results

3.1. Results of the Event Study

This research investigates the changes in returns of the large, medium, and small-market-cap portfolios during the three investigated periods: the event window, the before-event days, and the after-event days.

The empirical results of the event study are presented in Table 3.

Table 3. Results of the event study.

Portfolios	Mean (%)	*t* Value	*p* Value
Event window			
CAR_large	1.6 ***	4.9092	0.0000
CAR_medium	−2.5 ***	−5.3155	0.0000
CAR_small	−5.9 ***	−6.5735	0.0000
Before-event days			
CAR_large	−0.5 **	−2.7494	0.0205
CAR_medium	0.8 ***	3.2524	0.0087
CAR_small	−1.3	−0.99795	0.3418
After-event days			
CAR_large	3.7 ***	13.933	0.0000
CAR_medium	−1.9 ***	−5.3717	0.0000
CAR_small	−7.1 ***	−8.4419	0.0000

Notes: CAR_large, CAR_medium, and CAR_small are cumulative abnormal returns for the large, medium, and small-market-cap portfolios, respectively. *** $p < 0.01$; ** $p < 0.05$; This tableshows the two-tail *t*-test for cumulative abnormal returns of the three portfolios: large, medium, and small-market-cap portfolios for the event window, the before-event days, and the after-event days. The null hypothesis: the true mean of cumulative abnormal returns is equal to zero (i.e., no event effect); alternative hypothesis: the true mean of cumulative abnormal returns is not equal to 0 (i.e., event effect).

Table 3 shows the results of the *t*-test for cumulative abnormal returns for the three portfolios for three periods: the event window, the before-event days, and the after-event days. The results suggest that most means of the cumulative abnormal returns for the three periods are significantly different from zero at the significance level of 1%. However, the mean of the cumulative abnormal return of the small-market-cap portfolio (CAR_small) for the before-event days is not significant, meaning that it is not affected before the event.

During the event window, the returns of the three portfolios are significantly affected at the significance level $\alpha = 1\%$. Although the mean of the CAR of the large-market-cap portfolio takes a positive value of 1.6%, the means of the CAR of the medium-market-cap portfolio and the CAR of the small-market-cap portfolio are negative (−2.5% and −5.9%, respectively), i.e., the medium and small-market-cap portfolios are adversely impacted, but the large-market-cap portfolio is not. The result implies that the medium and small-market-cap portfolios are more negatively affected than the large-market-cap portfolio. Moreover, the CAR for the small-market-cap portfolio (−5.9%) is considerably negatively lower than the CAR for the medium-market-cap portfolio (−2.5%) meaning that the small-market-cap portfolio is more severely adversely affected than the medium one.

During the before-event days, the mean of the CAR of the large-market-cap portfolio is slightly negatively affected at the significance level $\alpha = 5\%$ (the mean value of −0.5%). However, the mean of the CAR of the small-market-cap portfolio is insignificant, but it has a negative effect during the event window; this is because the small-market-cap portfolio is highly negatively affected during the after-event days. The mean of the CAR of the medium-market-cap portfolio is significantly different from zero and takes a value of 0.8%,

meaning that the portfolio is not adversely impacted during this period. We find that the large-market-cap portfolio is more sensitive to COVID-19 than the other portfolios, because it is slightly negatively affected in this window, but the others are not.

During the after-event days, the means of the CARs of the three portfolios are significantly different from zero at the significance level $\alpha = 1\%$. The means of the CAR of the medium and small-market-cap portfolios are -1.9% and -7.1%, respectively, implying that the two portfolios are negatively affected; the small-market-cap portfolio is considerably adversely affected. The mean of the CAR of the large-market-cap portfolio is 3.7%, suggesting that the portfolio is not negatively affected. It might be that the large-market-cap portfolio (or large firms within it) manages its response to the event quicker than the other portfolios (the medium and small-cap), leading investors to be more confident in large firms.

In short, the results indicate that the returns of the three portfolios are affected more significantly after the event than before the event. Before the event, only the large-market-cap portfolio was slightly negatively affected, but not the others. After the event (i.e., after the "lockdown" policy coming into force on 12 March 2020), all three portfolios were differently impacted; the medium and small-market-cap portfolios were extremely negatively affected, but the large-market-cap portfolio was not.

