International Journal of Social Science and Entrepreneurship ***(IJSSE)*** ***Vol 4 , Issue 3***
ISSN (Print): 2790-7716, ISSN (Online): 2790-7724 ***July to September2024***

An Examination of Ex – Dividend Day Stock Returns: A Case of Pakistan Stock Exchange

Amber Qadar
Lecturer, Department of Management Sciences, The Islamia University of Bahawalpur, Pakistan (Ph. D Scholar, Department Business Administration, Iqra University, Islamabad, Pakistan)
amber.qadar@iub.edu.pk

Dr. Muhammad Khan
Associate Professor, Department of Social Sciences, Iqra University, Islamabad, Pakistan.
muhammad.khan@iqraisb.edu.pk

Abstract

This research paper attempts to investigate the impact of various factors on abnormal returns of stocks around ex–dividend day. For this, stocks listed in Pakistan stock Exchange have been examined considering a time span of twenty years. This study covers the time span when capital gain tax on sale of securities was introduced in Pakistan in July 2010. Moreover, the impact of various exogenous variables, specifically unsystematic risk along with systematic risk, has not been analyzed on ex – dividend abnormal returns particularly in the context of Pakistan. Generally, stock prices decrease with an amount less than dividend on ex – dividend day. Such price discrepancies may attract traders and arbitrageurs to earn quick profit and result in abnormal returns. Panel data is used covering the time span of twenty years 2001 – 2020. Diagnostic tests have been applied to check the normality of data. The Hausman test is used to choose between fixed effect and random effect model. Further, Breusch and Pagan Lagrangian multiplier test is used to decide between pooled regression model and random effect model. Based on the obtained results, fixed effect model is considered appropriate choice for making prudent conclusions. Impact of various exogenous factors is examined through fixed effect regression model. Abnormal returns are calculated with the help of the market model. Our regression results revealed that dividend yield, transaction cost, systematic risk and firm age have crucial and significant impact on ex–dividend day abnormal returns. The ex-dividend day anomaly, a phenomenon that greatly affects trading methods, would also be clearly illustrated for dividend-capture and capital-gain traders, who could benefit most from this study. They can optimize their trading methods to maximize returns and minimize potential risks by considering the variables causing this anomaly. Institutional stakeholders will also benefit greatly from this research because they may use it to improve the way they manage their portfolios and create innovative investment and trading plans.

Key words: Ex- dividend day, abnormal returns, Pakistan Stock Exchange, transaction cost, dividend yield.

Introduction

Investors generally make investments in stock markets with the prime motive to get some financial benefit. This financial benefit can either be in the form of dividends or capital gain. Dividends are the part of profit that is distributed among the shareholders. On the other hand, capital gain can be exploited by considering the positive price differences of shares. Dividends decisions are considered essential not only for investors but also for corporations because such decisions have a significant impact on the prices of shares. The amount of dividend is declared on announcement date by the board of directors of the corporations that may influence the perception of all stakeholders regarding corporations and its future performance. This may bring stock prices up or down depending upon the amount of expected dividend. Ex – dividend day comes after announcement date. Ex – dividend day serves as cut off day that draws a clear line of distinction between investors who are eligible to receive declared dividend and those who are not. On ex – dividend day anyone who buys shares of a company does not qualify to get declared dividend. As stocks are traded without containing the benefit of dividend therefore a decrease in the price of stock is generally observed.

The idea that a stock price should decline by the amount of the dividend was first questioned by Campbell and Beranek in 1955. According to them, the prices of stocks should decrease with an amount equal to dividend, but in the real scenario this does not happen. In fact, prices of stocks tend to fall less than the amount of dividend Dupuis (2019), Asimakopoulos et al. (2015) and Tamara et al. (2020). Such price discrepancies result in abnormal returns that may attract many investors and arbitrageurs who exploit such price differences and make quick profits. Stock pricing behavior surrounding ex-dividend day is considered the most debated issue in corporate finance theory. According to Miller and Modigliani (1961), the prices of stock should fall approximately with an amount equal to dividend in a risk-free environment. In fact, no such market exists in the real world. Various researchers have studied the equity share price phenomenon across the world to explain the anomaly. For this, variations in prices of stocks are calculated to confirm the presence of abnormal returns. Anomalous return is basically the discrepancy between a stock's actual return and its anticipated return.

