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The Effect of Dividend Distribution Announcements on Stock Prices: Evidence from Borsa Istanbul[1]

Kâr Payı Dağıtım Duyurularının Hisse Fiyatlarına Etkisi: Borsa İstanbul Örneği

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Abstract: This paper investigates firstly whether cash dividend distribution announcements in Turkish stock market have any effect on the stock returns or not. Data set is determined as companies listed in the Borsa İstanbul 100 Index between 2010 and 2019. To reveal the announcement effect, event study analysis is applied. Event study analysis shows that increasing dividend announcements have a significant positive impact on abnormal returns while decreasing and constant dividend announcements have a significant negative impact. Secondly, if the announcements of cash dividend distributions result in abnormal returns on the stock prices, the variables driving the abnormal returns are examined using cross-sectional regression analysis. Percentage change in dividend payment, dividend yield at the time of dividend change announcement, market value to book value ratio, company size, and return on asset ratio variables are tested whether they have explanatory power on abnormal returns or not. The results indicate that price to book ratio and return on asset ratio variables affect abnormal returns for cash dividend decrease announcements while dividend change, dividend yield, size and return on asset variables affect abnormal returns for cash dividend increase announcements. In all cash dividend announcements where cash dividend decrease, increase and no change announcements are considered, dividend yield and return on asset variables have an effect on abnormal returns.

Keywords: Borsa Istanbul, Dividend Distribution, Announcement Effect, Efficient Markets Hypothesis, Abnormal Returns.

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Öz: Bu çalışmada ilk olarak Türkiye hisse senedi piyasasında yapılan nakit kâr payı dağıtım duyurularının hisse senedi getirileri üzerinde etkisinin olup olmadığı araştırılmaktadır. Veri seti, 2010-2019 yılları arasında Borsa İstanbul 100 Endeksi'nde yer alan şirketler olarak belirlenmiştir. Duyuru etkisini ortaya çıkarmak için olay çalışması analizi uygulanmıştır. Olay çalışması analizi, artan nakit kâr payı duyurularının normalüstü getiriler üzerinde anlamlı ve pozitif etkiye sahip olduğunu, azalan ve değişmeyen kâr payı duyurularının ise anlamlı ve negatif etkiye sahip olduğunu göstermektedir. İkinci olarak, nakit kâr payı dağıtım duyuruları hisse senedi fiyatlarında normalüstü getirilere neden oluyor ise, normalüstü getirileri etkileyen faktörler yatay kesit regresyon analizi kullanılarak araştırılmıştır. Kâr payı ödemesindeki yüzde değişim, kâr payı duyurusu anındaki kâr payı verimi, piyasa değeri defter değeri oranı, şirket büyüklüğü ve aktif kârlılık oranı değişkenlerinin normalüstü getiriler üzerinde açıklayıcı güçleri olup olmadığı test edilmiştir. Sonuçlar, piyasa değeri/defter oranı ve aktif kârlılık oranı değişkenlerinin azalan nakit kâr payı duyuruları için normalüstü getirileri etkilediğini, ayrıca kâr payı ödemesindeki yüzde değişim, kâr payı verimi, şirket büyüklüğü ve aktif kârlılık oranı değişkenlerinin de nakit kâr payı artış duyuruları için normalüstü getirileri etkilediğini ortaya koymaktadır. Azalan, artan ve değişmeyen nakit kâr payı duyurularının dikkate alındığı tüm nakit kâr payı duyurularında da kâr payı verimi ve aktif kârlılık oranı değişkenlerinin normalüstü getirileri etkilediği tespit edilmiştir.

Anahtar Kelimeler: Borsa İstanbul, Kâr Payı Dağıtımı, Duyuru Etkisi, Etkin Piyasalar Hipotezi, Normalüstü Getiriler

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1. Introduction

One of the topics that receives the greatest attention in the literature on finance is the dividend distribution policy. The connection between a company's dividend distribution level and the market price of the stock stands out among the various study areas linked to dividend distribution policy. According to Gordon's growth model, which associates dividend distribution with the market values of stocks, it is possible to say that an increase in the amount of dividend distributed should be accompanied by an increase in the market value of the stocks, and therefore the value of the company increases (Gordon, 1959). Miller and Modigliani's dividend irrelevance argument, however, makes clear that dividend decisions made in the past, present, or future have no bearing on a company's market value (Miller & Modigliani, 1961). Instead, according to Miller and Modigliani, the value of the company is determined by its expected future cash flows and the associated risk. Empirical studies conducted after Miller and Modigliani (1961) have reached different conclusions about whether dividend distribution decisions affect the market value of companies. Some theories to explain the connection between dividend policy and stock performance have emerged during the next years. Tax effect, asymmetric information and signaling theory, and agency cost theories are among them. The management utilize the dividend distribution choice to provide asymmetric information about the future profitability of the companies since they are better informed than the investors about the company's present and prospective financial status. (Daniels, Shin, & Lee, 1997, p. 78). Thus, disclosures about a change in the amount of dividends to be distributed give a useful information to the market that reflects management's expectations for future cash flows. As a result, dividend increases and decreases inform the market in a favorable or negative way about the potential future earnings of companies that give dividends. Within the scope of this statement, an increase or a decrease in stock prices is accompanied by an explanation that there will be an increase or a decrease in the amount of dividend to be distributed. This argument was developed by of Lintner (1956) and later Fama et al. (1969), which is accepted as the basis of the dividend signal hypothesis.

