Article

SciPap
scientific papers

Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration 2024, 32(1), 1773.

DOI: 10.46585/sp32011773
editorial.upce.cz/SciPap

Revisiting Dividend Policy and Stock Market Reaction of Indonesian Manufacturing Enterprises amidst the COVID-19 Crisis: A Series of Robustness Checks

Powell Gian Hartono

Sekolah Tinggi Ilmu Ekonomi Ciputra Makassar, Department of Management, Indonesia

Robiyanto Robiyanto

Satya Wacana Christian University, Department of Management, Indonesia

Georgina Maria Tinungki

Hasanuddin University, Department of Statistics, Indonesia

Budi Frensidy

Universitas Indonesia, Department of Accounting, Indonesia

Muhammad Yaasiin Raya

Universitas Islam Negeri Alauddin Makassar, Department of Sharia Economic Law, Indonesia

Anderson Hidarto

Universitas Katolik Indonesia Atma Jaya, Department of Applied English Linguistics, Indonesia

Abstract

This study, which was prompted by the COVID-19 crisis, aims to assess the dividend policies of manufacturing firms, and examine market reactions to these corporate actions. A comprehensive evaluation of robustness was carried out, encompassing sub-period and sub-sample robustness checks, along with consistency testing for various key variable proxies. The effects of dividend announcements on the stock market were investigated across three time periods: 2019 to 2021. The main models indicate a positive dividend policy of manufacturing firms during the pandemic, revealing that the firms maintained or enhanced dividends amidst the pandemic, which was consistent in all sub-period check estimations. Conversely, distinct findings are observed within the Basic and Chemical industry sectors, while the Consumer Goods and Miscellaneous industries align with this study's results. The study also demonstrates the relevance of the findings to dividend signaling theory but not to the pecking order theory. Furthermore, the market reactions to dividend announcements during the 2020 crisis were strong and positive, in contrast to the weaker sensitivity observed in 2019 and 2021. This study bears significant implications for the crisis-time dividend policies for firms, implying that corporations should exhibit heightened responsiveness during such periods to transmit a positive signal to the market amid sluggish stock market activity.

Keywords

Crisis, COVID-19, Dividend Policy, Manufacturing Companies, Stock Market Reaction

JEL Classification

C33, G01, G35

Introduction

The global economy has been profoundly affected by the crisis due to COVID-19 pandemic, which led to notable disturbances, as indicated by the substantial and abrupt decrease in stock values and heightened volatility in worldwide markets, including those in Indonesia (Tinungki et al., 2023). In response to the initial outbreak, the government of Indonesia took some measures to restrict human mobility aimed at curbing the virus transmission.

Corresponding author:
Powell Gian Hartono, Sekolah Tinggi Ilmu Ekonomi Ciputra Makassar, Kawasan CitraLand City Losari Centre Point of Indonesia, Jalan Sunset Boulevard, Makassar 90224, Indonesia
Email: powell.hartono@ciputra.ac.id

However, this action inadvertently hindered the movement of goods, resulting in disruptions to the intricate webs of commerce and the economy. As a consequence, the economic activities were hindered, culminating in a crisis. Up to now, even though the government has lifted the Restrictions on Community Activity (PPKM), the COVID-19 pandemic is anticipated to still persist in Indonesia, spurring the Minister of Home Affairs to issue the Instruction of the Minister of Home Affairs Number 53 of 2022, which provides guidance on pandemic management. The regulation oversees the necessary measures to control the virus's spread during the transition to an endemic state, which are intended to assist the government in mitigating the pandemic's impact on various sectors, particularly the economy (Ali, 2022; Indonesian Ministry of Home Affairs, 2022).

