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# The Signal in the Noise: Unpacking the Influence of Dividend Adjustments on Market Returns in Indonesia During the COVID-19 Era

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The views stated in this thesis are those of the author and not necessarily those of the supervisor, second reader, Erasmus School of Economics or Erasmus University Rotterdam.

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**Abstract**

Various research regarding the impact of dividend policy to abnormal returns have been studied throughout time. This study examines the impact of changes in dividend policy on the cumulative abnormal return (CAR) of the Indonesian equity market during the COVID 19 Pandemic. Using sample from Bloomberg terminal and Refinitiv Eikon, we took samples from November 2019 until December 2023 and used the event study methodology to capture the market reaction of dividend announcement. Our finding reveals that changes in dividend per share significantly influence CAR which supports the signalling theory opposed of Miller and Modigliani (1961). The research contributes to a deeper understanding of dividend policy role in emerging market and delves deeper into investor behaviour during economic crises.

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# 1. Introduction

*1.1 Research Background*

Dividend Announcements are pivotal events in the financial markets, often leading to significant movements in stock prices. These announcements can signal a company's financial situation and future prospects to investors. The relevance of this topic is underscored by the recent market reactions of New York Community Bancorp in which the stock fell by 38% following a dividend cut and surprise loss, reflecting concerns about the health of similar lenders (Niket Nishant & Anand, 2024). This suggests that dividend reductions can lead to negative valuation effects (Bessler & Nohel, 1996). Inversely, Meta Platform's shares surged by over 14% after announcing its first dividend of 50 cents per share.

Dividend Policy has long been debated in financial theory. The seminal paper of Miller and Modigliani (1961) posits that dividend policy is irrelevant to stock prices in a perfect market. This perfect market assumes no taxes, transaction costs, or information symmetry. According to this theory, a firm's value is determined solely by its investment decision and not by how it distributes earnings. However, numerous studies have challenged this theory. Baskin (1989) and Allen and Rachim (1996) argue that market imperfections make dividend policy relevant. Farre-Mensa et al. (2014) further critique the irrelevance theory by highlighting the fact that taxes on dividends can influence investor preferences which affects stock prices. Furthermore, the idea of information asymmetry from investors makes dividend announcements a significant signal to the market.

COVID-19 pandemic presents a unique context for studying dividend policies. The pandemic has caused market instability and economic disruption worldwide. During this time, many firms faced significant dividend cuts and omissions. Krieger et al. (2021) found that in the second quarter of 2020, 213 out of 1400 dividend paying US firms cut dividends, and 93 were omitted. The driving factors behind these decisions were based on firm profitability and debt levels. On the other hand, Mazur et al. (2020) observed that some firms increased or maintained their dividend levels despite declining earnings and stock prices. The pandemic has thus added another layer of complexity to the study of dividend policies and their impact on stock prices.

Early empirical research supports the notion that dividend changes affect stock prices. Michaely, Thaler and Womack (1995) reported that dividend initiations result in average excess return of 3.4 % while omissions lead to -7% with positive changes generally viewed favourably and negative changes seen as potential financial trouble. While much of the research has been focused on US and Western markets, there seems to be a notable gap in the study of emerging markets, particularly in Southeast Asia. Indonesia presents a unique case due to its growing economic significance and distinct market dynamics. The country's regulatory environment and market behaviour can differ significantly from those in more developed markets, providing a rich context for exploring the effects of dividend policy. Recently, the Financial Services Authority (OJK) has increased its scrutiny over bank dividend distributions (The Jakarta Post, 2024).

### *1.2 Problem Formulation*

The study aims to close the gap in the literature by focusing on the Indonesian market, which presents unique regulatory and economic characteristics. Specifically, it seeks to understand how unexpected changes in dividend policy affect cumulative abnormal return (CAR) of securities in Indonesia. By examining the interplay between dividend announcements, market reactions and the economic context of pandemic, this research will provide insights of how dividend policy affects CAR in the Indonesian Market. This brings to the research question:

"*How do unexpected changes in dividend policy affect the cumulative abnormal return (CAR) of stocks in the Indonesian market?"*

### *1.3 Research Contribution*

Dividend policies remain one of the more popular methods in which a firm can signal its healthy financial wellbeing. This paper examines the relationship of dividend per share to the cumulative abnormal return. Inspired by the paper of Drienko & Bardia Khorsand (2023), we used a panel regression using dividend per share as the independent variable and controls of the firm. Prior literature such as Kurniasih et al. (2011) finds that the market reacts to dividend announcement, however these reactions are affected at various firm-level factors and an older sample size between 2004 and 2009.

By offering insights into the role of dividend policies in emerging markets, this study provides practical recommendations for investors, policy makers, and managers. The result of this research highlights the emerging market characteristics of Indonesia and its response to dividend policy changes, provides empirical evidence on the effects of dividend changes during COVID 19 pandemic and offers insights for companies on how to manage dividend policies during a period of economic crises.

### *1.4 Research Structure*

Following the introduction, the structure of this thesis is as follows: Chapter 2 covers the literature review which offers overview of dividend irrelevance theory, signalling models, agency cost theory, market reactions to dividend policy and the context of COVID 19. Chapter 3 describes the methodology which we used. This includes the sample and data collection, variable of interests, research method and model specification. Chapter 4 includes the descriptive statistics, results of panel regression and the robustness test. Chapter 5 concludes our findings and its implication. Chapter 6 consists of our limitations and suggestions for further research.

## 2. Literature Review

### *2.1 Dividend Irrelevance theory*

The classical theory of Miller & Modigliani (1961) has shown that dividend payout is irrelevant towards firm value in a perfect capital market setting. Given that the net payout includes both dividend and share repurchase, a firm is able to modify its level of payout by adjusting the number of shares outstanding. From the investor's perspective, this means that wealth is unaffected since any preferred payment stream can be facilitated through buying and selling of equity. However, this theory has been rejected multiple times through the studies of Baskin (1989) and Allen and Rachim (1996). The following are the complete assumptions list of Miller & Modigliani (1961):

1. No taxes, transaction, or issuance costs
2. Symmetric information in the market
3. Complete contracting possibilities
4. Competitive product and financial markets
5. Rational Investors and managers

In terms of the first assumption, one of the critiques made by (Farre-Mensa et al., 2014) was that dividend and capital gains are taxed which can fluctuate over time. These differences of taxes would vary to different investors and at certain periods which can impact the type and amounts of payouts. Secondly, Farre-Mensa et al. (2014) rejected that symmetric information rarely holds due to the idea that insiders and managers are more likely to possess more information than other market participants leading to adverse selection problems. Lastly, the idea of rational investors and managers does not seem to hold in practice. In some cases, investors have preference for dividends which could hardly be understood in a rational framework (Shefrin & Statman 1984).

