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The Effects of Cash Dividend on Stock Prices during the COVID-19 Pandemic: Evidence from Poland

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Abstract:

Purpose: *The aim of the study was to examine investors' reactions to planned dividends and assess the short-term behaviour of stock prices before ex-dividend. In our paper we have adopted the following research hypothesis: The buying pressure from traders causes order imbalances and positive abnormal returns in the cum-dividend period in COVID-19 reality.*
Design/Methodology/Approach: *Using event-study methodology we investigated the stock market reaction to dividend payment in 2020 (first pandemic year) at Warsaw Stock Exchange, Poland. The research sample consisted of 132 dividends payments. The event day was the last cum-dividend day (session day before ex-dividend) and the event periods were comprised of 16, 11, 6, 4 and 3 days.*
Findings: *Our findings indicate that in COVID-19 reality buying pressure caused positive abnormal returns in the cum-dividend period in short term 16, 11, 6, 4 and 3 day event windows.*
Practical Implications: *The conclusions obtained can guide investors in developing investment strategies during financial crises.*
Originality/Value: *The main contributions of the study are the evidence in the discussion of the impact of cash dividends in the COVID-19 pandemic and the results of capital markets information efficiency tests. The research and conclusions extend the existing knowledge on the response to dividend payments during periods of financial crises. The article extends research on dividends in the Polish capital market.*

Keywords: *Cum-dividend, market reaction, COVID-19, event study methodology.*

JEL codes: *G01, G14, G35.*

Paper Type: *Research article.*

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1. Introduction

The dividend policy is used by companies to create market value and build relationships with shareholders. Dividends are also an important element in strategic decisions regarding the management of the company's capital. The payment of a cash dividend by a company is a distribution of capital to shareholders. We analyse investors' reactions to planned dividends and examine the short-term behaviour of stock prices before the ex-dividend.

Assuming the existence of the efficient markets hypothesis, dividends paid should not generate any abnormal rates of return. It is argued that in the information-efficient market, the share price should be adjusted by the amount of dividend paid at the next session after the record date. However, there is also a view in literature about the positive impact of cash dividends on the market value of companies (Gordon, 1963; Lintner, 1956; 1964).

The last three years have been an unusual period for the global economy and financial markets. The world was under the influence of the COVID-19 pandemic. In 2020, there was a sharp reduction in economic activity due to lockdowns and there were strong declines in the financial markets. Equity markets, which are closely related to the economic situation, were losing particularly hard. The Warsaw Stock Exchange also fell significantly (Kaźmierska-Jóźwiak *et al.*, 2022).

In our article, we check whether the uncertainty resulting from COVID-19 had any impact on investors' behaviour. We have attempted to analyse the impact of cash dividends on the value of companies during the crisis caused by COVID-19. The aim of the study is to analyse the short-term impact of cash dividends on the market value of companies in the conditions of the COVID-19 crisis in 2020. The research was carried out using the cumulative abnormal rates of return and analysing the impact of the dividend rate on the strength of the market reaction.

The main contributions of the study are the evidence in the discussion of the impact of cash dividends in the COVID-19 pandemic and the results of capital markets information efficiency tests.

2. Literature Background

The COVID-19 outbreak was exceptional in the extreme scope, level and uncertainty (Roubini, 2020). Although the pandemic had a heterogeneous impact on capital markets, nearly all companies faced difficult decisions about how to respond to the unexpected event. The vast majority of countries responded by locking down people and business activity. This resulted in significant changes in the levels of generated incomes. This forced managers and owners to revise their companies' investment plans and plans to distribute the profits generated in the previous year (Kaźmierska *et al.*, 2021).

According to the modified pecking order theory (Myers, 1984), companies, especially in times of crisis, will be reluctant to raise external funds. This may encourage higher levels of retained earnings at the expense of potential dividends. On the other hand, target dividend payout ratios are sticky, which should discourage decisions to reduce or stop dividend payments.