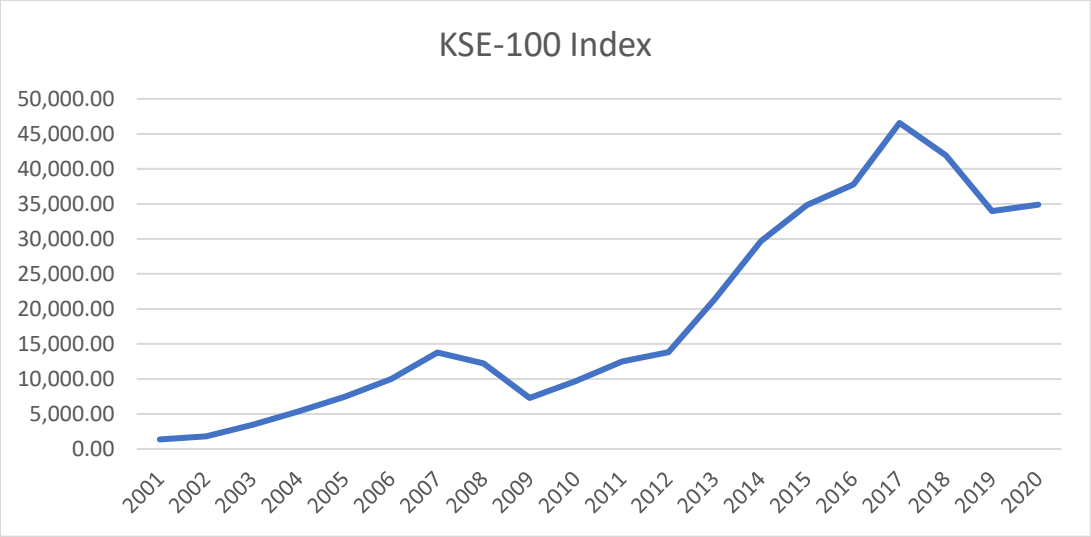
Existing literature penned two competing explanations for this price discrepancy including tax effect and short-term trading effect. Elton and Gruber (1970) presented the tax effect hypothesis

to explain the ex – dividend day phenomenon. They suggested that stocks price drop on ex – dividend day accounts for differences in tax rates in dividends and capital gain of marginal investor. Kalay (1982) was one amongst the researchers who contested the Elton and Gruber's work and shed light on a new aspect to explain ex – dividend day effect. He presented the theory of 'short term trading' and connected this cause to the ex – dividend day phenomenon. According to his seminal work, for tax neutral investors there are factors that mitigate the effect of any tax discrepancy. These factors are generally brought on by short term traders. Stock prices that drop with a magnitude that is less than the amount of after-tax dividend generate arbitrage opportunities. Arbitrage traders may earn arbitrage profits up to extent where their marginal transaction costs equate marginal profit.

The variations in stock prices in relation to ex- dividend day is not much clear in context of other countries, especially in financial markets of developing and emerging economies. The importance of emerging economies cannot be ignored as it represents 50.1% of the world's GDP in 2023 and 66.7% of its growth over the past decade (World Economics, 2024). Over past three decades, emerging markets have experienced tremendous growth in urbanization. Out of twenty largest cities in the world, sixteen are in emerging markets. From roughly 19% of global exports in the early 1990s reach to nearly 35% recently, developing economies now account for a larger portion of global exports.

The main stock exchange in Pakistan is the Pakistan Stock Exchange (PSX). Soon after the partition, PSX began its operations. Up until 2015, the market was technically split between the stock exchanges of Islamabad, Lahore, and Karachi. The Karachi Stock Exchange (KSE) is seen to have performed the best out of the three since its founding. Being named the top performing market in the world in 2002 was an honor bestowed upon KSE. Pakistan Stock Exchange Limited (PSX) was formed on January 11, 2016, following the consolidation of these three stock exchanges. A significant turning point was reached in 2017 when PSX was promoted by MSCI from Frontier Market to Emerging Market classification. For all these reasons, Pakistan Stock Exchange is considered an interesting laboratory to examine the stock pricing behavior surrounding ex – dividend day. The performance of Pakistan Stock Exchange from 2001 to 2020 is shown in the following graph.

Figure 1



Source: Pakistan Stock Exchange

By examining Pakistani equities, this study expands on existing research by testing the theoretical explanation. It also puts to the test various theoretical hypotheses on how Pakistani stock prices respond on ex-days. The underlying study adds to the chunk of existing literature by examining stock behavior around ex – dividend day by considering 20 years of duration from 2001 – 2020. For this, time is considered when capital gain on sale of shares has been introduced in Pakistan. Impact of various exogenous variables on endogenous variable is assessed by using regression. For this, most widely analyzed variables dividend yield, systematic risk, transaction cost, firm age, abnormal trading volume and unsystematic risk are chosen. These relationships are also not tested earlier in the context of Pakistan. To the best of the researchers' knowledge, no research has been undertaken to evaluate the impact of various factors on abnormal returns by using large data set of Pakistani stocks on the ex-dividend day.

Literature Review

Experts have studied the behavior of stock prices around ex-dividend days for the past 50 years, but most of them have not come to a consensus on a single explanation explaining why this behavior happens. Pioneers in the industry, Campbell and Beranek, initially devised the ex-dividend day price anomaly in 1955. Campbell and Beranek first raised doubts about the notion that a stock price should drop by the dividend amount at the ex-dividend date in 1955. They arrived at the conclusion that 90% of the dividend amount was typically dropped in relation to

stock price. Even though they were unable to find a reason for the stock's unusual behavior, they had been the first to notice an anomaly. The first idea that tried to explain this behavior on the ex-dividend date appeared a few years later. The ex-dividend day behavior of stock prices was the subject of a paper published in 1970 by Elton and Gruber. They were the first academics to contend that the impact of taxes was the reason behind the behavior of stock prices. Elton and Gruber studied this average price decline to calculate the investor's marginal tax rate and evaluate the tax impact. The tax-effect involves contrasting the taxation of dividends and capital gains. The New York Stock Exchange provided the data for their study. All NYSE-listed stocks that declared dividends were included in the data they used. Asserting that it would be more advantageous to sell soon before the ex-dividend day, at the cum-dividend day, or just after, they said that shareholders would make this decision when contemplating selling a stock at the ex-dividend date.