All revealed and easily accessible information is fairly and impartially represented by current prices in an efficient market. The projected return on a security in a period is independent of all information known in the prior period since the price of the security already represents the effect of this information. It is impossible to regularly provide returns in such a market that are higher than the equilibrium risk-adjusted return. Even after the dividend announcement, abnormal returns are still possible in an inefficient market. The anomalous activity in stock prices prior to an announcement, however, may indicate that the market is not efficient, but this does not imply that it will be a constant indicator. The market is considered to be inefficient if, for whatever reason, certain investors have access to crucial information that the rest of the market does not, or if the investors have the capacity to predict this knowledge.

This study first seeks to determine if announcements of cash dividend distributions have any impact on stock returns, and if so, what factors, if any, contribute to that impact. In order to accurately measure this effect, companies in the BIST100 index, which is composed of companies with the highest trading volume among companies traded in Borsa Istanbul, were selected. In addition to examining how each of these companies' cash dividend distribution announcements affected stock returns, each cash dividend announcement was divided into three categories: decreasing, increasing, and constant relative to the prior cash dividend distribution amount. Subsequently, normal returns were calculated with the help of the risk-adjusted market model in the study. When the relevant literature is examined, in other studies on the Turkish stock market, percentage change in dividends and dividend yield, which are among the factors affecting stock returns, have been investigated, but other factors that may affect abnormal returns have not been studied. Moreover, to contribute to the literature, it has been tried to determine whether the market value to book value ratio and return on assets ratio affect abnormal returns.

The following parts make up the remaining sections of this study: Section two gives a brief review of the literature, section three describes the data and methods used, and section four discusses the empirical findings. Lastly in section five, concluding remarks are presented.

2. Literature Review

From the beginning of the 1950s to the present, the link between dividend policy and market value of the company as well as how the market responds to dividend announcements have been studied. Walter (1956, p. 31) advocates the view that dividend distribution will affect the stock price. Walter argues that when the amount of dividend expected to be paid in future periods is reduced by the appropriate capitalization rate, it will give the present value of the stock. Furthermore, according to Gordon (1959), the market value of the company can be calculated as present value of future dividend payments. In contrast, according to the Modigliani-Miller theorem, the stock price is influenced by the company's investment strategies and profit potential rather than by dividend payments (Miller & Modigliani, 1961). Besides the valuation effect of dividend distribution, it is also considered as crucial information on a company's prospects. Lintner (1956) and Miller and Modigliani (1961) first proposed the information content of dividends, which was later named as the "signaling theory" by Battacharya (1979), Millier and Rock (1985), and John and Williams (1985). According to Miller and Modigliani (1961), under perfect market circumstances, dividends have no impact on a company's value or capital structure. Instead, they suggest that dividends provide information about the company's potential future earnings and cash flows. The declaration of a dividend is one means for management to reveal private information to shareholders through the market since management has better private knowledge about the company's anticipated future revenues and cash flows. The management signals an increase in future cash flows for the company by announcing an increase in the present payout. Therefore, dividend adjustments provide significant and useful information about long-term changes in the company's profitability, which will be reflected in stock prices when the information is made public (Günalp, Kadıoğlu, & Kılıç, 2010, p. 3).

The findings of the subsequent research suggest that fluctuations in stock price should coincide with dividend shifts in the same direction. Pettit (1972) found that announcements of dividend increases or cuts in cash dividends are followed by major price increases or price drops, depending on how well or poorly earnings performed. Similar findings were made by Aharony and Swary (1988), who revealed that for the 20 days before the date of the announcement, shareholders of companies increasing their cash dividends received positive abnormal returns, however, owners of companies who reduced cash dividends had negative abnormal returns.