### *2.2 Signalling Models*

Summarised by the papers of Bhattacharya (1979), Miller & Rock (1985), John & Williams (1985), the premise of signalling models is one in which management has a material information that the general market does not have in which it presents as an incentive for the management to reveal this information. The rise in dividends typically presents as an indicator that firms will perform better in the future and that decrease in dividends signals a worse performance. One of the assumptions made by Bhattacharya's (1979) indicated that this theory holds as long as the firm is able to generate future cash flows in order to meet the dividends, otherwise it will have to resort to external financing. In equilibrium, undervalued firms in the market will decide to pay for dividends. Inversely, overvalued firms will avoid this as it relies on costly financing to maintain dividend payments. Another assumption made by Miller & Rock (1985) model is that firms are willing to cut back investments to elevate dividends, thereby signalling high earnings. This leads to dissipative costs due to distortion in the firm's investment choice.

These theories could be an explaining factor in why the market reacts positively toward unexpected dividend increases. However, Lintner (1956) suggested an alternative theory related to signalling in which firms are reluctant to reduce its dividends once it has been increased. Therefore, an increase in dividends implies that a firm anticipates a lower earnings volatility.

### *2.3 Agency Cost Theory*

The agency cost theory stems from the idea of potential conflict of interest that may arise from how a firm interacts with payout policy. Traditionally, dividends have been used as a corrective mechanism to reduce the extent to reduced cash holdings as it helps limit management the ability to limit the consumption of perks, investment in privately beneficial but negative NPV projects, and excessive spending (Farre-Mensa et al., 2014). This claim is further backed by Easterbrook (1984) in which good investments made by firms should be used simultaneously to pay dividends and raise capital in the capital markets. Financial slack should not be invested in projects which do not raise a firm's value and taking cash away is a more prudent investment decision. However, the extent to which payout or repurchase are more effective as a disciplinary device remains the question. Farre-Mensa et al. (2014) argued that dividends are irreversible and stickier compared to repurchases. Furthermore, Jagannathan, Stephens & Weisbach (2000) and Guay & Harford (2000) suggested that dividends serve as a better controlling mechanism for firms with recurring cash flows whereas repurchases are better for firms with onetime cash flows.

### *2.4 Market Reaction to Dividend Policy*

The empirical research of Grullon, Michaely & Swaminathan (2002) finds that an increase in dividend would lead to an increase in average abnormal return of 1.34% (a median of 0.95%) and that a decrease in dividend would incur a negative abnormal return of 3.71% on average (median of -2.05%) using an American firm sample between the year 1967-1993. This is similar to the finding of Benartzi, Michaely & Thaler (1997) in which a year prior to the dividend increase leads to an average increase of 8.6% of abnormal return. Again, this research uses the American sample with conditions that firms must pay four quarterly dividends in at least two consecutive years and ignores initiations and omissions. Another paper by Michaely, Thaler &Womack (1995) suggests that average excess return is 3.4% for initiations and -7% for omissions. The former also concluded that there is a strong correlation with regards to lagged dividends and contemporaneous dividends changes and earnings changes, however there is no evidence that dividend changes would lead to a change in future earnings. With all things considered, we formulate the first hypothesis as follows:

**H1:** *Dividend Per Share of a firm positively influences the cumulative abnormal return*

The recent paper of Ham et. al, (2020) uses an event window approach to clearly delineate the timing of earnings relative to dividend announcements. The results show that the impact of dividend increase on future earnings rises from 0.013 for one-year ahead earnings changes to 0.020 for two years. This proves that dividend changes provide lasting shocks towards future cash flows. However, this does not take into account when firms begin hibernating their dividends and to the effect of cumulative abnormal return. Drienko & Bardia Khorsand (2023) used a more robust approach to account for hibernating periods, while also measuring the cumulative abnormal return and earnings predictability. They defined a hibernation period as during which dividends are kept fixed for two consecutive quarterly periods or more. Result shows that firms increasing dividends after four - eight quarters experience 0.5% and 0.7% higher in cumulative abnormal return compared to non-hibernating. However, it reports no significant difference in negative market reactions to dividend cuts as the sample size is smaller. Larger dividend changes for hibernating firms results in lower cumulative abnormal return due to non-linear market reactions. This brings us to the second and third hypothesis:

**H2:** *Positive Change disclosure of dividend per share positively influences the Cumulative abnormal return*
**H3:** *Changes in dividend per share positively influences the cumulative abnormal return*

Internationally, similar studies have been linked towards dividend and CAR. The study of AA. Lonie et al. (1996) investigates the UK dividend announcement where the earnings and dividends could interact at the same time. Result shows that UK firms saw a positive abnormal return of 2.03% with increase in dividend, a negative abnormal return of -2.35% with decrease in dividends and positive association with no dividend change. Furthermore, positive abnormal returns seem to be the highest when both dividends and earnings increase and vice versa. Another study by Apostolos Dasilas & Leventis (2011) uses the dividend announcements for the Athens Stock Exchange in which it finds that dividend increases leading to a stock price and trading volume and vice versa. This study supports signalling across the US and UK setting despite its unique regulation such as mandatory minimum cash distribution. Despite the popularity of the subject, it remains to be examined carefully in Asia. One paper from Dinh Bao Ngoc & N. Cuong (2016) interestingly finds that average abnormal returns are significantly negative around the ex-date with positive in the ex-date. Market reacts positively to dividend announcements indicating the information content of dividends. However, the study did not consider the changes of dividends in the previous period and the event window seems to be relatively larger compared to the US studies. This brings us to the last hypothesis:

**H4:** *Interaction of Dividend per share and Earnings per share positively affects cumulative abnormal return*

### *2.*5 *COVID 19 Crisis*

Given the sample size begins from 2019 until 2024. It is important to highlight the exogenous shocks of the equity markets during the COVID-19 Pandemic with dividends. The pandemic has increased market instability and risk around the world. Krieger et al. (2021) uses the US firm sample size and found that out of 1400 dividend paying firms, 213 cut dividends and 93 omitted dividends entirely in the second quarter of 2020. The main causing factors of the cuts and omissions were determined by firm profitability and debt. However, Mazur et. al (2020) finds that the majority of firms increase or maintain a level of dividend during the crisis despite falling earnings and share prices. Another study found by Davide Pettenuzzo et al., (2020) examines the impact of COVID pandemic influenced the firm's decision to suspend dividends. The results suggest that dividend suspension had a greater magnitude of dividend growth in certain industries such as consumer goods and manufacturing. On the other hand, it had less impact in the high tech and healthcare industries. From behavioural finance perspective, Naseem et al. (2021) uses the Shanghai, Nikkei and Dow Jones market to examine the impact of COVID on investors. It finds that negative investor psychology is driven by psychological resilience and pressure of the pandemic, leading to decreased financial investment and stock market returns. Lastly, the paper of Toan et al. (2021) reveals a feverish sentiment index which shows how sentiment shocks are transmitted among economies. The study finds that investor sentiment predicts shock volatility positively and stock returns negatively at the onset of COVID 19.