In the context of Indonesia, the economic fallout from the pandemic emerged as a critical event in 2020, with indicators signaling the onset of this crisis in regards to Indonesia's economic trajectory (Kamaludin et al., 2021). In 2020, Indonesia experienced a -2.07% Gross Domestic Product (GDP) growth rate, a notable departure from the range of 4.88% to 5.17% observed in the previous years from 2014 to 2019. The evaluation of economic growth, as measured by GDP, has demonstrated its effectiveness in assessing the crisis ramifications brought about by the pandemic. A remarkably high Pearson correlation coefficient of 0.999 is evident between a binary dummy variable and GDP growth differentiating crisis from non-crisis situations. Nevertheless, given the recent resurgence in economic activities, a phase of post-crisis recuperation was projected to start by 2021 and 2022. This prognosis was supported by the economy's expansion, characterized by an increase of 3.69% and 5.31% in GDP growth rates in 2021 and 2022, respectively (Tinungki, Hartono, et al., 2022; Tinungki, Robiyanto, et al., 2022).

Moreover, as examined from an alternative macroeconomic perspective, the inflation rate stands at 1.68%, denoting a decline in contrast to previous years. Specifically, between 2015 and 2019, inflation rates in Indonesia ranged approximately from 2.72% to 3.61% (Tinungki, Robiyanto, et al., 2022). This underscores the restrained inflation patterns observed during 2020, attributed to the prevalent tendency for individuals to deposit their funds in financial institutions and reduce expenditures amidst the crisis, driven by uncertainties surrounding the pandemic's resolution. Furthermore, the IDX composite witnessed a downturn throughout 2020, reaching its lowest point at 4,194 on March 20, 2020, reflecting a 33.25% decline from its commencement at the onset of 2020. This underscores the critical assertion that the stock market's decline during the pandemic-induced crisis bears substantial importance (Hartono & Raya, 2022).

Several empirical findings have shed light on the detrimental effects of the COVID-19 pandemic on performance of global stock market, as evidenced by studies conducted by Owusu & Bentum-ennin (2021), Cepoi (2020), and Ashraf (2021). Similarly, analogous patterns have emerged across various financial domains, encompassing equity markets, cryptocurrencies, and commodities, as examined by Conlon & McGee (2020), Ahmed & Sarkodie (2021), Mazumder & Saha (2021), Baig & Chen (2022), Montasser et al. (2022), and Robiyanto et al. (2023). In Indonesia, this pattern is evident, as the adverse effects of the pandemic are felt across various sectors. For instance, Utomo & Hanggraeni (2021) demonstrated its impact on the stock market, Gunawan & Anggono (2021) explored its implications within the realm of cryptocurrencies, and Kamaludin et al. (2021) articulated its effects on equity markets. Furthermore, the issue of dividend policy as a measure of stock investment return becomes notably pertinent, especially amid times of crisis when the capital market undergoes downturns.

Empirical evidence across various nations has shown some crisis-induced impacts on dividend policies. Młodkowski (2010) observed declining dividend distribution in Japan during the 1989-1990 and 2008 crises. Hauser (2013) found reduced dividends during the 2008-2009 crises. Lim (2016) noted decreased dividends from the 2008 crisis in the Australia, China, Germany, Japan, Korea, and United States, based on cash flow theory. Abdulkadir et al. (2015) reported how Nigerian firms with high leverage and low cash flows suppressed dividends during crisis. Attig et al. (2016) likewise identified reduced dividends in nine East Asian economies, particularly family-controlled firms, during the 2008-2009 crises. Reddemann et al. (2010) documented dividend decreases in European insurance firms, suggesting these cuts improved financial conditions and compliance. Similar patterns were substantiated by Basse et al. (2014) for European banks and Basse et al. (2011) for the German automotive sector during the crises.