Figure 4 presents the returns of the three portfolios against the market-index return during the event window; the vertical red line (on 12 March 2020) divides the graph into two parts: before the event and after the event. The figure shows that the large portfolio moves close to the market index. Therefore, the slightly negative effect of the large portfolio during the before-event days is probably caused by the dramatic fall in the major indices (see Figure 1) as well.
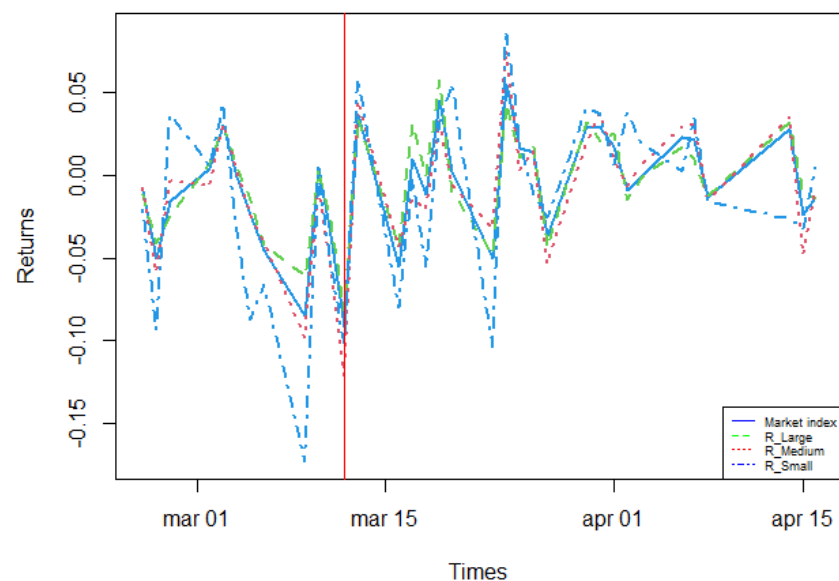

Figure 4. Portfolio returns against market-index return.

The market cap illustrates its important role in relation to risk and returns during the crisis; the small and medium ones are severely negatively affected, but not the large; the small is also found to be more severely negatively affected than the medium. The larger the market cap, the more stable the stocks.

The results imply that the large-market-cap portfolio might be more sensitive to COVID-19 than other portfolios at the beginning. However, the large rapidly manages its reaction to the event to prevent extreme negative effects, while the medium and small are found to slowly manage their response, leading to extreme negative effects after the event. The results reveal that investors might trust large firms more than the medium and the small ones after the event.

These results support the findings by the authors in Harjoto et al. (2021) that positive abnormal returns can be found for large firms instead of small firms in the US market. However, they are partly inconsistent with the findings by the authors in Al-Awadhi et al. (2020), Liu et al. (2020), Zhang et al. (2020), and Uddin et al. (2021), who suggest that stock returns were negatively impacted, and the authors in Chang et al. (2021) and Narayan et al. (2020), who showed stock returns had a positive effect.

Cumulative abnormal returns of the three portfolios during the three periods—the before-event days, the after-event days, and the event window—are also presented in Figure 5. The blue line on 12 March 2020 divides the event window into two parts: the before-event days and the after-event days.
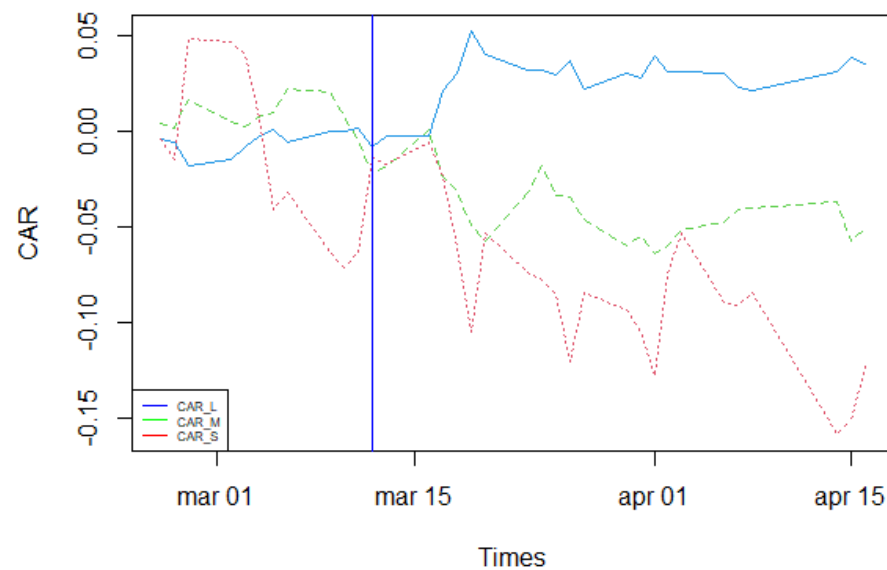