## 3. Methodology

### *3.1 Sample and Data Collection Method*

The sample of the dividend announcement is taken from the Bloomberg terminal from the 1st of November 2019 until 18th December 2023. Once the sample of the dividend announcement has been taken, Refinitiv Eikon was used to provide the International Securities Identification numbers (ISIN) to match with the tickers which will then be used later to find the Cumulative Abnormal Return. Refinitiv is used then again to find the corresponding independent variable of dividend per share as per announced and the control variables as of the announcement date. Table 3.1 describes the search strategy in obtaining the sample. The initial sample contained 1,263 dividend announcements. However, our sample size greatly decreased to 404 - 671 after the inclusion of independent variables and control variables. Furthermore, WRDS does not provide CAR for certain securities and at certain dates as it has not been fully updated.

**Table 3.1**

*Sample selection method in the Database*

| **Category** | **Search Strategy** |
|---|---|
| Event Type | Dividend Announcement |
| Period | Announced on 01/11/2019 and up to 18/12/2023 |
| World region | Indonesia |
| Payment Method | Cash Dividend |
| Ownership status | Public |
| Major sectors | All Sectors |

We obtained the announcement dates from 2019 to 2023 as it represents the most recent data available. This helps in ensuring that our findings are relevant to current market conditions and reflects investor behaviour in recent years. Furthermore, the COVID-19 pandemic had a profound impact in Indonesia and analysing this period would allow us to assess how such an event could unfold the Indonesian financial market. We used Indonesia as a setting due to its emerging market nature that is vastly different from the west, but has continued to grow in significance especially in the ASEAN Capital market. During 2023, the Indonesian Stock Exchange (IDX) added billions through the IPO of major mining and geothermal firms leading to a lead in market share amongst exchanges in the ASEAN region (Guild, 2024). Additionally, we include announcements that are cash dividends as it is the most common form of dividend payment. Lastly, all sectors are included in the sample to mitigate biases.

### *3.2 Variable of Interest*

#### *3.2.1 Dependent Variable*

To perform the tests for the aforementioned hypotheses, we will be conducting event study to capture the effect of an event at a certain time period. This method was originally set by Fama et al. (1969); however, the method of this research will be based on MacKinlay (1997). In this case, the event that will be measured would be the dividend announcement date.

To capture the stock market reaction surrounding the dividend announcement, abnormal return and cumulative abnormal return (CAR) are used. This value is dependent on the chosen event window. The event window refers to the time of the interest date which consists of: pre-announcement and post-announcement period. In this case, we use a 5-day event window of [-2, +2] which means we capture the abnormal return two trading days prior the dividend announcement and two trading days after the dividend announcement.

To estimate the normal returns for the firms, we employ the market model as it is the most commonly used approach in event studies due to its simplicity and transparency. Equation 3.1, 3.2 and 3.3 refers to how normal returns, abnormal returns and cumulative abnormal returns are calculated respectively.

***Equation 3.1***

$$R_{i,t} = \alpha_i + \beta_i * R_{m,t} + \varepsilon_{i,t}$$

***Equation 3.2***

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i * R_{m,t})$$

***Equation 3.3***

$$CAR_{i,(t1,t2)} = \sum_{t=t1}^{t2} AR_{i,t}$$

Where $R_{i,t}$ represents the return of stock i on day t, $\alpha_i$ serves as the intercept of stock i, $\beta_i$ is expressed as the expected return of a security given the market risk at time t, and $\varepsilon_{i,t}$represents the error term of a security at time t which are not accounted within the market model. $CAR_{i,(t1,t2)}$ serves as the cumulative abnormal return of a security during the event window (-2) to (+2) which will be used as the dependent variable for this research.

### *3.2.2 Independent Variable*

The independent variable is the dividend per share of the firm from Refinitiv Eikon as per the announcement of the dividend date. For the initial hypothesis, we transform dividend per share into natural logarithm to account for skewness (refer to appendix D) to see the effect of dividend per share. Previous studies such as Drienko & Bardia Khorsand (2023) have mostly focused on the changes of dividends and the lags. For the second hypothesis, we transform the dividend per share of each firm into first difference dividends of the previous periods. This will be used to measure how changes of previous periods affect the cumulative abnormal return. The third hypothesis will take into account how the interaction of changes in dividend interacts with the natural logarithm of EPS. This hypothesis follows the conclusion of AA. Lonie et al. (1996) in which he states that combination of dividend announcements is found to be the important explaining share price reaction on announcement day, however he did not consider when the changes are constant. Lastly, this leads to our final hypothesis in which we define a categorical variable of No Dividend Change, Positive Change, and Negative Change to indicate how the presence of the change can affect the cumulative abnormal return.

### *3.2.3 Control Variable*

All control variables are taken from Refinitiv Eikon and have included these variables in the regression models: earnings per share, size and leverage. All the following control variables are heavily right-skewed (refer to Appendix D). Therefore, we transformed into natural logarithms. Conclusively, Table 3.2 provides all the variables used in this research.

**Table 3.2**

*Description of Variables*

| Variable | Variable Type | Form | Measurement | Sources |
|---|---|---|---|---|
| CAR | Dependent | Continuous | The total cumulative abnormal return of the event window [-2, +2] | WRDS & Bloomberg |
| Dividend Per Share (ln) | Independent | Continuous | Natural logarithmic form of the firm dividend per share as per | Refinitiv Eikon |

| | | | | |
|---|---|---|---|---|
| | | | announced | |
| ΔDividend Per Share | Independent | Continuous | The first difference dividend per share of previous period | Refinitiv Eikon |
| ΔPositive Dividend | Independent | Categorical | =1 if first difference dividend per share is positive | Refinitiv Eikon |
| ΔNegative Dividend Change | Independent | Categorical | =2 if first difference dividend per share is negative | Refinitiv Eikon |
| ΔNo Dividend | Independent | Categorical | =3 if first difference per share has no change | Refinitiv Eikon |
| Size (ln) | Control | Continuous | Natural logarithmic form of the firm market capitalizations | Refinitiv Eikon |
| Earnings Per Share (ln) | Control | Continuous | Natural logarithmic form of the firm earning per share | Refinitiv Eikon |
| Leverage (ln) | Control | Continuous | Natural logarithmic form | Refinitiv Eikon |

| | | |
|---|---|---|
| | | of the firm of the<br>firm's total debt<br>over total equity |

*3.3 Descriptive Statistics*

Table 3.3 represents the yearly distribution of dividend announcement dates from the year 2019 until 2023. We believe that the peak exogenous shocks of COVID 19 circa 2020 leads companies to be more conservative with employing dividends hence we see a lower frequency during the period. We assume that there are time-varying factors which may lead to a favourable condition for firms to make dividend announcements. As a result, we will take into account the announcement dates as a time fixed effects as yearly variation. However, after conducting the Hausman Test (refer to appendix A) it is concluded that random effects would be more suitable to the model due to the unbalanced nature of the panel.