While there are various studies on whether abnormal returns are present or not about dividend distribution announcements, factors affecting the abnormal returns resulting from dividend distribution announcements are infrequently investigated. First of all, Wansley et al., (1991) examined the dividend change announcements in the US stock market between 1973 and 1986. The event study approach was used to determine the abnormal returns in the event window, and the cross-sectional regression analysis was used to look into the factors influencing the abnormal returns. The study's findings indicated that the dividend yield affected the abnormal returns in a statistically significant and positive way.

In another study on the US stock market, Lee and Yan (2003) examined the factors affecting the abnormal returns resulting from dividend announcements between 1975 and 1996. The event window (-1,1) was utilized to assess abnormal returns using cross-sectional regression, and it was investigated if the percentage dividend change, quarterly dividend yield, change in risk, and change in return on capital had an impact on abnormal returns. The study's findings revealed that the abnormal returns were influenced by the percentage change in dividend.

Chen et al., (2007) in their study on Chinese stock market investigated whether dividend change announcements between 2000 and 2004 influenced stock prices, and which factors affected the abnormal returns followed by announcements of dividend changes. Cross-sectional regression analysis was used in the study to explain the abnormal returns brought on by dividend announcements. Independent variables in the model were determined as dividend yield, percentage change in cash dividend payment, dividend payout ratio, book value of total assets, market value to book value ratio, debt ratio, asset turnover rate,

return on assets and non-floating shares. Six different cross-sectional regression analyses were performed, and the results showed that the return on assets and dividend yield had a statistically significant positive impact on abnormal returns, while market value to book value and non-floating shares had a statistically significant negative impact.

The effect of cash dividend announcements on stock prices of firms listed on the Athens stock market between 2000 and 2004 was studied by Dasilas (2009). The (-220,-21) day range served as the forecast window in the analysis that employed the event study approach. In the study, the abnormal return on the day of the cash dividend announcement and projected cumulative abnormal returns in the event window (-1,1) were used as dependent variables for two different cross-sectional regression analyses. Risk (beta), dividend yield, company size, average transaction volume, percentage change in dividend payment, pre-announcement transaction volume, and dummy variable were the independent variables in the study. Findings of the study revealed that abnormal returns were positively and significantly influenced by dividend yield and percentage change in dividend payout, whereas abnormal returns were negatively and significantly impacted by average transaction volume.

Dasilas and Leventis (2011) examined the impact of a total of 231 dividend distribution announcements on stock prices and stock trading volumes in the Athens Stock Exchange. With the aid of the least squares approach and the market model, predicted returns were determined in the research that employed the event study method utilizing five distinct event windows between (-5, 5) days as the event window and (-220, -21) days as the forecast window. In order to identify the variables influencing the dividend announcements, cross-sectional regression analysis was performed individually to all dividend announcements, announcements of dividend increases or decreases and announcements of constant dividends. The dependent variable in the analysis was the cumulative abnormal returns in the event window (-1,1); the independent variables were systematic risk (BETA), dividend yield, size, average trading volume, percentage change in dividend, abnormal trading volume prior to the announcement, and dividend dummy variable. According to the study's findings, positive and significant price volatility was produced by dividend increases, and large negative price volatility was produced by dividend decreases, supporting the dividend signaling theory. It was also determined that, despite the fact that the trading volume responded favorably to announcements in which the dividend amount changed, the dividend yield and percentage of change in dividend had statistically significant explanatory power.

In situations where earnings and dividend announcements were made concurrently in both stable and unstable market conditions, Bozos et al. (2011) tested the signaling hypothesis. The study examined 991 dividend announcements made by companies listed in the FTSE350 index between 2006 and 2010 and utilized cross-sectional regression analysis to detect the factors influencing the abnormal returns. It was shown that dividend announcements provided less information than profit announcements during periods of growth and stability based on the statistically significant positive abnormal returns around dividend announcements.

Kurniasih et al. (2011) aimed to reveal whether the dividend distribution announcements of the companies traded in the Indonesian stock market between 2004-2009 influenced the stock prices, as well as the factors affecting the abnormal returns resulting from the dividend change announcements. Between 2003 and 2009, 54 companies that regularly distributed cash dividends were included in the study. As the forecast window (-160,-11) days interval was used, while (-4,4) days interval was preferred as the event window. Panel regression analysis was used to determine whether the abnormal returns were affected by the dividend earnings, the change in the amount of dividends to be distributed, profitability (return on assets), change in profitability, company size and risk (beta) variables. It was found that the change in the amount of dividend to be distributed, profitability, change in profitability and risk had positively affected the abnormal returns.

Hatem (2015) studied the factors affecting the abnormal returns on the French stock market in 2007. Abnormal returns were calculated using event study method. The results of cross-sectional regression

analysis indicated that abnormal returns were correlated with the company size, profitability and managers' ownership variables in the opposite direction and with the debt ratio in the parallel direction, while no significant relationship was found between research and development expenditures and abnormal returns.