During the COVID-19 crisis, numerous scholarly inquiries have explored its precise implications on dividend policies. Ali (2022), examining G-12 countries, recorded a reduction in dividend distributions across diverse firms and nations. Cejnek et al. (2021) investigated firms in Euro Stoxx 50, FTSE 100, S&P 500, and Euro Stoxx Banks with maturities spanning 2018 to 2026 and 2018 to 2025, respectively, finding decreased dividends during the pandemic. Krieger et al. (2021) reported 213 U.S. firms reducing and 93 eliminating dividends during the initial 2020 COVID-19 period. Correspondingly, N. Ali et al. (2022) noted reduced dividends in Pakistan, particularly among highly leveraged firms. Boumlik et al. (2023) discovered a downward trajectory in corporate dividends in Morocco, indicative of a tendency towards risk aversion amid times of crisis. This behavior prioritizes earnings retention over dividends. Similarly, Hartono, Tinungki, et al. (2023) found Indonesian real estate companies reducing dividends due to profitability decline. These findings support the pecking order theory, indicating firms' preference for stability and sustainability over dividends during crises (Jensen, 1986; Lim, 2016).

During crises, such as the COVID-19 pandemic, there is a noticeable observation that the formulation of dividend

policies faces potential challenges, thereby possibly resulting in a decrease in dividend disbursement (Krieger et al., 2021). However, a subset of companies preserves or increases dividend levels. This phenomenon suggests that companies aim to signal their performance during crises, particularly catering to investors valuing the bird-in-the-hand theory (Hartono & Robiyanto, 2023). Dividend distribution remains responsive to market uncertainty, reflecting the influence of capital gain returns amidst sluggish market conditions (Ashraf, 2021). Kumar (2017) unearthed that the pronouncements of dividends serve as conveyors of auspicious signals, with heightened dividends coinciding with an uptick in stock prices, whereas enterprises upholding their dividend levels from the preceding year exhibit no discernible market reaction. Anwar et al. (2017) documented favorable market receptions to cash dividend declarations during the 2008-2009 financial crises. Amidst the pandemic, Pandey & Kumari (2022) observed a deficiency in positive reactions to firms initiatives during the 2020 crisis among BSE 500-indexed firms. Conversely, Robiyanto & Yunitaria (2022) indicated an absence of positive market reaction within LQ-45 enterprises in Indonesia

Based on reported phenomena and empirical findings, it becomes imperative to examine dividend policies during crises. In the realm of dividend policies during periods of crisis, it is essential to explore how the market reacts to dividend announcements in accordance with established dividend policies. Can the issuance of dividends send positive signals to the market? If discernible positive reactions manifest, they might have the potential to mitigate capital market distress arising from market pessimism. Consequently, examining dividend policies amidst the COVID-19 crisis and assessing market reactions to such corporate actions can effectively demonstrate the dividend policy's impact in mitigating capital market distress during crises. Therefore, this study seeks to examine dividend policies within Indonesian manufacturing firms amidst the COVID-19 pandemic, while also analyzing market reactions to dividend announcements. The selection of the manufacturing sector is justified by its significant contribution to the Indonesian economy (Indonesian Ministry of Industry, 2019), underscoring its pivotal role in the nation's economic framework, which is believed to remain pertinent even amidst the COVID-19 crisis. This argument is reinforced by the contention of scholars and practitioners that an optimal dividend policy can maximize firm value, thus contributing to the economy (Hartono & Raya, 2022; Robiyanto & Yunitaria, 2022; Salvatori et al., 2020).

As a consequence, this study contributes significantly to the existing literature. Firstly, it constitutes a reexamination of dividend policies within Indonesian manufacturing companies during the COVID-19 crisis, building upon the prior work of Hartono & Raya (2022). This research undertakes a comprehensive review by conducting a series of robustness checks, encompassing both sub-sample robustness checks and sub-period robustness checks. Furthermore, the robustness assessment of the crisis's impact on dividend policy employs multiple measurement proxies for both the crisis variable and the dividend policy variable. To bolster the study's robustness, the empirical analysis involves the utilization of a Dynamic Panel Data Regression, where the System-Generalized Method of Moments (SYS-GMM) estimation approach with a two-step estimator technique is employed. Secondly, this study offers a more comprehensive reevaluation of capital market reactions to announcement of dividend during the 2020 COVID-19 crisis, encompassing a broader range of companies. Additionally, we extend our market reaction analysis to the years 2019 and 2021 for comparison. Subsequently, the research findings reveal that the dividend policies of manufacturing firms during the COVID-19 crisis are positively aligned with the primary empirical model. Moreover, the results of the robustness checks on the sub-sample consistently indicate that the Basic and Chemical Industry sectors tends to adopt a negative dividend policy during periods of crisis, with similar negative trends observed in the Consumer Goods and Miscellaneous Industry sectors. In the context of sub-period analyses, substantial evidence emerges suggesting that models for the periods 2015-2020 and 2016-2021 confirm the positive establishment of dividend policies amidst the pandemic crisis, while the model examined for the period 2014-2019 establishes a positive correlation between economic conditions and dividend policies. Further findings reveal that during the crisis year of 2020, there is a notably strong and rapid positive market response to dividend announcements compared to the pre-crisis period of 2019 and the post-crisis period of 2021.