**Table 3.3**

*Yearly Distribution of Dividend Announcement by Dividend Per Share*

| Year | Frequency | Percent |
|---|---|---|
| 2019 | 13 | 1.74 |
| 2020 | 141 | 18.83 |
| 2021 | 160 | 21.36 |
| 2022 | 236 | 31.51 |
| 2023 | 199 | 26.57 |
| **Total** | **749** | **100** |

Table 3.4 provides the descriptive statistics of the variables used in this research. The table contains a number of observations, mean, standard deviation, range, skewness and kurtosis. We can see discrepancies between the observation gaps of dividend per share and CAR. These phenomena could occur in a situation whereby the firm has decided to abort the dividend payout prior to the ex-date. According to Hair et al. (2010) and Bryne (2016), data can be presumed as normally distributed if the skewness and kurtosis lies between [-2, +2] and [-7, +7] respectively. In this case, all of the variables

fit within the region which implies normal univariate distribution. The mean for the CAR is 0.02 and standard deviation is 0.07 indicating that on average firms tend to have a positive stock reaction after a dividend announcement which brings to the similarities of the findings from Drienko & Bardia Khorsand (2023). Reverting to the original scale, the dividend per share holds the mean of IDR 111.51 per share and standard deviation of 15.59.

**Table 3.4**

*Descriptive statistics*

| Variable | Obs. | Mean | Std.dev. | Min | Max | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| CAR [-2, +2] | 749 | .02 | .07 | -.27 | .36 | .69 | 6.56 |
| DPS (ln) | 733 | 3.14 | 1.85 | -4.61 | 8.77 | -.52 | 4.83 |
| ∆DPS | 432 | .64 | 2.08 | -1.60 | 8.59 | -.21 | 3.71 |
| No Change | 544 | .05 | .22 | 0 | 1 | -1.14 | 2.31 |
| Positive Change | 544 | .75 | .43 | 0 | 1 | 4.06 | 17.48 |
| Negative Change | 544 | .20 | .40 | 0 | 1 | 1.49 | 3.24 |
| Size (ln) | 749 | 15.60 | 1.84 | 10.56 | 23.49 | .61 | 3.60 |
| EPS (ln) | 700 | 3.21 | 2.92 | -4.61 | 8.85 | -1.38 | 4.27 |
| Leverage (ln) | 729 | 2.72 | 2.07 | -4.61 | 6.25 | -1.14 | 4.17 |

### *3.4 Research Method*

#### *3.4.1 Method and Model*

The following cumulative abnormal return uses a market adjusted model in which it assumes that the beta is equal to one. Additionally, this research takes into account the heteroskedastic nature of the model (refer to appendix B) and the multicollinearity of the model (refer to appendix C). To account for such circumstances, we cluster the standard errors in industry categories to create robust standard errors. In addition, the multicollinearity of the model is dealt by dropping the control variables with high VIF. Furthermore, the Pearson correlation matrix test is done in appendix F and we do not observe extreme collinearity between the independent, dependent and control variables.

To test the first hypothesis in which the dividend per share has a positive impact on the firm's abnormal return, we regress the dividend per share in natural logarithm alongside the control variables over the firm cumulative abnormal return over the announcement return of the event window.

***Equation 3.4***

$$CAR_{i,(t1,t2)} = \hat{\alpha}_0 + \hat{\beta}_1 ln(DPS)_{i,t} + \hat{\beta}_2 ln(size)_{i,t} + \hat{\beta}_3 ln(EPS)_{i,t} + \hat{\beta}_4 ln(leverage)_{i,t} + Random\ Effects + \varepsilon_{i,t}$$

Where $CAR_{i,(t1,t2)}$ represents the cumulative abnormal return during the event window for dividend announcement i at the date t. $\hat{\alpha}_0$ refers to the intercept, $ln(DPS)_{i,t}$ denotes the dividend per share in natural logarithm form, $ln(EPS)_{i,t}$ is the earnings per share in natural logarithm, $ln(leverage)_{i,t}$ denotes the total debt over total equity in natural log, $Random\ Effects$ represents the random effect and lastly, $\varepsilon_{i,t}$ is the error term.

For the second hypothesis, we regress the dividend change disclosure of the firm as $(Change\ Dividend)_{i,t}$ alongside with the control variables. This allows us to observe disclosures of changes in dividend.

***Equation 3.5***

$$CAR_{i,(t1,t2)} = \hat{\alpha}_0 + \hat{\beta}_{1-3}(Change\ Dividend)_{i,t} + \hat{\beta}_2 ln(EPS)_{i,t} + \hat{\beta}_4 ln(size)_{i,t} + \hat{\beta}_5 ln(leverage) + Random\ Effects + \varepsilon_{i,t}$$

For the third hypothesis, we regress the first difference of dividend per share of the firm from the previous periods in which we denote as $\Delta(DPS)_{i,t}$. The value of the change is not taken in natural logarithm due to the fact that the change can be in negative form which leads to removal of the value.

***Equation 3.6***

$$CAR_{i,(t1,t2)} = \hat{\alpha}_0 + \hat{\beta}_1 \Delta(DPS)_{i,t} + \hat{\beta}_2 ln(size)_{i,t} + \hat{\beta}_3 ln(EPS)_{i,t} + \hat{\beta}_4 ln(leverage)_{i,t} + Random\ Effects + \varepsilon_{i,t}$$

For the fourth hypothesis, we regress the interaction term of the first difference of dividend per share with the natural logarithm of the EPS which is denoted as $ln(EPS) * \Delta(DPS)_{,t_{i,t}}$ to observe the strength of which the effects are stronger.