The Athens Stock Exchange was considered by Asimakopoulos et al. (2015) to examine the factors influencing price behavior of stocks. The years 1996 to 2005 are covered under the study period. In this study, 500 ex-days are examined by using various techniques like price drop ratios, abnormal returns and trading volumes using event study. In addition to these techniques, regression analysis is also conducted to explain the relationship of various variables. They confirmed the existence of anomalous returns and trade volumes, and they reported low price drop ratios in connection to dividends. They found a strong positive correlation between dividend yield and anomalous returns. They did not, however, notice any appreciable effects of risk or transaction costs. One of the main causes of the ex-day pricing behavior in the ASE is share illiquidity.

Heba and Menshawy (2018) studied the unsystematic risk and its forecasting ability to predict the future returns. An emerging capital market of Egyptian stock exchange (ESE) is taken under consideration. Indirect method is used to calculate unsystematic returns. Equities listed during 2006 – 2015 in Egyptian Stock Exchange are chosen to test the market volatility. Their results reveal that although unsystematic risk is an integral component of total risk yet its ability to predict future return is questionable. They found that unsystematic risk has no impact on stock returns. In contrary, another study conducted by Roman (2021) found a significant impact of unsystematic risk on abnormal returns of stock. The equities of Amman Stock Exchange (ASE)

are selected for the period covering the duration of 2009 to 2019. All commercial banks were selected in the final sample. Their results showed that unsystematic risk has significant impact abnormal returns. It shows that idiosyncratic risk also has significant role in explaining variation in abnormal returns. Due to its significant impact, investors also look for compensation for risk premium while deciding to invest in securities. Alho N. (2022) investigated the Nordic market in order the examine the ex – day effect. This study focused on the presence of short-term trading opportunities. They found abnormal returns and reported the significant impact of dividend yield and volatility. Tran et al. (2017) examined the stocks of Vietnamese listed stocks. Using event research methodology, they looked patterns and fluctuations of not only stock price behavior but also trade volume. Additionally, OLS regression analysis was employed to examine the connection between dividend yield and anomalous return. Tan Viet Securities Company (www.tvsi.com.vn) is the source of the study's database. 757 observations from 277 companies made up the final research sample. The ex-day abnormal return determined by the market model is taken as the dependent variable. Their results go against the expected correlation between abnormal return and dividend yield. Tauseef and Nishat (2015) investigated the price behavior of the listed equities on the Karachi Stock Exchange. There was no capital gains tax throughout the time under investigation; however, dividends were subject to a 10% withholding tax. They evaluated the aberrant returns using the traditional event study methodology. In comparison to their theoretical values, the study reported price drop ratios are relatively low. On the event day, no significant excess returns were detected. The study offers proof for the making quick profits by engaging in short-term trading theory related to Karachi Stock Exchange ex-dividend days. They chose the time to study ex – dividend day phenomenon when capital tax was not imposed on sale of securities. Moreover, they took a very short time span, consisting of two years, to conclude the ex – dividend day phenomenon.

Hypothesis Development

Abnormal Returns and Dividend Yield

Stocks with higher dividend yields tend to attract more arbitrageurs looking to profit from market inefficiencies. Therefore, arbitrageurs attempt to maximize their gains from higher-yielding stocks, which will attract more short-term traders. Similar claims were made by Tamara et al., (2020), who claimed that dividend capture operations are used by short-term investors to reap

profits. They established a link between dividend yield and short-term trading profitability. It suggests a strong correlation between abnormal price returns and dividend yield. Several scholars have investigated this connection and found evidence to support it, including (Dasilas, 2009; Asimakopolous, 2015; Jakob & Ma, 2007). It is often found significant at high levels of probability Henry & Koski (2017). As this relationship is not tested in context of Pakistan when previous literature regarding ex - dividend day is explored. For this, it is pertinent to investigate this relationship in context of PSX listed stock. So, our next hypothesis is

H_1: Dividend yield has no impact on ex – dividend day abnormal return

Abnormal Returns and Systematic Risk

Risk usually has negative effect on trading volume that reduces the abnormal returns Dasilas (2009). Risk plays an integral role in diminishing the level of trading activities and confirmed the inverse relationship between risk and abnormal returns. Heath and Jarrow (1988) exerted that it makes very difficult for arbitrageurs to take short term trading benefit without considering risk. The stock prices on ex dividend day are not known to traders in advance. For this, they look for premium that may provide compensation against the risk of unknown ex – day stock prices. In contrary, Asimakopoulos (2015) argued that a positive association is expected between risk and abnormal returns and more compensation will be required for extra risk taking. That is why more return is associated with more risk. So, the next hypothesis is