Studies on the Turkish stock market, which test the variables that affect abnormal returns, are also very limited. Günalp et al. (2010), investigated companies traded in Borsa Istanbul, analyzed the significance of announcements about cash dividend distribution on stock returns and the variables influencing the abnormal returns caused by this impact. The data set containing 429 events belonging to 80 companies between 2003 and 2009 was used. Independent variables determined as earnings per share after tax, dummy variable for companies included in the National 30 Index, dummy variable indicating that no other announcement was made with the dividend distribution announcement, the dividend calculated from the previous dividend. A dummy variable was also included in the model as a dependent variable for the case that the dividend was less than the previous dividend. A statistically significant negative relationship was found between the cumulative abnormal returns and the post-tax earnings per share. Considering that taxes on capital gains are lower than those on dividend income in Turkey, it was stated that the regression results were compatible with the tax effect hypothesis.

Kadioglu et al. (2015) used a panel regression model to analyze the abnormal returns around 902 cash dividend announcements made by 118 companies listed in Borsa Istanbul between 2003 and 2015. The dividend per share was utilized as independent variable in the regression model, and the cumulative abnormal returns in the event windows were used as dependent variable. A statistically significant inverse association between profits per share and abnormal returns was found. Although it was noted that these findings supported the tax-customer effect hypothesis, it was determined that there had been no information leak prior to the release of cash dividend announcements.

In several studies, distributed amount of dividend used as an independent variable to determine its effect on abnormal returns after the dividend announcements. Woolridge (1982), Divecha and Morse (1983) Aharony et al. (1988), Eddy and Seifert (1992) and Nissim and Ziv (2001) reported that announcements of increase in dividend distribution led to an increase in abnormal returns. On the other hand, Dasilas and Leventis (2011) found an inverse relationship between dividend reduction announcements and abnormal returns. In addition, there were studies showing that the announcements of changes in the amount of dividends do not affect the abnormal returns (Chen, Nieh, Chen, & Tang, 2007).

In addition to the change in the amount of dividend, dividend yield was one of the variables tested as a factor affecting abnormal returns. Wansley et al. (1991), Lee and Yan (2003), Chen et al. (2007), Dasilas (2009), Kurniashish et al. (2011) and Dasilas and Leventis (2011) found statistically significant relationship between dividend yield and abnormal returns. In contrast, Günalp et al. (2010) reported a statistically significant negative relationship between dividend yield and abnormal returns.

A few research have looked at how the market value to book value ratio affects abnormal returns. Chen et al. (2007) concluded that the market value to book value ratio had a positive and statistically significant impact on the abnormal returns.

Whether the volatility of abnormal returns is influenced by the size of the firms is one of the variables tested in studies on the subject. Bajaj and Vijh (1990) found in their study that changes in the amount of dividends had a greater effect on small companies than on large companies. Mozes and Rapaccioli (1995) also stated that the information conveyed to the investor through dividend announcements could be transferred in other ways as the size of the company increases. Also, Dasilas (2009) concluded that company size affected abnormal returns negatively. According to these studies, it is expected that there will be a negative relationship between company size and abnormal returns. However, Chen et al. (2007) and Hatem (2015) concluded that company size did not affect abnormal returns.

In addition to this, Hatem (2015), Chen et al. (2007) and Kurniasish (2011) investigated whether return on asset ratio affects abnormal returns or not. They stated that the return on assets ratio positively affects abnormal returns.

3. Data and Methodology

3.1. Data

In this study, cash dividend announcements gathered from the Public Disclosure Platform, and the adjusted closing prices of companies and BIST100 index values were obtained from the Finnet 2000 data bank provided by Finnet. 453 dividend distribution announcements from 73 companies that were listed in the BIST100 index were used from the period of 2010 - 2019.

It is necessary to consider the dividend distribution announcement separately, depending on whether the dividend distribution amount increases or decreases compared to the previous dividend distribution amount. For this reason, companies that distributed cash dividends only once in the period under consideration were excluded from the data set. In this study, 169 of the 453 cash dividend distribution announcements are cash dividend decrease announcements and 239 are cash dividend increase announcements. In addition, there are 45 announcements where cash dividend declared to maintain the last level, namely constant. The independent variables considered are the percentage change in dividend payout (DC), dividend yield (DY), market value to book value ratio at the time of dividend change announcement (PB), natural logarithm of the company's market value 20 days before the announcement (SIZE) and return on assets ratio (ROA).

3.2. Methodology

The method of the study consists of two stages. In the first stage, it is tested whether the abnormal returns in the event windows are statistically significant. The relationship between abnormal returns and explanatory variables is determined in the second stage by the application of cross-sectional regression analysis.