***Equation 3.7***

$$CAR_{i,(t1,t2)} = \hat{\alpha}_0 + \hat{\beta}_1 \Delta DPS)_{i,t} + \hat{\beta}_2 ln(EPS)_{i,t} + \hat{\beta}_3 ln(EPS) * \Delta(DPS)_{i,t} + \hat{\beta}_4 ln(size)_{i,t} + \hat{\beta}_5 ln(leverage) + Random\ Effects + \varepsilon_{i,t}$$

## 4. Results

### *4.1 Dividend Per Share and Cumulative Abnormal Return*

We conducted a panel regression analysis to test hypothesis 1 with clustered industry of standard errors. Table 4.1 presents the results of the regression using random effects where we examine the effect of dividend per share in natural logarithm to the cumulative abnormal return alongside while controlling for market capitalization, leverage, and earnings per share. We found a significant relationship between the dividend per share and the cumulative abnormal return at 1% level. A one percent increase in the dividend per share leads to an increase in the cumulative abnormal return by 0.008 ceteris paribus.

For control variables, there is a significant relationship between company size at 1% significance level which also matches Drienko & Bardia Khorsand (2023) with leverage and earnings per share being the exception. This suggests that 1% increase in market capitalization would lead to a decrease in CAR by -0.006 all things kept constant. The constant term is 0.09, which is statistically significant at the 1% level. This represents the expected level of Cumulative Abnormal Returns when the independent variable and the controls are equal to zero.

Conclusively, the results suggest that amongst the variable, dividend per share and size are significant predictors of cumulative abnormal returns. Specifically, higher dividends per share are associated with higher abnormal returns, while larger firm size is associated with lower abnormal returns. These results match closely with Drienko & Bardia Khorsand (2023) which suggests that the Indonesian financial market follows a close reaction as the United States. Earnings per share and leverage do not appear to yield a significant impact on abnormal returns.

**Table 4.1**

*Panel Random Effect analysis for dividend per share and cumulative abnormal return*

| | CAR |
|---|---|
| Dividend Per Share (ln) | .0084222*** |
| | (.001) |
| Size (ln) | -.0062787*** |
| | (.003) |
| Earnings Per Share (ln) | -.0012104 |
| | (.000) |
| Leverage (ln) | -.0005047 |
| | (.001) |
| _Cons | .0931637*** |
| | (0.027) |
| Observations | 671 |
| Number of firms | 294 |
| $R^2$ | 5.2% |
| S.E Clustered | Industry Level |

Note: Standard errors are in parentheses
*** p<.01, ** p<.05, * p<.1

*4.2 First difference dividend changes in dummy variable and cumulative abnormal return*

For our second, we examine the disclosure of the changes of dividend per share in a form of categorical variable to the cumulative abnormal return. This method follows closely with Drienko & Bardia Khorsand (2023) where dividend changes are examined separately with the CAR, however we combined the samples in this case. Table 4.2 shows the results of the disclosure of dividend changes alongside the controls that have been used in the previous models regressed to the cumulative abnormal return in the event window [-2, +2] using an Indonesian sample. Random effects are included in the model with the additions of industry level clustered standard errors

The analysis includes dummy variables for no dividend change, positive dividend change, with negative dividend change being the omitted reference category. In terms of no dividend change, the result remained insignificant which indicates that no change in dividend does not show a significant impact to the cumulative abnormal return compared to firms with negative change. The coefficient of positive change dummy is positive and statistically significant at five percent level which holds a value of 0.01395. This implies that a positive change leads to an average of 1.395% higher than those with negative dividend change holding other variables constant. Earnings per share has a negative and statistically significant level at 10% which holds a value of -0.002. This indicates that higher earnings per share are associated with lower CAR. Specifically, a 1% increase in EPS leads to a decrease of 0.2% of CAR holding other variables constant. Size and Leverage are not statistically significant which implies that it does not have a significant impact on cumulative abnormal returns.

The result of no dividend changes and market reaction concluded that our findings do not support the theory of Drienko & Bardia Khorsand (2023) as the lack of significance in the results suggests that the market does not react significantly to no dividend changes in the sample. However, the result of positive dividend change to market reaction can be significant. The theory of (Ham et al, 2020) suggested a large dividend change does not necessarily convey more information about long-run earnings compared to moderate changes. This results partly aligned by showing a positive and significant market reaction.

**Table 4.2**

*Panel Random Effect analysis for dividend changes in dummy variable and cumulative abnormal return*

| | CAR |
|---|---|
| No Dividend Change | .0183714 |
| | (.012) |
| Positive Change | .0139523** |
| | (.006) |
| Negative Change | Omitted |
| Earnings Per Share (ln) | -.0016962* |
| | (.001) |
| Size (ln) | -.0017179 |
| | (.002) |
| Leverage (ln) | -.0019196 |
| | (.002) |
| _Cons | .0462673 |

| | |
|---|---|
| | (.029) |
| Observations | 404 |
| Number of firms | 188 |
| $R^2$ | 2.6% |
| S.E Clustered | Industry Level |

Note: Standard errors are in parentheses
*** p<.01, ** p<.05, * p<.1

*4.3 First Difference of Dividend per Share and Cumulative Abnormal Return*

In this section, we analysed the results of the first difference of dividend per share and the cumulative abnormal return of the firms. Table 4.3 provides the result of the first dividend of the previous announcement period being regressed into the adjusted market model of cumulative abnormal return within the [-2, +2] event window using the Indonesian sample. Random effects are included in this model as well as clustered industry level as standard errors.

Focusing on the model, we found a significant relationship at one percent level for the first difference of dividend per share which has a coefficient of 0.005 This implies that a first difference has miniscule but positive impact on the cumulative abnormal return. In this model, the earnings per share have a coefficient of -0.002 at 5% significance level. The weak significance suggests that higher earnings per share are somewhat associated with a decrease in CAR. Here, Leverage is significant at the significance level of 10% with a coefficient of -0.002. This suggests a partial association between leverage and cumulative abnormal return. The following variable of size is not statistically significant in this case which suggests that the two variables do not significantly influence the cumulative abnormal return.

The result of this model follows closely with the results of Drienko & Bardia Khorsand (2023) and (Ham et. al, 2020) in which changes in dividends are significant at 1% level and yields a positive impact in the CAR. However, the set of controls in prior studies yield an insignificant, but positive direction which goes against the current study.