H_2: Risk has no impact on ex – dividend day abnormal return

Abnormal Returns and Unsystematic Risk

When a stock's returns fluctuate due to variables peculiar to that company, like news about the company, product advancements, or managerial choices, it's referred to as unsystematic risk (Waemustafa & Sukri, 2016). Systematic risk, which impacts the entire market or industry, is not the same as this kind of risk. The difference between the actual return seen on the ex-dividend day and the projected return given the current state of the market is known as the abnormal return. It represents any additional profits or losses that are not consistent with either pre-existing trends or typical market movements. The theory contends that the aberrant returns are not much impacted by variations in unsystematic risk, which are unique to each company (Heba & Menshawy, 2018). This suggests that the variances in abnormal returns on this day are not

primarily caused by company-specific variables, such as internal news or special risk occurrences. Ang et al. (2006) found a negative relationship between stock returns and unsystematic risks. In a similar vein, Machdar, N. (2015) investigated the impact of unsystematic risk on stock return and reported a significant negative relationship. In contrary, Goyal & Clara (2003); Fu, (2009) reported a positive impact of unsystematic risk and stock returns. Many studies have found the insignificant relationship between unsystematic risk and stock returns (Bali & Cakici, 2008; Heba & Menshawy, 2018; Rachel, 2014). Analyzing the connection between unsystematic risk and the anomalous returns on ex-dividend days is thought to be crucial in the context of the ex-dividend day anomaly. The premise is supported, and it is suggested that factors other than company-specific risks have a greater influence in explaining the observed abnormal returns if statistical tests reveal that unsystematic risk has no discernible impact on these abnormal returns. So, the hypothesis is,

H_3: Unsystematic risk has no impact on ex – dividend day abnormal return.

Abnormal Returns and Transaction Cost

Abnormal return is basically a diversion between actual and expected return. It indicates an investment's outperformance or underperformance compared to what conventional asset pricing models would have predicted. Contrarily, transaction costs are the costs related to purchasing or selling an investment. It comprises of commissions, bid-ask spreads, brokerage fees, and other trade-related expenses etc. High cost of transaction dampens trading activity and results in lower abnormal returns. As dividend capturing activities are more prevalent in high dividend yield stocks. It signifies that short term traders are likely to pay higher trading cost to get high DY stocks. Therefore, a positive relationship is expected as reported by previous studies (Karpoff and Walking 1988; Dasilas 2009; Asimakopouos 2015; Dhaliwal & Li, 2006). It is considered essential to examine that how relationship between abnormal returns and transaction cost works in the context of Pakistan. So, for this, following hypothesis is to be tested.

H_4: Transaction cost has no impact on ex dividend day abnormal return.

Abnormal Returns and Firm Age

Firm age is basically the number of years from which a company has been listed in stock market. It not only talks about the actual age of the company but also clears that either a corporation is

considered younger or older. Some businesses are quite young; others have been in operation for many years. The age of the firm indicates the length of its operations. Sare & Esumanba (2013) examined the relationship between firm age and abnormal returns and reported a significant positive relationship. It suggested that as firms get older, they bring greater changes in price reactions as compared to younger firms. In contrary, an inverse relationship was reported by Smith and Watts (1992) between abnormal returns and firm age, signifying that younger firms are prone to bring more changes in abnormal returns. As mixed evidence are reported in literature and the relationship between abnormal returns and firm age have not been examined in context of PSX listed stocks. So, the next hypothesis is

H_5: Younger firms have more impact on ex – dividend day abnormal returns than older firms.

Abnormal Returns and Abnormal Volume

According to Asimakopoulos (2015), arbitragers and other short-term traders frequently use price differences around the ex-dividend date as a catalyst for taking profit chances. Because of the heightened buying and selling of the stock due to the anticipated dividend payout, this causes abnormal trading activity. Given the documented linkage between abnormal trading volume and abnormal returns, short-term trading around ex-dividend days is probably going to have a positive relationship. Because of dividend capture methods and other arbitrage activity, market players will likely adjust their positions to take advantage of the price decrease and subsequent recovery after the ex-dividend date, which would likely result in anomalous profits from the rise in trading volume. As a result, an unusual trading volume could be seen as an indication of abnormal returns because it shows increased activity and a desire to profit from dividends. In relation to the Pakistan Stock Exchange, this link is still mostly unknown (PSX). Specifically, examining the relationship between abnormal trading volume and abnormal returns in the context of the PSX will clarify the ways in which dividend capture strategies and short-term trading influence abnormal returns. Testing this theory will allow us to learn more about the connection between abnormal returns and trade volume in a setting of emerging markets. By examining if increased trading activity around ex-dividend days produces anomalous returns, this study will contribute to the expanding body of knowledge addressing market efficiency, dividend capture strategies, and the effect of aberrant volume on price behavior. So, the next hypothesis is

H_6: abnormal trading volume has no impact on ex – dividend day abnormal returns.

Data & Methodology

Data related to ex-dividend dates, daily prices of shares, annual number of dividends, daily trading volumes and daily number of outstanding shares is collected from Data Stream. Ex divided dates are collected from business recorder website covering the time span of 2001 - 2020. All listed companies that met the following mentioned selection criteria were considered in this study:

a) Annual cash dividends must be paid by companies every year for the period under investigation i.e. 2001-2020. b) ex- dividend dates must be available publicly c) Price data of companies would be accessible for event window and estimation period. A total of 660 ex-days (33 yearly dividends over a 20-year period) are investigated in this study since 33 listed corporations fit the requirements. Abnormal return is calculated by market model. This study applies the approach recommended by Dasilas (2009) and Asimakopoulos (2015), Garaham et al. (2003) and Anantarak (2011) to analyze pricing fluctuations.