The exposition of the research in this paper is structured into several distinct sections. In Section 1, the introduction is provided, wherein the phenomenon under scrutiny is introduced, preceding studies are critically reviewed, research gaps are identified with novel originality, comprehensive contributions are emphasized, and the conceptual framework of the article is delineated. Section 2 encompasses the literature review, which synthesizes overarching theories and hypotheses. Section 3 elaborates on the research methods, detailing aspects such as data collection, variables, and the statistical analysis tools employed. Section 4 presents and discusses the empirical findings in depth. Lastly, Section 5 encapsulates the conclusion, providing a succinct summary of the research outcomes, managerial implications, limitations, and recommendations for future research endeavors.

Literature Review

The Relevance of Pecking Order Theory and Dividend Signaling Theory as Foundational Concepts during the Crisis due to COVID-19 Pandemic

During crises, particularly amidst the COVID-19 era, companies often strategized to combat economic downturns. Furthermore, the crisis was triggered by COVID-19, stemming from this pandemic, was instigated by restricted

mobility of individuals, which impacted the movement of goods, thus hindering the business cycle and even the economy. The situation in Indonesia revealed that until the end of 2020, there remained uncertainty regarding the resolution of the pandemic, including the absence of definite measured to combat it (Khoirunurrofik et al., 2022). As a consequence, a crisis ensued in 2020, as evidenced by negative year-on-year GDP growth. Following this, the early months of 2021 witnessed promising advancements in combatting the pandemic, marked by the emergence of highly effective vaccines that demonstrated the ability to curb the spread of the virus. Over time, transmission rates decreased, and societal resilience to virus outbreak strengthened. As a result, the government gradually eased movement and restriction of trade, facilitating the resumption of business and economic activities (Prasasti & Ekananda, 2023). Therefore, the economy showed improvement signs, characterized by positive economic growth indicators (Guedhami et al., 2022).

Amid economic uncertainties, particularly evident in 2020, companies tended to prioritize survival and longevity. The corporate performance decline during crises is a consequence of disruptions in the cycle of business. Therefore, a more comprehensive investigation into net earnings of companies becomes crucial to determine whether they lean towards dividend distribution or retain earnings for further investment. According to the pecking order theory, firms typically prefer internal sources of funding over external ones due to their lower associated risks. Moreover, internal funding necessitates lower capital costs compared to external alternatives such as debt, bond issuance, and equity, which entail higher costs. Consequently, amidst the pandemic-induced crisis, companies tended to suppress or even abstain from distributing dividends to ensure their survival, particularly to navigate crises. Especially during crises characterized by declines in capital market performance, companies are inclined to retain earned profits as external funding sources like equities become less favorable (N. Ali et al., 2022; Fassas et al., 2021; Hartono & Raya, 2022; Lim, 2016; Myers, 1984).