There are two opposing theories in literature regarding the relation of the dividend policy to firm value. Miller and Modigliani (1961) proved that, assuming perfect capital markets and investor rationality, the dividend policy does not affect the firm value. According to Linter (1956, 1964) and Gordon (1963) bird-in-the-hand theory, which assumes a world of uncertainty and imperfect information, shareholders prefer current dividend payments over capital gains in the future. The uncertainty accompanying the COVID-19 pandemic has led to research into the relationship between dividend payments and abnormal returns of the listed companies.

We decided to focus our studies on the cum dividend period because there are fewer studies in literature based on such an event than on dividend announcements. We find two opposite models explaining potential imbalances and abnormal returns on cum-dividend. Frank and Jagannathan (1998) in their microstructure model argue that order imbalances are the consequence of avoiding dividends investors. They claim that investors avoid dividends by selling cum-dividends, mostly because collecting and handling dividends has a significant nuisance cost to investors.

Ainsworth *et al.* (2017) found in the cross-sectional analysis that "the buying pressure is likely to arise from both long-term traders accelerating trades to the cum-dividend period and short-term traders capturing the dividend. It is expected that in the lead up to the ex-dividend day there would be positive order imbalances and positive abnormal returns".

The research on the dividend policy in crisis periods indicates that the 2008-2009 financial crisis negatively affected dividends (Reddemann *et al.*, 2010; Hauser, 2013). A similar reaction took place in the US market during the COVID-19 pandemic, where the proportion of companies cut their dividend rate or omissions dividends in the second quarter of 2020 was three to five times higher than any other quarter since 2015 (Krieger *et al.,* 2020).

The research by Fama and French (2001) indicates that the propensity to pay dividends increases with the company size, increasing profitability and decreasing investment opportunities. Assuming a decline in firm profitability during the pandemic period, this confirms that the number of companies paying dividends during the crisis may decrease.

Stock price behaviour before ex-dividend was conducted by Eades *et al.* (1984). They tested common stocks listed on New York Stock Exchange during the period 1962-1980 and pointed out that there was a run-up in stock prices before the ex-

date. Ainsworth *et al.* (2017) investigated the role of order imbalance in the pricing of stocks around the ex-dividend day with the sample covers dividends paid by companies listed on Australian Stock Exchange between 1995 and 2008. They concluded that price pressure arising from order imbalance is an important determinant of price changes. Order imbalance was positive in the cum-dividend period and there was a simultaneous run-up in prices.

On the Polish market, dividend-related research focused primarily on determinants of dividend policy (Kaźmierska-Jóźwiak, 2015), the propensity of companies to pay dividends (Kaźmierska-Jóżwiak, 2016), reactions to dividend announcements and dividend payments (Mrzygłód and Nowak, 2017; Gnap, 2022), the impact of an unexpected dividend increase on share performance (Słoński and Zawadzki, 2012), and corporate payout decisions modelling (Kowerski and Kaźmierska-Jóżwiak, 2022).

Given the uncertainty accompanying the COVID-19 pandemic and the potentially declining number of dividend-paying companies, we are inclined to propose the following research hypothesis:

H: The buying pressure from traders causes order imbalances and positive abnormal returns in the cum-dividend period in COVID-19 reality.

3. Methodology

We examined the stock market reaction to dividend payment in 2020 (first pandemic year) at Warsaw Stock Exchange, Poland. An event study was used as research methodology, which allowed us to examine the abnormal return of a stock price before ex-dividend during the COVID-19 pandemic in 2020. The research sample consisted of 132 dividends payments. Rates of returns were calculated on the basis of the closing values of each stock. The event day was the last cum-dividend day (session day before ex-dividend) and the event periods were comprised of 16, 11, 6, 4 and 3 days.