The cross-sectional regression model of this study is as follows:

$$\boldsymbol{AR_{0,it} = \alpha_0 + \alpha_1 Dividend\ Yield_{it} + \alpha_2 Transaction\ Cost_{it} + \alpha_3 Beta_{it} + \alpha_4\ unsystematic\ risk_{it} + \alpha_5 Dummy\ firm\ age_{it} + \alpha_6 Abnormal\ Volume_{it} + \varepsilon_{it}}$$

AR_0 denotes the dependent variable Abnormal Returns. In addition to that,α_0 is an intercept and $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6$ symbolize the regression coefficient of respective variable. Moreover, α_1 represents the exogenous variable Dividend Yield (DY), α_2 stands for Transaction Cost (TC) and α_3 is representing beta, α_4, represents unsystematic risk, α_5 represents the dummy variable of firm age. Firm age takes the value 0 if the age of firm is less than 20 and it is considered as young age. The firm is considered as older and takes the value 1 if its age is more than 20 years. $\alpha 6$ represents the coefficient of abnormal volume. To remain consistent with Chowdhury (2016), Dasilas (2009) and Henry et al., (2017) the ratio of dividend (annual) to cum dividend day stock price (D/*Pc*) is used as dividend yield. This ratio assesses quantum of cash dividend that companies pay to stockholder in relation to stock value. Transaction costs are referred to those expenses that are incurred when buying or selling a good or service is taken place. In terms of

finance, transaction costs comprise brokers' commissions and spreads. Following Chowdhury & Sonaer, 2016; Asimakopoulos (2015) and Yahyaee et al., (2007), and Dasilas (2009), the inverse of share price (1/*Pc*) is used to compute transaction costs. Following Al-Yahyaee (2007), Dasilas (2009), Chowdhury (2016), Tamara et al., (2020) and Garaham et al. (2003) market model is being used to calculate abnormal returns (AR). Beta is a measure of stock return volatility in relation to market. Following Dasilas (2009), Asimakopoulos (2015) and Chowdhury (2016), it is estimated by using market model and represents the systematic risk. Following Bansal, P., & Clelland, I. (2004), unsystematic risk is calculated by using direct method. In direct method mean of residuals of regression model for each selected corporation (unit) is taken. Single factor market model has been used to calculate market returns. The event window stems from – 20 to +20 days from ex-dividend day. The parameters of market model are calculated considering length of 230 days' estimation period. The parameters of market model are as follows:

$$AR_{it} = R_{it} - E(R_{it})$$

$\mathrm{AR_{it}}$ = abnormal return

$\mathrm{R_{it}}$ = actual return

$\mathrm{E(R_{it})}$ = expected return of stock i at time t

Expected return is measured by using following equation:

$$\mathrm{E(R_{it})} = \alpha + \beta \mathrm{R_{mt}}$$

α = intercept of market model

β = beta coefficient of market model

Table 1
Summary Table of Variables

Variables		**Measurement**
AR	Abnormal Return	$AR_{it} = R_{it} - E(R_{it}),\quad \mathrm{E(R_{it})} = \alpha + \beta \mathrm{R_{mt}}$
AV	Abnormal Volume	$\left[\frac{\text{TurnOver}}{\text{Normal Turnover}_i} - 1\right]$

DY	Dividend Yield	D/Pc
TC	Transaction Cost	1/Pc
Unsystematic Risk	Unsystematic Risk	Mean of residuals
Fa	Firm Age	ln (Number of years since its listing) 0 = if age of firm is less than 20 1 = if age of firm is equal or more than 20

PDR is the price drop ratio calculate by taking the discrepancy between stock price on cum day and ex – day divided by dividend. P_{cum} represents the stock price on cum dividend date. P_{ex} represents the price of stock on ex – dividend date. Rm is the ex – dividend day market returns proxied by Pakistan Stock Exchange Index. D is the annual cash dividend. AR is the abnormal returns representing the difference between actual returns and expected returns. Abnormal volume is the actual daily turnover relative to normal volume minus 1. Dividend yield is the ratio of dividend to price of stock on cum dividend day. Transaction cost is the inverse of cum dividend day stock price. Beta is the measure of systematic risk. Firm age is the natural log of number of years since its listing. Mean of residuals is taken as unsystematic risk.

Results and Discussion

By examining the possible effects of various variables on the abnormal return, more evidence about ex-day abnormal returns (AR) is obtained. First, certain diagnostic test for data normality is used. The data for regression is tested for checking the multi-collinearity, heteroscedasticity and autocorrelation. When two or more predictor variables in a multiple regression model have a high correlation with one another, this phenomenon in statistics is called multicollinearity. The variance inflation factor (VIF) is a method used to quantify and measure the amount of inflated variance. If the value of VIF is less than 5, there may not be any problem of multicollinearity (Daoud, 2017). The following table is showing that VIF in case of each independent variable is less than 5 that is why no problem of multicollinearity has been detected among variables.