**Table 4.3**

*Panel Random Effect analysis for first difference dividend per share and cumulative abnormal return*

| | CAR |
|---|---|

| | |
|---|---|
| ΔDividend Per Share | .0053257*** |
| | (.000) |
| Size (ln) | -.0015478 |
| | (.002) |
| Earnings Per Share (ln) | -.0021073** |
| | (.001) |
| Leverage (ln) | -.002453* |
| | (.001) |
| _Cons | .0608073** |
| | (.025) |
| Observations | 401 |
| Number of firms | 186 |
| $R^2$ | 3.2% |
| S.E Clustered | Industry Level |

Note: Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

*4.4 First Difference of Dividend per Share with the interaction of earnings per share and Cumulative Abnormal Return*

This section aims to discover which of the effects of dividend per share and earnings per share are stronger. Referring to the studies of AA. Lonie et al. (1996) in which dividends are almost invariably announced simultaneously with the corporate earnings, signals may conflict with one another where dividends may increase and earnings decrease vice versa. Table 4.3 shows the results of the first difference of dividend change alongside the earnings per share, the interaction term and the remaining controls being regressed into the adjusted market model event window of [-2, +2] using an Indonesian sample. Random effects are included in this model as well as clustered industry level as standard error.

Focusing on the model, the first difference change in dividend is positive and statistically significant at 5% significance level. The coefficient yields a value of 0.006 which implies that an increase in dividend per share by IDR 1 leads to a very small increase in the CAR. The coefficient of earnings per share which is measured in the natural logs of EPS is negative and statistically significant at 5% level. This result implies a 1% increase in earnings per share is associated with a decrease in CAR by approximately -0.002 holding other factors constant. Interaction term between the change in dividend per share and the logarithm of earnings per share does not have a statistically significant effect on CAR. This suggests that the impact of the change in dividend per share on CAR does not depend on the level of earning per share. Other financial controls such as firm size and leverage do not yield a significant impact of abnormal return.

**Table 4.4**

*Panel Random Effect analysis for first difference dividend per share with interaction term of EPS and cumulative abnormal return*

| | CAR |
|---|---|
| ΔDividend Per Share | .0063112** <br> (.002) |
| ΔDividend Per Share * Earning Per Share (ln) | -.0004943 <br> (.001) |
| Earnings Per Share (ln) | -.0021313** <br> (.001) |
| Size (ln) | -.0016022 <br> (.001) |
| Leverage (ln) | -.0023971* <br> (.001) |
| _Cons | .0572408** <br> (.025) |
| Observations | 401 |
| Number of firms | 186 |
| $R^2$ | 3.3% |
| S.E Clustered | Industry Level |

Note: Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

*4.5 Robustness Test*

Our Robustness test employs alternative event windows of [-1, +1], [-5, +5] and [-10, +10] for the cumulative abnormal return. Table 4.5 shows the results of the robustness test of the base model with dividend per share in natural log as the independent variable alongside the controls. The models account for random effects with the additions of industry level clustered standard errors (Refer to appendix E for full robustness test)

The results consistently show that Dividend per share remains positive and highly significant across all windows which strengthens its robust impact on the cumulative abnormal return. Size remains negatively significant in shorter time windows but loses its significance in the [-10, +10] window, which may indicate the size effect may diminish over longer periods. Earnings per share reveals a significance of 5% and negative impact in the event window [-1, +1] and [-10, +10] suggesting the influence of EPS may be more pronounced in different time periods. The robustness test validates the primary conclusion of the main dividend model which demonstrates that the effects of dividend per share and size on CAR are robust across different event windows, however it also highlights the varying influence of EPS over different time frames which suggests investors may react differently towards this metric.

**Table 4.5**

*Partial robustness analysis for dividend per share and cumulative abnormal return*

| | CAR [-1, +1] | CAR [-5, +5] | CAR [-10, +10] |
|---|---|---|---|
| Dividend Per Share (ln) | .0106433*** | .0136214*** | .0167154*** |
| | (.0017232) | (.004505) | (.0056281) |
| Size (ln) | -.0056642*** | -.009427*** | -.0056283 |
| | (.0018796) | (.003651) | (.004255) |
| Earnings Per Share (ln) | -.0018772** | -.0037365 | -.0081688** |
| | (.0008208) | (.0024239) | (.0033984) |
| Leverage (ln) | -.0013316 | .0002422 | .0015445 |
| | (.0011405) | (.0023499) | (.0029576) |
| _Cons | .0769798 *** | .1453473*** | .0792448 |
| | (.0240475) | (.0449257) | (.0550212) |

| | | | |
|---|---|---|---|
| Observations | 487 | 487 | 487 |
| Number of firms | 236 | 236 | 236 |
| $R^2$ | 8.9% | 5.7% | 5.8% |
| S.E Clustered | Industry Level | Industry Level | Industry Level |

Note: Standard errors are in parentheses
*** p<.01, ** p<.05, * p<.1

**5. Discussion and Conclusion**

This thesis researches the impact of changes in the dividend per share on the Indonesian stock market. As previously mentioned, most of the settings regarding prior literature have been emphasised on the US and European market. The paper aims to contribute existing literature by emphasising more the setting of the Indonesian stock market and accounting for the COVID 19 pandemic. Event study methodology is used to capture the cumulative abnormal return using the market model. This brings us back to the main research question: "*How do unexpected changes in dividend policy affect the cumulative abnormal return (CAR) of stocks in the Indonesian market?"* Table 5.1 reports our findings.

**Table 5.1**

*Summary of Results*

| **Hypothesis** | **Result** | **Explanation** |
|---|---|---|
| H1: Dividend Per Share of a firm positively influences the CAR | Supported | The relationship is significant at the 1% level, indicating a positive effect of dividend per share on CAR. |
| H2: Positive Change disclosure of dividend per share positively influences the CAR | Supported | The positive change dummy is significant at the 5% level, suggesting a positive impact on CAR. |
| H3: Changes in dividend per share positively influence the CAR | Supported | Significant at the 1% level, indicating that changes in dividend per share have a |

| | | |
|---|---|---|
| | | positive impact on CAR. |
| H4: Interaction of Dividend per share and Earnings per share positively affects CAR | Unsupported | The interaction term is not significant and is negative. |

In terms of the first hypothesis, the results highlight that dividend per share and company size are significant predictors of CAR. Specifically, one percent increase in the dividend per share leads to an increase in the cumulative abnormal return by 0.84%. These findings are consistent with Drienko & Bardia Khorsand (2023) which suggests that the Indonesian financial market exhibits similar behaviour to the United States. This refutes the dividend irrelevance theory of Miller & Modigliani (1961) which also aligns the views of Farre-Mensa (2014) in which it reinforces the importance of real-world imperfections such as taxes, transaction costs, and information asymmetry.