3.2.1. Event Study Methodology

In this study, event study methodology is applied according to the method stated in Bown and Warner (1985) and MacKinlay (1997). The average and variance of the price data of stocks or indexes depend on the prices of the previous period. Therefore, performing the event study with price data may not yield accurate results. Taking the percentage or logarithmic change of prices often negates this effect. For this reason, return data is generally used instead of price data in financial analysis. The return on stock (or index) i (i=1,…,N) at time t is as in Equation (1):

$$R_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \quad (1)$$

In Equation (1), $R_{i,t}$ represents the return on day t of stock i, and $P_{i,t}$ represents the price of stock i on day t.

In order to calculate normal returns, the Market and Risk Adjusted Return Model stated in Brown and Warner's (1985) is used. This model is shown in Equation (2).

$$R^*_{i,t} = \propto_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (2)$$

In Equation (2), $R^*_{i,t}$ is the normal return of stock i at time t, α_i is the constant coefficient, $R_{m,t}$ is the market index's return on day t, β_i is the relationship of stock return with the market index return which is beta coefficient, and $\varepsilon_{i,t}$ is the error term, which is anticipated to be 0. Moreover, it is assumed that the expected value of the $R^*_{i,t}$ is also 0.

The difference between the realized return and the expected return, which is how the abnormal return is described, is represented as follows:

$$AR_{i,t} = R_{i,t} - R^*_{i,t} \quad (3)$$

In Equation (3), $AR_{i,t}$ expresses the abnormal return rate of i stock on day t, $R_{i,t}$ expresses the realized return rate of i stock on day t, and $R^*_{i,t}$ expresses the normal return of i stock on day t.

The mean abnormal return is expressed as:

$$AAR_{i,t} = \frac{1}{N}\sum AR_{i,t} \quad (4)$$

In Equation (4), N represents the number of cash dividend announcements and t represents the event window.

The cumulative average abnormal return in the event windows is obtained by adding the daily average abnormal returns. Using Equation (5), cumulative average abnormal returns are determined.

$$CAR_{i,t} = \frac{1}{N}\sum AAR_{i,t} \quad (5)$$

In Equation (5), $CAR_{i,t}$ expresses the cumulative average abnormal return in the event window t, while $AAR_{i,t}$ expresses the average abnormal return on event window t of the stock i.

3.2.2. *Cross-Sectional Regression Analysis*

Cross-sectional regression analysis is conducted using the ordinary least squares to investigate the factors explaining the market response to the announcements of cash dividend distribution. The model established in the analysis in which all announcements, increasing cash dividend announcements and decreasing cash dividend announcements are investigated separately as shown in Equation (6):

$$CAR_{i,t} = \beta_0 + \beta_1 DC_{i,t} + \beta_2 DY_{i,t} + \beta_3 PB_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 ROA_{i,t} + \varepsilon_{i,t} \quad (6)$$

In the model in Equation (6), CAR denotes the cumulative abnormal return of share i in event window t, DC is percentage change in dividend payout, DY is dividend yield at the time of dividend change announcement, PB means market value to book value ratio, SIZE is company size, and ROA shows the return on asset ratio.

Since there is no time dimension in the cross-sectional regression analysis, the error terms do not have a serial correlation. For this reason, autocorrelation tests aren't performed in the analysis. In order to eliminate the problem in models where error terms have varying variance, the Newey-West (1987) variance estimator is used.

4. Empirical Findings

The empirical analysis part of this study consists of two stages: investigating the existence of abnormal returns and determining the factors affecting abnormal returns. According to the efficient markets hypothesis, a new information does not provide an opportunity to make abnormal gains in stock prices because it is accessed by all stakeholders in the market at the same time. Therefore, in the event window determined according to the efficient markets hypothesis, the cumulative abnormal returns should not be different from zero. On the other hand, the information content hypothesis of the dividend suggests that the increase in the amount of the dividend indicates the future earnings of the company, hence the companies that will increase the amount of the dividend can be expected to generate abnormal returns. Also, according to the tax effect theory, in markets where dividend earnings are taxed more than capital gains, investors prefer companies that pay less dividends. Consequently, it is expected that the demand for the stocks of companies with a decrease in the amount of dividends will increase, hence, positive abnormal returns will emerge.

In the first stage, the cumulative abnormal returns (CAR) are tested by applying event study methodology to see if they deviate from zero or not. According to the efficient markets hypothesis, abnormal returns cannot be obtained with information disclosed to the public in semi-strong form. Therefore, the cumulative

abnormal returns are not expected to be different from zero. The results of the event study analysis are summarized at Table 1.