Table 2
Multicollinearity

Variables	VIF	Tolerance = 1/ VIF
DY	1.05	0.952
TC	1.08	0.922
Firm age	1.04	0.959
Beta	1.10	0.909
Unsystematic Risk	1.01	0.992
AV	1.00	0.995

Heteroscedasticity

Heteroscedasticity is an error term in a regression analysis that indicates an uneven residual distribution. Outliers are the primary source of heteroscedasticity in the data. Breusch-Pagan / Cook-Weisberg test is used for the detection of heteroscedasticity. As the value of Breusch-Pagan / Cook-Weisberg test for heteroscedasticity is showing higher probability value. That's why null hypothesis cannot be rejected that confirms the constant variance.

Table 3

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

Variables: fitted values of AR
chi2(1) = 0.23
Prob > chi2 = 0.6331

Autocorrelation

The correlation between a variable's historical values across time and its own is called autocorrelation, sometimes referred to as serial correlation. Durbin Watson test is used to check the problem of autocorrelation. As the value of DW test is (1.7232) is near to 2, it shows that there is no autocorrelation.

Durbin – Watson Statistics = 1.7232

After confirming the absence of multicollinearity, heteroscedasticity and autocorrelation, OLS regression is estimated. To get more authentic results, it is imperative to test the model

specification before concluding the results of regression analysis. Two most widely and famous statistical models used for panel data are fixed effect and random model. Hausman test is used to detect the either of two models is appropriate to draw prudent conclusion of estimates.

Model Estimation

The fixed-effect model and the random-effects model are the two most widely used statistical models in panel data regression-analysis. As per the fixed-effect model, all the studies in the analysis are based on a single genuine effect size, and sampling error is the reason behind any variations in observed effects. Unobserved entity-specific effects are treated as random and uncorrelated with the explanatory variables in the Random Effects (RE) model, a technique for panel data analysis. Prior to making logical arguments on stock pricing behavior, it is determined which model—fixed effect or random effect—is better suited for the regression. With the use of the Hausman test, a decision was made. The Hausman test's chi square score, at 1%, is notable. The chi square value of Hausman test is 87.69 and probability value is 0.000. The results of Hausman test are indicating that ***fixed effect model*** is considered more appropriate for analysis of panel data to draw prudent conclusions.

Pooled Regression Model Vs Random Effect Model

Breusch and Pagan Lagrangian multiplier test is used to decide between pooled regression and random effect model. The null hypothesis for this is Pooled regression model is appropriate, and alternative hypothesis is random effect model is appropriate.

Table 4

Breusch and Pagan Lagrangian multiplier test for random effects

chibar2(01) =	24.11
Prob > chibar2 =	0.0000

Source: Author’s calculations

Based on the obtained results, the null hypothesis (pooled regression model is appropriate) is rejected as p value (0.000) is less than 5%. For this, random effect model is considered more appropriate to use. Now, we can use fixed effect model for analysis with more confidence as

Hausman test has rejected the random effect model and Breusch and Pagan Lagrangian multiplier test rejected the pooled regression model. Results of fixed effect regression model are given below to make logical arguments.

Table 5
Fixed Effect

Variable	Co-efficient	p- value
DY	0.9770***	0.000
TC	0.2982***	0.000
Firm age	0.0365***	0.000
Beta	0.0220***	0.000
Unsystematic Risk	-0.3470	0.142
AV	0.0391	0.298
Constant	-0.0846	0.000
R-Sq 0.6447		

Source: Author's calculation
*Specifies Significance at 10%, ** specifies Significance at 5%, *** specifies Significance at 1%

The results from regression analysis by using fixed effect model are reported in table 5. The coefficient of DY is 0.9770 that is significant at 1%. The results show the positive association between DY and company's return. The strength of this relationship is quite strong (0.9770 is a high number). This suggests that companies with higher dividends (which are attractive to investors who want to make quick profits) tend to have higher stock prices on ex – dividend day. These results agree with the findings of previous research (Asimakopoulos, 2015; Henry and Koski, 2017; Chowdhury and Sonaer, 2016; Dasilas, 2009; Kadapakkam & Martinez, 2008). The coefficient of systematic risk is 0.0220 that is positively significant at 1% level of significance. On ex – dividend day the prices of stock are not known in advance that is why short-term traders find it difficult to engage in dividend capturing activity without taking consideration the extent of risk. Due to the presence of systematic risk, short term traders (arbitrageurs) expect to have risk premium in ex – dividend day returns. An extra compensation is demanded by arbitrageurs for taking extra risk. Therefore, there is a positive relationship between risk and ex – dividend day abnormal returns. These results are consistent with (Henry and Koski, 2017; Dhaliwal and Li,

2006; Chowdhury & Sonaer, 2016). An insignificant relationship is found between unsystematic risk and abnormal returns of stocks. An inverse relationship between unsystematic risk and abnormal returns meaning that higher unsystematic risk results in lower abnormal returns. Yet this impact is statistically insignificant. The insignificance of unsystematic risk recommends that unsystematic risk has not considerable effect on ex dividend day abnormal returns. It suggests that there may be other factors that may have more substantial impact on ex dividend day return fluctuations. A positive relationship is also found between transaction cost and abnormal returns in context of ex – dividend day. The coefficient of TC is 0.2982 is also indicating a significant relationship. Shares with a higher TC result in higher brokerage costs, which could stop investors from capturing dividends. As dividend capturing activities are more prevalent in high dividend yield stocks around ex – dividend day. It signifies that short term traders are likely to pay higher trading cost to get high DY stocks. Therefore, a positive relationship is justifiable and in accordance with previous studies (Karpoff and Walking, 1988; Dasilas, 2009; Asimakopouos 2015; Naranjo et al. 2000). A significant transaction cost means that TC have a strong effect on ex dividend day abnormal returns. This finding is consistent with (Dasilas, 2009).