The result of the second hypothesis reveals that no dividend change does not significantly impact the cumulative abnormal return compared to negative changes. However, a positive dividend change disclosure significantly increases CAR by 1.395%. These findings strongly support the signalling models of Bhattacharya, 1979; Miller & Rock, 1985; John & Williams, 1985 which suggest that positive dividend change signals better future performance leading to higher CAR. Furthermore, this aligns with Lintner's (1956) view that dividends signal stability and lower earnings volatility. Overall, the study highlights the significant role of dividend changes as signals to the market, influencing CAR similarly to observations in US markets (Grullon, Michaely & Swaminathan, 2002; Benartzi, Michaely & Thaler, 1997).

The result of the third hypothesis suggests changes in dividend per share and cumulative abnormal returns yields positive results. Specifically, IDR 1 increase in dividend per share change increases CAR by approximately 0.006, while a 1% increase in EPS leads to a decrease in CAR by 0.002. These findings align with and extend the literature of Drienko & Bardia Khorsand (2023) demonstrating that firms increasing dividends after periods of stable payouts experience higher CAR, reflecting the market's positive response to dividend increases. Our results similarly show that positive dividend changes significantly boost CAR. This strengthens the idea that dividend policy changes are key signals to the market. Furthermore, Ham et al. (2020) highlighted that dividend increases have a lasting positive impact on future earnings, supporting the idea that dividend changes convey crucial information on a firm's prospect.

Lastly, the result of the fourth hypothesis suggests that a change in dividend per share has a positive and significant impact on cumulative abnormal returns (CAR) with a coefficient 0.006. Earnings per share with a 1% increase in EPS leading to CAR of 0.002. The interaction term between dividend changes and EPS is not statistically significant which suggests that dividend changes on CAR does not depend on EPS level. This seems to contradict the idea of AA. Lonie et al. (1996) where positive abnormal returns seem to be the highest when both dividends and earnings increase and vice versa as the coefficient is negative.

**6. Limitations and Recommendations**

One of the main limitations with the thesis was the fact that financial data may not be representative at the time of dividend announcement. This was due to the fact that the financial controls were obtained at the end of the most recent fiscal year. As a result, the time intervals are not captured which may not reflect the performance of the cumulative abnormal return of around the dividend announcement. Relating to the first limitation, the unavailability of financial data for some Indonesian firms could potentially lead to potential sampling bias, even though the sample size is quite adequate. The interaction term between dividend and EPS is not significant which may indicate a possible need for more nuanced measures of earnings that are available. Secondly, the low R-squared value suggests that the use of a market model for the event study might not account for all firm-specific risks or market anomalies. The use of the Fama - French 3 Factor model may help provide insights into the additional factors such as market risk, size, and value. Furthermore, this could perhaps be solved using more controls, however it is important to keep in mind that multicollinearity could arise through this method.

One of the main improvements that could be implemented in further research would be to consider a longer time frame which may include different economic cycles to have a grasp on the long-term effects of dividend changes on cumulative abnormal return. Additionally, expanding to the ASEAN market would allow for a more robust and enhanced external validity towards the emerging market. Secondly, the sample size from the variable no dividend change needs to be explored more given the limited size available and the rare occurrence. This could be done by expanding the sample size of the ASEAN market or Asia Paci

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## Appendix A

*Hausman Specification Test*

| | Coef. |
|---|---|
| **Chi-square test value** | 5.00 |
| **P-value** | 0.287 |

*** p<.01, ** p<.05, * p<.1

## Appendix B

*Heteroskedasticity using Predicted Residual Regression*

| uhatsq | Coef. | St. Err. | t-value | p-value | Sig |
|---|---|---|---|---|---|
| **xb** | -.006 | .040 | -0.15 | .883 | |
| **c.xb#c.xb** | 1.861 | 1.012 | 1.84 | .066 | * |
| **Constant** | .003 | .000 | 5.74 | .000 | *** |

*** p<.01, ** p<.05, * p<.1

## Appendix C

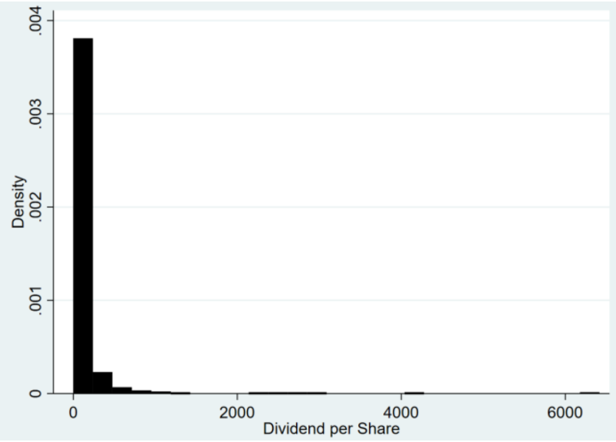
*Multicollinearity Table*

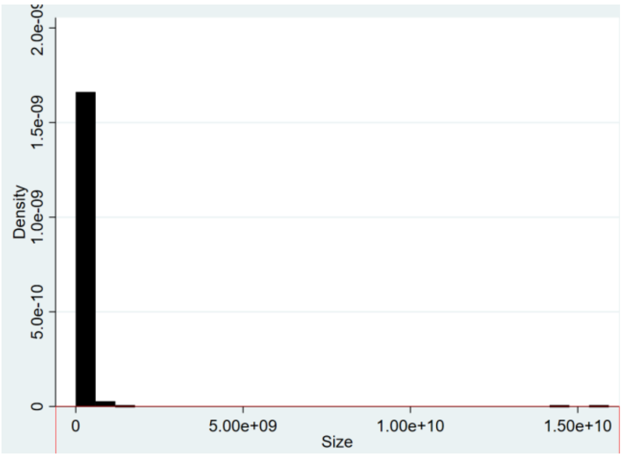
| Variable | VIF | 1/VIF |
|---|---|---|
| Size (ln) | 7.55 | 0.1325 |
| EPS (ln) | 4.88 | 0.2051 |
| Dividend Per Share (ln) | 2.69 | 0.3715 |
| Leverage (ln) | 2.42 | 0.4126 |