So as to measure the market reaction we employed abnormal returns calculated with the use of Market-Adjusted Return Model (Brown and Warner, 1985):

$$AR_{i,t} = R_{i,t} - R_{m,t}$$

where:
$AR_{i,t}$ – the abnormal return on the i stock for day t,
$R_{i,t}$ – the return on the i stock for day t,
$R_{m,t}$ – the return on the market index for day t.

Stooq Poland All Stocks Price Index was taken as the equivalent of the market portfolio. For each stock, 60 trading days were used as an estimation window.

The average abnormal returns were calculated as follows:

$$ARR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{i,t}$$

The cumulative abnormal returns were calculated as follows:

$$CAR_i = \sum_{t=T_1+1}^{T_2} AR_{i,t}$$

The cumulative average abnormal returns were calculated as follows:

$$CAAR = \frac{1}{N}\sum_{i=1}^{N} CAR_i$$

Where:
N – the number of dividend payments.

A modified version of the mean value test by Brown and Warner (1985) was used to verify the average abnormal return:

$$S_{AAR} = \sqrt{\frac{1}{M-1}\sum_{t=T_0}^{T_1}(AAR_t - \overline{AAR})^2}$$

$$\overline{AAR} = \frac{1}{M}\sum_{t=T_0}^{T_1} AAR_t$$

Where:
M – estimation windows (days).

Test statistics for $H_0: E(AAR_t) = 0$ were calculated as follows:

$$t_{AAR_t} = \frac{AAR_t}{S_{AAR}}$$

Test statistics for $H_0: E(CAAR) = 0$ were calculated as follows:

$$t_{CAAR} = \frac{CAAR}{\sqrt{T_2 - T_1} S_{AAR}}$$

Our research was conducted in two stages. In the first stage, all 132 dividend payments identified in 2020 were analysed. This allowed us to verify the adopted research hypothesis. In the second stage, dividend payments were divided into 4 clusters with the use of quartiles (33 events each):

- Q1: set of dividend payments between the upper quartile and the maximum dividend yield
- Q2: set of dividend payments between the median and the upper quartile
- Q3: set of dividend payments between the lower quartile and the median
- Q4: set of dividend payments between the minimum dividend yield and the first quartile.

The analysis of the results by quartile made it possible to assess whether the dividend yield has an impact on the abnormal return in COVID-19 reality.

4. Results

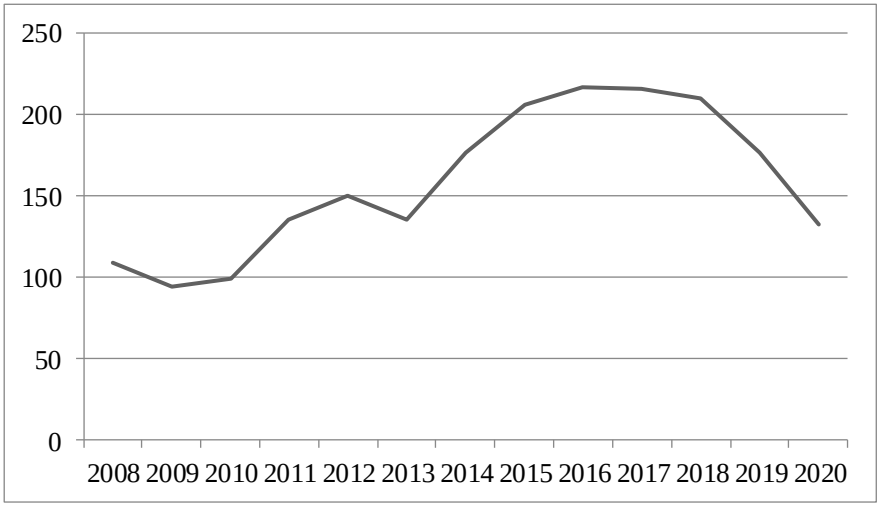
We first examined the development of the number of cash dividend payments over the last 13 years. From the results shown in Figure 1, a clear decrease in the number of cash dividend payments can be observed over the years 2019 and 2020. The number of dividend payments in 2020 is equal to the number of payments made in 2013. A dynamic decrease can be seen in 2020, which was the year when the COVID-19 pandemic started.