A significant positive relationship 0.0365 is reported between abnormal returns on ex – dividend day and firm age. Here, firm age is a categorical variable that assumes a value of 0 if firm age is less than 20 years and 1 if age of firm is equal or more than 20 years. Firms less than 20 years are considered a young firm and all other are assumed older firms. A positive relationship shows that older firms are contributing 0.0365 more to abnormal returns as compared to younger firms. In other words, it shows that older firms bring greater changes in price reactions as compared to younger firms and contribute more towards abnormal returns. These results are consistent with the results of (Sare & Esumanba, 2013). A positive but insignificant relation is found between abnormal returns and abnormal trading volume. The coefficient of abnormal volume is 0.0391 is also indicating positive relationship. Ordinarily, abnormal trading volume is used to describe unexpected trading activity. Certain opportunities to make rapid profits inevitably arise since stock prices tend to drop on ex-dividend day. Price differentials of this kind encourage arbitragers to profit from the circumstances and maybe carry out dividend-capture operations. On ex-dividend days, therefore, it is possible to report irregular trading behavior. A greater number

of anomalous returns are produced by more anomalous trading volumes. Dasilas (2009) states that if short-term trading occurs around ex-dividend days, a positive correlation between abnormal trading volume and abnormal returns is expected. These results are consistent with (Dasilas, 2009; Asimakopoulos, 2015).

Conclusion and Discussion

To better explained the ex – dividend day anomaly, a regression analysis is performed to analyze the potential relationships of different variables. For this, impact of dividend yield, beta (systematic risk), transaction cost, firm age, abnormal volume and unsystematic risk is examined on abnormal returns. The ex-day abnormal return and dividend yield have a strong positive correlation which suggests short-term trading. A higher dividend yield is a sign that investors receive higher rewards. In a similar manner, transaction cost has a significant impact on arbitrage activity, as demonstrated by the coefficient of transaction cost. Systematic risk and anomalous returns are found to have a strong positive association. As higher risks are anticipated to provide higher returns, there is a positive correlation between systematic risk and abnormal returns. A short-term trader needs to be compensated for taking on greater risk. The findings of this study reveal that investors engage themselves in dividend capturing activities around ex – dividend day to get benefit from price discrepancies. Thus, short term trading activities are evident around ex – dividend date. Moreover, dividend yield, firm age and systematic risk are considered important determinants of stock prices on ex – dividend day as they have significant impact on stock price returns on ex – dividend day. The anomalous returns on ex-dividend day and abnormal trading volume are found to be positively but not significantly correlated. A positive coefficient of abnormal volume indicates a rise in trading activity on the day before the ex-dividend. Unsystematic risk and abnormal stock returns have insignificant correlation. The insignificance of unsystematic risk implies that it has minimal effect on ex dividend day anomalous returns. It means that other factors may have a stronger influence on ex-dividend day return fluctuations. A substantial positive association has been seen between firm age and abnormal returns. The coefficient of firm age significant at 1%, indicating that older firms contribute more to ex-dividend anomalous returns than younger ones.

Future Research

- A comparative study of different sectors can be conducted to study the underlying phenomenon. This would provide more insights to understand ex dividend day behavior of stock prices that will enable investors to take more prudent trading decisions.
- The results of the Pakistani stock market could be compared in future research to those of other developed and emerging economies. This would facilitate the assessment of whether the patterns observed—such as the significance of transaction costs and anomalous returns—are specific to Pakistan or prevalent in other market contexts.
- As this study is conducted in the context of Pakistan, more developing economies will be considered in the future. This may increase the generalizability of the findings of this study.
- Some behavioral factors would be considered in future to explain ex – dividend price anomaly.
- Special dividends or stock dividends may also be taken into consideration to understand the ex – dividend day phenomenon.

References

Alho, N. P. (2022). Incidence, determinants and opportunities of ex-dividend day anomaly: evidence from Nordic markets. *Thesis.* School of Business and Management, Business Sciences.

Anantarak, S. (2011). Economic Motivation of the Ex-Dividend Day Anomaly: Evidence from an Alternative Tax Environment. Dissertation Doctor of Philosophy University of North Texas.

Ang, A., Hodrick, R. J., Xing, Y., & Zhang, X. (2006). The cross-section of volatility and expected returns. *Journal of Finance*, 61, 259-299.

Asimakopoulos, P., N. Tsangarakis, & E. Tsiritakis (2015). Price Adjustment Method and Ex-dividend Day Returns in a Different Institutional Setting. *International Review of Financial Analysis41*: 1–12.

Bali, T. G., Cakici, N., Yan, X., & Zhang, Z. (2005). Does idiosyncratic risk really matter? The journal of finance, 60(2), 905-929.