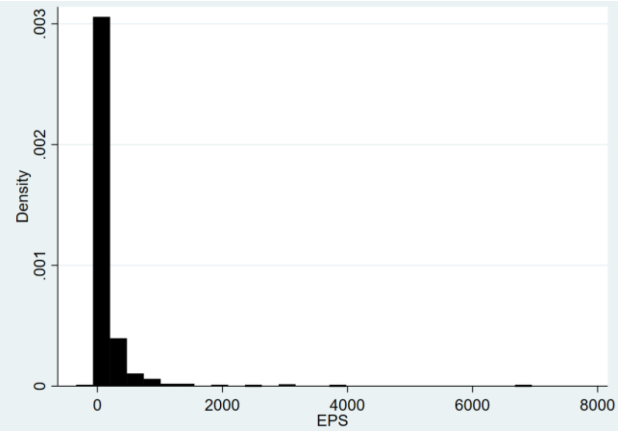
## Appendix D

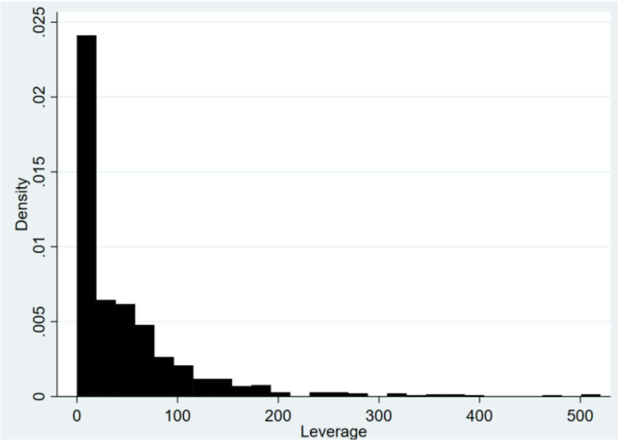
*Data Skewness*

The following figures are histograms of the variable: Dividend per share, Size, EPS and Leverage. In this dataset, we observe a heavily right-hand skewness which dominates the dataset.



**Appendix E**

*Full Robustness Analysis in all models using three different event windows of [-1, +1], [-5, +5] and [-10, +10]*

| | CAR [-1, +1] | CAR [-5, +5] | CAR [-10, +10] |
|---|---|---|---|
| ΔDividend Per Share | .0000113** | .0000197** | .0000212 |
| | (.0000) | (.0000) | (.0000145) |
| Size (ln) | -.0023145 | -.0088782** | -.0053518 |
| | (.0015929) | (.0043622) | (.0052579) |
| Earnings Per Share (ln) | -.0024462 | -.0047212 | -.0091431 |
| | (.001717) | (.0039732) | (.005816) |
| Leverage (ln) | -.0019372 | .0007997 | .003944 |
| | (.0016237) | (.0032883) | (.0047918) |
| _Cons | .0619357** | .1814519*** | .1319724 |
| | (.0252405) | (.0695576) | (.0805312) |
| Observations | 267 | 267 | 267 |
| Number of firms | 140 | 140 | 140 |
| $R^2$ | 3.6% | 3.2% | 3.1% |
| S.E Clustered | Industry Level | Industry Level | Industry Level |

Note: Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

| | CAR [-1, +1] | CAR [-5,+5] | CAR [-10, +10] |
|---|---|---|---|
| ΔDividend Per Share | .0000169* | .0000256 | .0000252 |
| | (.0000) | (.0000159) | (.0000177) |
| ΔDividend Per Share * Earning Per Share (ln) | -.000000897*** | -.0000111** | -.000000802 |
| | (.0000) | (.0000) | (.0000) |

| | | | |
|---|---|---|---|
| Earnings Per Share (ln) | -.0021217 | -.004266 | -.0053711 |
| | (.001593) | (.0038776) | (.005832) |
| Size (ln) | -.0023299 | -.0089128** | -.0087568 |
| | (.0015887) | (.0043564) | (.0052564) |
| Leverage (ln) | -.0022596 | .000238 | .0034956 |
| | (.0016473) | (.0032917) | (.0046971) |
| _Cons | .0619449** | .1820212*** | .132198 |
| | (.0250586) | (.0697534) | (.0808453) |
| Observations | 267 | 267 | 267 |
| Number of firms | 140 | 140 | 140 |
| $R^2$ | 4.5% | 3.6% | 3.3% |
| S.E Clustered | Industry Level | Industry Level | Industry Level |

Note: Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

| | CAR [-1, +1] | CAR [-5, +5] | CAR [-10, +10] |
|---|---|---|---|
| No Dividend Change | .0042789 | -.006694 | .0062917 |
| | (.0155955) | (.0186888) | (.0185346) |
| Positive Change | .0097941** | .0193691** | .0386488*** |
| | (.0049762) | (.0098565) | (.0116114) |
| Negative Change | Omitted | Omitted | Omitted |
| Size (ln) | -.0009008 | -.0034741 | .0026706 |
| | (.0017416) | (.0027007) | (.0029728) |
| Earning Per Share (ln) | -.00093 | -.0025063 | -.0067752*** |
| | (.0016213) | (.0022934) | (.0025051) |

| | | | |
|---|---|---|---|
| Leverage (ln) | -.001908 | .0000199 | .0008295 |
| | (.0012625) | (.0023439) | (.0027868) |
| _Cons | .0279649 | .0781885* | -.0282932 |
| | (.0245638) | (.0412606) | (.04869) |
| Observations | 494 | 494 | 494 |
| Number of firms | 238 | 238 | 238 |
| $R^2$ | 1.4% | 2.1% | 3.8% |
| S.E Clustered | Industry Level | Industry Level | Industry Level |

Note: Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

**Appendix F**

*Pearson Correlation Matrix of variables*

| | CAR | DPS (Ln) | ΔDPS | ΔDPS *EPS (Ln) | Positive Div Change | No Div Change | Negative Div Change | Size (Ln) | EPS (Ln) | Leverage (Ln) |
|---|---|---|---|---|---|---|---|---|---|---|
| CAR | 1.00 | | | | | | | | | |
| DPS (Ln) | 0.19 | 1.00 | | | | | | | | |
| ΔDPS | 0.03 | 0.20 | 1.00 | | | | | | | |
| ΔDPS*EPS (Ln) | 0.00 | 0.16 | 0.72 | 1.00 | | | | | | |
| Positive Div Change | 0.08 | 0.16 | 0.21 | 0.11 | 1.00 | | | | | |
| No Div Change | 0.04 | -0.05 | -0.03 | -0.02 | -0.36 | 1.00 | | | | |
| Negative Dividend Change | -0.11 | -0.14 | -0.21 | -0.10 | -0.81 | -0.24 | 1.00 | | | |
| Size (Ln) | -0.03 | 0.30 | 0.07 | 0.08 | -0.03 | -0.04 | 0.05 | 1.00 | | |
| EPS (Ln) | -0.09 | 0.18 | 0.04 | 0.13 | -0.00 | -0.050 | 0.04 | 0.04 | 1.00 | |
| Leverage (Ln) | -0.06 | -0.04 | -0.04 | -0.05 | -0.03 | 0.07 | -0.01 | 0.16 | -0.03 | 1.00 |