Table 1 Results of Event Study Analysis

		A. All Announcements N=453		B. Decreasing Dividends N=169		C. Increasing Dividends N=239		D. Constant Dividends N=45	
	Days	%CAR	t-Value	%CAR	t-Value	%CAR	t-Value	%CAR	t-Value
Pre- Event Windows	CAR(-20,0)	-0,118	-1,27	**-0,257***	-1,76	**0,366*****	3,14	**-2,171*****	-4,92
	CAR(-15,-1)	0,078	0,84	**0,389****	2,67	**0,299****	2,57	**-2,263*****	-5,13
	CAR(-10,0)	0,022	0,24	-0,025	-0,17	**0,33*****	2,83	**-1,433*****	-3,25
	CAR(-5,-1)	0,097	1,05	**0,292****	2	0,086	0,74	-0,573	-1,3
	CAR(-5,0)	**0,193****	2,07	0,096	0,66	**0,394*****	3,38	-0,51	-1,16
	CAR(-3,0)	0,081	0,87	-0,108	-0,74	**0,272****	2,33	-0,222	-0,5
	CAR(-2,-1)	0,098	1,05	0,014	0,1	0,157	1,35	0,096	0,22
	CAR(-1,0)	**0,185****	1,99	-0,161	-1,1	**0,444*****	3,81	0,112	0,25
Post Event Windows	CAR(0,1)	0,088	0,95	**-0,351****	-2,41	**0,339*****	2,9	0,406	0,92
	CAR(1,2)	-0,133	-1,43	**-0,293****	-2,01	-0,057	-0,49	0,068	0,15
	CAR(0,3)	-0,033	-0,35	**-0,68*****	-4,66	**0,352*****	3,02	0,352	0,8
	CAR(0,5)	0,031	0,33	**-0,574*****	-3,94	**0,432*****	3,71	0,168	0,38
	CAR(1,5)	-0,065	-0,7	**-0,378****	-2,59	0,124	1,06	0,105	0,24
	CAR(0,10)	-0,047	-0,5	**-0,538*****	-3,69	**0,449*****	3,85	**-0,835***	-1,89

Notes: *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level.

In Table 1, CAR represents the cumulative abnormal returns in the specified event window, and the t-value represents the value calculated by dividing the cumulative abnormal returns in Equation (1) by the standard error term in the regression model is used to estimate the abnormal returns.

In section A of Table 1 where all announcements are given, statistically significant positive abnormal returns are present in the pre-event windows. It can be concluded that stock prices react positively to cash dividend announcements. This situation reveals that there may be a problem of information leakage related to dividend distribution. Statistically significant abnormal returns are not detected in the post-event windows.

In section B of Table 1, cumulative abnormal returns resulting from the announcements of the decreasing cash dividends are shown. Section B of Table 1 clearly indicates that cumulative abnormal returns are statistically significant in three out of eight pre-event windows and in all six post event windows. The results reveal that the dividend decrease announcements will lead to statistically significant negative abnormal returns in the event window as Chen et al. (2007), who states that dividend decrease announcements cause statistically significant negative returns in the event windows covering the announcement. Altıok and Akben (2010) is consistent with this finding as they state cash dividend decrease announcements cause statistically significant negative abnormal returns in the post-event windows.

Announcements of increasing cash dividends in section C of Table 1 indicates that announcements of increasing cash dividends have a statistically significant positive abnormal returns on many of the pre and post event windows. Chen et al. (2007) show that cash dividend increase announcements in the Chinese stock market do not lead to abnormal returns, while Hussin et al. (2010) indicate dividend increase announcements in the Malaysian stock market lead statistically significant positive abnormal returns.

In section D of Table 1 where the announcements of the cash dividend amount do not change, statistically significant negative abnormal returns are detected in the event windows that cover more than 10 days. This can be concluded as constant dividend announcement are perceived as bad news in Turkish stock market.

In the second stage of the empirical analysis, to determine the variables that may cause statistically significant cumulative abnormal returns (CAR), the cross-sectional regression model in Equation (6) is estimated. These CARs are two event windows form section A and three event windows from section B

and C. Section D is excluded due to inadequate sample size. In order to test whether the error terms of the cross-sectional regression analysis have varying variance, the Breusch-Godfrey test is performed. Since the variable variance are detected in the equations created, the Newey-West (1987) variance estimator is used to eliminate the varying variance problem. Cross-sectional regression results are presented in Table 2 .