Figure 5. Cumulative Abnormal returns during the event period. Notes: CAR_L, CAR_M, and CAR_S are the CAR of the large-market-cap portfolio, CAR of the medium-market-cap portfolio, and CAR of the small-market-cap portfolio, respectively. The event day is 12 March.

Figure 5 presents the trends of CARs of the three portfolios during the event window (from 26 February to 16 April). During the event window, the small-market-cap portfolio is extremely negatively affected, and is the most volatile of the three; the medium-market-cap portfolio is more negatively affected after the event than before the event; and the large-market-cap portfolio is more stable than the others, although it is slightly negatively impacted before the event.

The left-hand side of the blue line (the before-event days) shows the trends of the CARs of the three portfolios during the before-event days (from 26 February to 11 March). The CAR of the large-market-cap portfolio (CAR_L) is slightly lower than zero, while the CAR of the medium-market-cap portfolio (CAR_M) is slightly higher than zero. The trend of CAR of the small-market-cap portfolio (CAR_S) shows that the portfolio is considerably volatile.

The right-hand side of the blue line (the after-event days) shows the trends of CARs of the three portfolios during the after-event days (from 13 March to 16 April). The CAR of the large-market-cap portfolio (CAR_L) is positive and better than the other CARs (CAR_M and CAR_S). The trend of the CAR of the medium-market-cap portfolio (CAR_M) is slightly negative; the trend of CAR of the small-market-cap portfolio (CAR_S) shows that the portfolio is considerably adversely impacted.

In short, during the event window, the medium and small-market-cap portfolios are impacted more negatively than the large-market-cap portfolio. During the before-event days, the large-market-cap portfolio is slightly negatively affected, but it tends to be better

after the event. The medium and small-market-cap portfolios seem not to be adversely affected before the event, but they are considerably negatively affected after the event.

3.2. Robustness Check

In this part, this research compares the cumulative abnormal returns for each pair of portfolios: large–medium, large–small, and medium–small, to test if the CARs of each pair are different. We use the Welch *t*-test to test this hypothesis. The results support the empirical results that the CARs of each pair of portfolios are different, meaning that each portfolio is differently affected.

The results in Table 4 confirm that the CARs of each pair of portfolios are different for the event window, before-event days, and after-event days because all the tests accept the alternative hypothesis at the significance level of 1%.

Table 4. Comparing CARs between the three portfolios. The Welch *t*-test is used for testing the difference in the two CAR means of two portfolios: large–medium, large–small, and medium–small.

Portfolios	Large Port	Medium Port	Small Port	Alternative Hypothesis	*p*-Values
Event window					
CAR mean (%)	1.6	−2.5		True difference in means is not equal to 0	0.0000 ***
CAR mean (%)	1.6		−5.9	True difference in means is not equal to 0	0.0000 ***
CAR mean (%)		−2.5	−5.9	True difference in means is not equal to 0	0.0013 ***
Before-event days					
CAR mean (%)	−0.5	0.8		True difference in means is not equal to 0	0.0004 ***
After-event days					
CAR mean (%)	3.7	−1.9		True difference in means is not equal to 0	0.0000 ***
CAR mean (%)	3.7		−7.1	True difference in means is not equal to 0	0.0000 ***
CAR mean (%)		−1.9	−7.1	True difference in means is not equal to 0	0.0000 ***

Notes: *** $p < 0.01$. For before-event days, because the CAR of the small portfolio is not significant (see Table 3), we only compare the CAR mean of the large with that of the medium.