The reduction in dividend payments may have been the result of concerns about an uncertain future. In such a case, managers seek to accumulate capital to be prepared for negative economic scenarios.

Due to the study results for the whole research sample (Table 1), dividend payment in the first year of the COVID-19 pandemic created positive and statistically significant cumulative average abnormal returns for all adopted event windows.

CAARs grew from 1.45% in the shortest, 3- day event window to 4.01% in the longest 16- day event window. As shown in Figure 2, the CAAR grew steadily as the event window became longer These results show that investors, in the period of uncertainty caused by the COVID-19 pandemic, are interested in buying stocks cum-dividend.

Figure 1. *Number of cash dividends payment at WSE in 2008-2020.*



Source: *Authors' own elaboration based on WSE (2022).*

Table 1. *Cumulative average abnormal returns (CAARs) for dividend payments in 2020*

Period	CAAR	t-ratio
ED – 15, ED	4.01	2.7419***
ED – 10, ED	3.40	2.8246***
ED – 5, ED	1.94	2.2341**
ED – 3, ED	1.27	1.7879*
ED – 2, ED	1.45	2.3376**
N=132		

Note: **,**,*** - significant at 10%, 5% and 1% respectively.*
Source: *Authors' own elaboration.*

In the second stage of the study, we analysed the cumulative average abnormal returns for each cluster separately. The results for the group of companies with the highest dividend yields (Q1) are shown in Table 2.

Table 2. *Cumulative average abnormal returns (CAARs) for dividend payments in 2020 – Q1 cluster*

Period	CAAR	t-ratio
ED – 15, ED	6.26	1.6582
ED – 10, ED	3.79	1.2038
ED – 5, ED	1.39	0.6005
ED – 3, ED	0.89	0.4709
ED – 2, ED	0.69	0.4203
N=33		

Note*: *,**,*** - significant at 10%, 5% and 1% respectively.*
Source: *Authors' own elaboration.*

The CAARs for the Q1 cluster were found to be higher than for the research sample as a whole in the longer, 11 and 16- day event windows. For the 3, 4 and 6- day event windows, the results are lower than for the total sample of companies. In addition, the values proved to be statistically insignificant. Therefore, it was impossible to prove that higher dividend yields lead to higher CAARs. This is due to the relatively high variability of the results obtained in this group of companies.

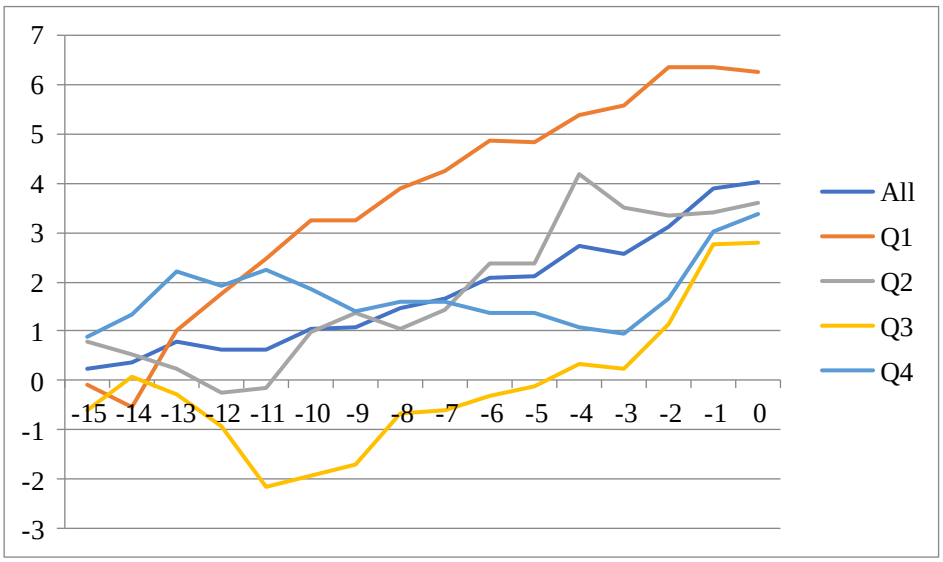
Table 3. *Cumulative average abnormal returns (CAARs) for dividend payments in 2020 – Q2 cluster*