Table 2 Results of Cross-Sectional Regression Analysis

		C	DC	DY	PB	SIZE	ROA	N	R^2 (%)	F
A. All cash dividend announcements	*CAR(-5,0)*	-0,0042	-0,0004	0,2097***	-0,0006	-0,0005	0,0461	453	3,41	3,15***
		(-0,38)	*(-0,29)*	*(2,96)*	*(-0,45)*	*(-0,37)*	*(1,46)*			
	CAR(-1,0)	0,0008	0,0004	0,0805*	0	-0,0006	0,0366*	453	2,48	2,28**
		(0,12)	*(0,42)*	*(1,73)*	*(-0,03))*	*(-0,67)*	*(1,77)*			
B. Cash Dividend Decrease Announcements	*CAR(-20,0)*	-0,013	0,029	-0,08	-0,0092**	0,0022	0,358***	169	7,12	2,5**
		(-0,28)	*(0,99)*	*(-0,26)*	*(-2,46)*	*(0,46)*	*(2,77)*			
	CAR(0,1)	0,0113	0,0027	0,0274	-0,0008	-0,0017	0,0021	169	1,18	0,39
		(0,69)	*(0,26)*	*(0,24)*	*(-0,56)*	*(-1,02)*	*(0,05)*			
	CAR(0,10)	-0,0174	0,0098	0,1928	-0,0025	0,0017	-0,0005	169	1,75	0,58
		(-0,55)	*(0,49)*	*(0,9)*	*(-0,97)*	*(0,53)*	*(-0,01)*			
C. Cash Dividend Increase Announcements	*CAR(-20,0)*	0,0676***	-0,0076***	0,4745***	-0,0008	-0,1449**	-0,008***	239	8,3	4,22***
		(2,61)	*(-2,98)*	*(3,22)*	*(-0,22)*	*(-2,13)*	*(-2,75)*			
	CAR(0,1)	-0,0129	0,0003	0,3379***	-0,0002	0,0223	0	239	10,65	5,55***
		(-0,96)	*(0,25)*	*(4,44)*	*(-0,1)*	*(0,64)*	*(0,02)*			
	CAR(0,10)	-0,0266	0,0004	0,3326**	-0,0023	0,0688	0,0018	239	3,91	1,9*
		(-1,06)	*(0,18)*	*(2,32)*	*(-0,66)*	*(1,04)*	*(0,62)*			

Notes: CAR denotes the cumulative abnormal return in the relevant event window, C is the constant term, DC is the percentage change in the dividend payment, DY is the dividend yield at the time of the dividend change announcement, the PB is market value / book value ratio, SIZE is company size, and ROA is return on assets ratio. In addition, N denotes sample size, and the F indicates the F statistic, which shows the significance of the model. The first expression in the column corresponding to each CAR value indicates the regression coefficient (β), and the values in parentheses indicate the t statistic of the regression coefficient.
***Significant at 1% level, ** Significant at 5% level, * Significant at 10% level.

Considering the results in section A of Table 2 where all cash dividend announcements are analyzed, as CAR(-5,0) is dependent variable, it can be seen that the DY is significant at the 5% level and the coefficient of the DY is β_1=0.2097. In this case, it can be concluded that dividend DY positively affects CAR(-5,0). However, DC, PB, SIZE and ROA have no significant effect on CAR(-5,0). When the results obtained for the CAR(-1,0) are examined, it can be seen that DY and ROA variables are statistically significant at the 10% level while DC, PB and SIZE variables have no significant effect on it. Moreover, both models are statistically significant at 1% and 5% levels, respectively. The results shows that DY is the main determinant of abnormal returns resulting from dividend announcements. Wansley et al. (1991), Lee and Yan (2003), Dasilas and Leventis (2011), Günalp et al. (2010) and Kadıoğlu et al. (2015) have similar results.

In section B of Table 2, cross-sectional regression analysis results are presented for the sample of decreasing cash dividend announcements. In the model for CAR (20,0), it can be seen that the PB is statistically significant at the 5% level, and the ROA is statistically significant at the 1% level. The coefficient of the PB is β_3=-0.0092, therefore, it can be interpreted that the cumulative abnormal return will decrease as the market value to book value ratio increases. The coefficient of the ROA is β_5=0.3580, and according to this result, it can be deduced that as the return on assets ratio increases, the cumulative abnormal return will also increase. Also, model for CAR(-20,0) is significant at the 5% level. Thus, for the model of CAR(-20,0), DC, DY, SIZE variables have no significant effect on CARs, while PB and SIZE have. The results of the analysis show that the market value to book value ratio negatively affects the abnormal returns created by the decreasing cash dividend announcements, although Chen et al. (2007) argue that market value to book value ratio positively affects abnormal returns. Also, the results reveal that the return on assets ratio has a statistically significant and positive effect on abnormal returns, as in Hatem (2015), Chen et al. (2007) and

Kurniashish (2011). In the second and third models established for CARs (0,1) and (0,10) event windows in section B of Table 2, the coefficients of variables are not statistically significant, and it is concluded that the models are not significant because the F values are lower than the F critical value.