3.3. Extremely Positive and Negative Abnormal Returns?

In this section, the research investigates if there are any extremely positive and negative abnormal returns of the three portfolios during the event window. According to MacKinlay (1997), abnormal returns for good news and bad news are defined as actual returns exceeding expected returns by more than 2.5% and dropping lower than −2.5%, respectively. In this research, therefore, we define extremely positive abnormal returns as actual returns exceeding expected returns by more than 2.5%, and extremely negative abnormal returns as actual returns exceeding expected returns by lower than −2.5% during the event window,

i.e., abnormal returns are considered to be extremely positive abnormal returns if they are higher than 2.5%, and as extremely negative abnormal returns if they are lower than −2.5%.

Interestingly, the research finds that during the after-event days, extremely positive abnormal returns were obtained by holding the small-market-cap portfolio. The results are presented in Table 5.

Table 5. Extremely positive and negative abnormal returns.

Portfolios	Dates	EP AbR (%)	EN AbR (%)
Before-event days			
AbR_large		0	0
AbR_medium		0	0
AbR_small	28 February 2020	6.27	
	4 March 2020		−3.29
	5 March 2020		−4.77
	9 March 2020		−3.14
After-event days			
AbR_large		0	0
AbR_medium	23 March 2020	2.53	0
AbR_small	18 March 2020		−3.69
	19 March 2020		−4.41
	20 March 2020	5.13	
	26 March 2020		−3.51
	27 March 2020	3.60	
	2 April 2020	5.31	
	6 April 2020		−3.55
	14 April 2020		−7.38
	16 April 2020	2.73	

During the before-event days, the small-market-cap portfolio is found to obtain extremely positive abnormal returns fewer times (only one time) than extremely negative abnormal returns (three times). However, the large and medium-market-cap portfolios seem not to earn any extremely positive or negative abnormal returns.

During the after-event days, the large-market-cap portfolio seems not to earn any extremely positive or negative abnormal returns, but the medium and small-market-cap portfolios do. The medium-market-cap portfolio earned an extremely positive abnormal return of 2.53%. The small-market-cap portfolio earned an extremely positive abnormal return several times, varying from 2.73% to 5.31%; however, the portfolio earned extremely negative abnormal returns several times, varying from −3.51% to −7.38%.

In short, the results suggest that there are opportunities to earn extremely positive abnormal returns by holding the medium and small-market-cap portfolios during the after-event period. The small-market-cap portfolio seems to provide more opportunities to earn extremely positive abnormal returns than the medium. However, the large-market-cap portfolio seems not to earn any extremely positive abnormal return.

Furthermore, the small-market-cap portfolio earns both extremely positive and negative abnormal returns after the event more frequently than the other portfolios; this implies that the small-market-cap portfolio is the most volatile of the three. Volatile stocks might therefore provide more opportunities for extremely positive abnormal returns. Investors might use the quick-return strategy—quickly reacting to sell or buy stocks—for small-market-cap stocks to earn a higher return.

4. Conclusions

This research investigates the role of market cap in returns during the COVID-19 pandemic, especially around the "lockdown" policy in Norway. The research conducts the

"event study" method for three periods: the event window, the before-event days, and the after-event days for the large, medium, and small-market-cap portfolios.

The main results suggest that during the event window, the medium and small-market-cap portfolios are impacted more negatively than the large-market-cap portfolio. During the before-event days, the large-market-cap portfolio is slightly negatively affected, but it tends to be better after the event. The medium and small-market-cap portfolios are not adversely affected before the event, but they are considerably negatively affected after the event. The small-market-cap portfolio is affected more severely negatively than the medium one. The small-market-cap portfolio is the most volatile of the three during the event window.

This research also finds that the market cap illustrates its important role in relation to risk and returns during the crisis. The larger the market cap, the more stable the stocks.

In addition, this research indicates that there are opportunities to earn extremely positive abnormal returns (from 2.5%) after the event by holding the small and medium-market-cap portfolios, but not for the large-market-cap portfolio. It seems that there are more opportunities to earn extremely positive abnormal returns for the small-market-cap portfolio than the medium one.

Notes

[1] RCEP stands for the Regional Comprehensive Economic Partnership, which is a free-trade agreement (FTA) between the 10 member states of the Association of Southeast Asian Nations and five other FTA partners; more information can be found here: https://asean.org/our-communities/economic-community/integration-with-global-economy/the-regional-comprehensive-economic-partnership-rcep/ (accessed on 10 September 2023).

[2] The stocks were found at https://live.euronext.com/en/product/indices/NO0000000021-XOSL (accessed on 30 April 2020).

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