Period	CAAR	t-ratio
ED – 15, ED	3.61	1.9671*
ED – 10, ED	3.74	2.4246**
ED – 5, ED	1.24	1.0508
ED – 3, ED	-0.58	-0.5528
ED – 2, ED	0.11	0.1234
N=33		

Note: **,**,*** - significant at 10%, 5% and 1% respectively.*
Source: *Authors' own elaboration.*

The CAARs for the Q2 cluster (Table 3) are lower in all analysed event windows than for the entire study sample. Furthermore, the results are statistically significant only for the longest, 11 and 16- day windows. It is also worth mentioning that negative abnormal returns were generated on the individual days preceding the ex-dividend (Figure 2).

Figure 2. *Cumulative average abnormal returns (CAARs) for dividend payments in 2020*



Source: *Authors' own elaboration.*

For the companies classified in the Q3 (Table 4) cluster, relatively high CAARs were observed, which for the 3, 4, 6 and 11- day window proved to be statistically significant.

Table 4. *Cumulative average abnormal returns (CAARs) for dividend payments in 2020 – Q3 cluster*

Period	CAAR	t-ratio
ED – 15, ED	2.8	1.2621
ED – 10, ED	4.94	2.6252**
ED – 5, ED	3.1	2.2447**
ED – 3, ED	2.47	2.2554**
ED – 2, ED	2.57	2.7198**
N=33		

Note: **,**,*** - significant at 10%, 5% and 1% respectively.*
Source: *Authors' own elaboration.*

The CAARs for the companies in cluster Q4, i.e., the companies with the lowest dividend yields, are shown in Table 5. The CAARs for which 3, 4 and 6- day event windows were found to be higher than for the sample as a whole. A statistically significant result was obtained for the shortest, 3-day event window.

Table 5. *Cumulative average abnormal returns (CAARs) for dividend payments in 2020 – Q4 cluster*

Period	CAAR	t-ratio
ED – 15, ED	3.38	1.0861
ED – 10, ED	1.13	0.4539
ED – 5, ED	2.03	1.1279
ED – 3, ED	2.31	1.5668
ED – 2, ED	2.43	1.9305*
N=33		

Note: **,**,*** - significant at 10%, 5% and 1% respectively.*
Source: *Authors' own elaboration.*

5. Conclusions

In our study, we analysed investors' reactions to planned dividends and examined the short-term behaviour of stock prices before ex-dividend. Our results showed that the COVID-19 pandemic negatively affected the number of cash dividend payments at Warsaw Stock Exchange. These results are in line with the results gained by Reddemann *et al.* (2010), Hauser (2013), Krieger *et al.* (2020). A reduced number of companies paying cash dividends can cause order imbalances before the ex-dividend day.

Assuming the existence of the efficient markets hypothesis, dividends paid should not generate any abnormal rates of return. Our findings indicate that in COVID-19 reality buying pressure caused positive abnormal returns in the cum-dividend period

in short term 16, 11, 6, 4 and 3-day event windows. These results support findings presented by Eades *et al.* (1984) and Ainswortj *et al.* (2017) and suggest that market anomalies can occur during crises such as the COVID-19 pandemic.

The study did not prove that the dividend yield has an impact on the generation of statistically significant abnormal returns. Although the CAARs for the companies paying the highest dividend yields were the highest (Figure 2), they proved to be statistically insignificant. The authors believe this is due to the high volatility in this group. Further in-depth analysis is therefore advisable.

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