In section C of Table 2, cross-sectional regression for CAR(-20,0) indicates that DC, DY, ROA are statistically significant at the 1% level, while SIZE is statistically significant at the 5% level. The coefficient of the DC is calculated as β_1=-0.076. This finding indicates that an increase in dividend payment will lead to a decrease in the cumulative abnormal returns, and from another point of view, a decrease in dividend payment will lead to an increase in the cumulative abnormal returns. The coefficient of the DY is calculated as β_2=0.4745. This result shows a decrease in dividend yield will lead to an increase in cumulative abnormal returns. Results are similar to the studies of Wansley et al. (1991), Lee and Yan (2003), Dasilas and Leventis (2011), Günalp et al. (2010) and Kadıoğlu et al. (2015). In the model, PB is not found to be statistically significant. However, the coefficient of the ROA is β_4=-0.0080 and statistically significant at the 1% level. This shows that company size and cumulative abnormal returns are inversely related. This result supports Dasilas and Leventis (2011), but does not support Chen et al. (2007), and Hatem (2015) also, which does not report any relationship. The coefficient SIZE is found to be β_5=-0.1449 and statistically significant at the 5% level. ROA also negatively affects cumulative abnormal returns.

In the second model established for CAR(0,1) in section C of Table 2, the abnormal returns are found to be positively related to the DY at the 1% level. The coefficient of the DY is calculated as β_1=0.3379. In this model, DC, PB, SIZE and ROA are not found to be statistically significant.

In the last model for CAR (0,10), only the DY is found to be statistically significant at the 5% level, as in the second model. The coefficient of the DY is calculated as β_1=0.3326.

5. Conclusion

Although there are many studies in the literature examining the effect of dividend distribution announcements on stock returns, few studies have been conducted to determine the factors that may affect abnormal returns. From this point of view, to determine which factors cause existence of cumulative abnormal returns (CARs), cross-sectional regression analysis is conducted. In the analysis, percentage change in dividend payment (DC), dividend yield at the time of dividend change announcement (DY), market value to book value ratio (PB), company size (SIZE) and return on assets (ROA) variables are tested to determine whether they have any effect on CARs or not. The model established for CARs resulting from cash dividend announcements made by the companies present in the BIST100 index between 2010 and 2019, all cash dividend distribution announcements as well as decreasing cash dividend announcements and increasing cash dividend distribution announcements are estimated separately with the cross-sectional regression model.

The results show that the percentage change in dividend payment negatively affects the cumulative abnormal returns in one of the models of cash dividend increase announcements. The revealed negative effect is in line with Bozos et al. (2011), but differs from Dasilas and Leventis (2011).

Dividend yield positively affects cumulative abnormal returns in all cash dividend announcements and cash dividend increase announcements. This result supports Chen et al. (2007), who conclude that dividend yield positively affects the abnormal returns resulting from dividend announcements.

It is found that market value to book value ratio negatively affects cumulative abnormal returns in one of the models of cash dividend decrease announcements. This result is contrary to Chen et al. (2007) , which test the same variable and find a positive effect. Also, company size negatively affects abnormal returns for cash dividend increase announcements. While this result supports Dasilas (2009), it does not support Chen et al. (2007) and Hatem (2015).

Return on assets ratio also affects abnormal returns as it is found statistically significant and positive in one of the abnormal return models created by decreasing cash dividend announcements, and statistically

significant and negative in one of the abnormal return models which is created by increasing cash dividend announcements. As in Hatem (2015), Chen et al. (2007) and Kurniashish et al. (2011), the return on assets ratio positively affects the abnormal returns created by the decreasing cash dividend announcements, and adversely affects the abnormal returns generated by the increasing cash dividend announcements.

This study's findings are consistent with the idea that BIST100 companies' announcements of cash dividend distributions convey information. It can be said that this situation is important for company managers and investors. While deciding to distribute cash dividends, company managers should consider that the amount of cash dividend to be distributed will decrease, increase or not change according to the latest cash dividend amount, and this decision may lead to negative or positive abnormal returns in stock prices. Contrarily, investors may experience negative returns from decreasing cash dividend announcements and positive abnormal returns from increasing cash dividend announcements in the post-event window. As a result, it may be advantageous for investment preferences to review the cash dividend announcements and compare them with the most recent cash dividend announcements when making investment decisions. Investors can also make their portfolios by considering the effects of the variables tested in the study on abnormal returns, while including the stocks of companies that distribute cash dividends in their portfolios.

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