Bansal, P., & Clelland, I. (2004). Talking trash: Legitimacy, impression management, and unsystematic risk in the context of the natural environment. *Academy of Management journal*, 47(1), 93-103.

Campbell, J., & Beranek, W. (1955). Stock price behavior on ex-dividend dates. *Journal of Finance, 10*, 425-429.

Chowdhury, J., & Sonaer, G. (2016). Ex-dividend day abnormal returns for special dividend. *Journal of Economics and Finance, 40*(4), 631-652.

Daoud, J. I. (2017, December). Multicollinearity and regression analysis. *In Journal of Physics*: *Conference Series*, 949(1), 012009.

Dasilas, A. (2009). The ex-dividend day stock price anomaly: evidence from the Greek stock market. *Financial Markets and Portfolio Management 23*, 59-91.

Dhaliwal, D., Zhen Li, O. (2006). Investor tax heterogeneity and ex-dividend day trading volume. *Journal of Finance*, 61, 463–490.

Dupuis, D. (2019). Ex-dividend day price behavior and liquidity in a tax-free emerging market, *Emerging Markets Review*, 38(C), 239-250.

Elton, E. J., & Gruber, M. J. (1970). Marginal Stockholder Tax Rates and the Clientele Effect. *Review of Economics and Statistics, 52*(1), 68-74.

Emerging markets (2024). World Economics.
https://www.worldeconomics.com/Regions/Emerging-Markets/

Fu, F. (2009) Idiosyncratic risk and the cross-section of expected stock returns, *Journal of Financial Economics*, 91, 34–7.

Garaham, J., R. Michaely, & M. Roberts (2003). Do price discreteness and transaction costs affect stock returns? Comparing ex-dividend pricing before and after decimalization. *Journal of Finance, 58*, 2611-2636.

Goyal, A., & Santa–Clara, P. (2003). Idiosyncratic risk matters. The Journal of Finance, 58, 975-1007.

Heath, D. C., & Jarrow, R. A. (1988). Ex-dividend stock price behavior and arbitrage opportunities. *Journal of Business*, 95-108.

Heba El Menshawy, M. M. (2018). The impact of unsystematic risk on stock returns in an Emerging Capital Markets (ECM's) country: An empirical study. *International Journal of Financial Research, 9(1), 189-202.*

Henry. T.R., Koski, J.L. (2017). Ex-Dividend Profitability and Institutional Trading Skill. *The Journal of Finance, 72*(1), 461-494.

Jakob, K., & Ma, T. (2007). Tick size, NYSE rule 118, and ex-dividend day stock price behaviour. *Journal of Empirical Finance, 72*(3), 605-625.

Kadapakkam, P.-R., & Martinez, V. (2008). *Ex-dividend returns: The Mexican puzzle. Journal of Banking & Finance, 32(11), 2453–2461.*

Kalay, A. (1982). The Ex-Dividend Day Behaviour of Stock Prices: A Re-Examination of the Clientele Effect. *Journal of Finance, 37*(4), 1059-1070.

Karpoff J, Walking, R (1988): Short-term trading around ex-dividend days: Additional evidence. *Journal of Financial Economics, 21(2):*291–298.

Machdar, N. M. (2015). The Effect of Capital Structure, Systematic Risk, and Unsystematic Risk on Stock Return. *Business and Entrepreneurial Review, 14(2),* 149-160.

Miller, M. H., & Modigliani, F. (1961). Dividend Policy, Growth, and the Valuation of Shares. *Journal of Business, 34*(4), 411-433.

Naranjo A, Nimalendran M, Ryngaert M (2000): Time variation of ex-dividend day stock returns and corporate dividend capture: *A re-examination. Journal of Finance,* 50:2357–2372.

Rachel, A. (2014). The Risk of Being Unsystematic and Stock Returns: The Empirical Test on Capital Validity of Capital Asset Pricing Model. *Manajemen dan Bisnis*, 13(2).

Roman, N. A. (2021). The Impact of Unsystematic Risks on Stock Market Return in Jordanian Commercial Banks.

Sare, Y. A., & Esumanba, S. V. (2013). Determinants of abnormal returns on the Ghana stock exchange. *Research Journal of Finance and Accounting*, 4(11), 7-16.

Smith Jr, C. W., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of financial Economics, 32(3),* 263-292.

Tamara, T. (2020). The Ex-Dividend-Day Behavior of Stock Prices and Volume: The Case of Pharmaceutical Dividend Aristocrats, *The Singapore Economic Review*, 65(4), 889–915.

Tauseef, S. & Nishat, M. (2015). The Ex-Dividend Day Stock Price Behavior: Evidence from Pakistan. *IBA Business Review*, *10*(1), 21-30.

Tran, Q, T. (2017). Dividend Capture on Ex-dividend day: Evidence from Vietnamese stock market. *Asian Academy of Managerial Journal of Accounting and Finance*, *13*(2), 69-94.

Waemustafa, W., & Sukri, S. (2016). Systematic and unsystematic risk determinants of liquidity risk between Islamic and conventional banks. International Journal of Economics and Financial Issues, 6(4), 1321-1327.

Yahyaee, K., Pham, T., Walter, T. (2007). *Ex-dividend behavior in the absence of taxes and price discreteness*. Presentation at the 2007 EFMA conference, Vienna, Austria.