Amidst crises, there persist companies that continue to allocate dividends. Despite often being at diminished rates, and occasionally even escalating, this tactical maneuver is undertaken by corporations to address the asymmetry of information between shareholders and the market concerning the long-term growth prospects of the firm (H. Ali, 2022; Baker et al., 2016). The Dividend Signaling Theory posits that the dissemination of dividend distribution information serves as a pivotal indicator of a company's performance and trajectory of growth. Likewise, the Agency Theory lends support to the notion that the decision to accentuate or withhold dividends during periods of dwindling corporate performance resonates with the personal motivations of corporate management, which may consequently engender conflicts of interest (Lambrecht & Myers, 2012). The retention of previous dividend levels or augmentation of dividend disbursements is posited to perpetuate their favorable signaling effect on the market. Conversely, a reduction in dividend payouts may also yield adverse repercussions on market responses (Hartono & Raya, 2022).

Dividend Policy amidst the COVID-19 Pandemic

The emergence of the COVID-19 pandemic has precipitated a crisis, exerting an impact on corporate financial policies internally (Ellul et al., 2020). The crisis's repercussions on the capital markets have led to extreme stock price volatility, thus inducing short-term uncertainty regarding profitability, particularly in terms of capital gains. Consequently, firms have been compelled to devise strategic policies concerning this external funding source (Chowdhury et al., 2022). Additionally, the downturn in corporate performance due to the crisis has also influenced several corporate policies. Therefore, companies need to formulate policies regarding their profitability and equity, particularly stocks (Mohammad, 2022; Omaliko et al., 2021).

Amidst periods of dwindling corporate profitability resulting in diminished net income during crises, companies find themselves compelled to deliberate on reducing or potentially eliminating dividends disbursed to shareholders as recompense for their equity investments. Opting to retain net income as retained earnings has been underscored as a prudent policy for upholding the company's viability amidst the uncertainties stemming from crises, rather than dispersing dividends. Additionally, up until the conclusion of 2020, a year riddled with crises, economic uncertainties were exacerbated by the ambiguities in pandemic management, predominantly constrained by restrictions on the mobility of both individuals and commodities (N. Ali et al., 2022; Cejnek et al., 2021; Krieger et al., 2021).

One of the key metrics used to gauge the economic landscape is the gross domestic product (GDP) growth, which serves as a barometer for potential economic growth within a nation. This metric holds particular relevance in assessing the COVID-19 crisis impact on dividend policies, as illuminated by various empirical inquiries conducted by Hartono & Raya (2022), Tinungki, Hartono, et al. (2022), and Tinungki, Robiyanto, et al. (2022). Moreover, the evaluation of dividend policies can be approached through two distinct proxies: firstly, by examining dividends per share, which delineates the dividends received by shareholders per share held, and secondly, by scrutinizing the dividend payout ratio, which juxtaposes dividends per share against earnings per share (Anggraeny et al., 2020; Damodaran, 2015; Sharma & Bakshi, 2019; Zutter & Smart, 2019).

Prior investigations have presented findings suggesting a favorable shift in dividend policies during crises, indicating a potential reduction or complete cessation of dividend payouts amid economic downturns triggered by the COVID-19 crisis, as highlighted by N. Ali et al. (2022), Boumlik et al. (2023), Cejnek et al. (2021), and Krieger et al. (2021). Furthermore, Ong et al. (2018) and Usman et al. (2024) uncovered a positive influence between gross

domestic product on dividend policy. Hence, drawing from logical reasoning, precedent studies, and the evaluation of dividend policy robustness through diverse metrics, the ensuing hypotheses are formulated:

H1: There exists a positive influence between Gross Domestic Product on Dividend per Share.

H2: There exists a positive influence between Gross Domestic Product on Dividend Payout Ratio.

Furthermore, this investigation aims to scrutinize the repercussions of the crisis instigated by the COVID-19 pandemic on dividend policies, employing binary dummy variables to enhance the robustness of GDP proxies. The classification of crisis and non-crisis states is achieved through binary dummy variables, a methodological approach previously utilized by Tinungki, Hartono, et al. (2022), Tinungki, Robiyanto, et al. (2022), and Usman et al. (2024). The categorization of these dummy variables assigns a value of 1 to crisis scenarios and 0 to non-crisis circumstances. As such, the formulated hypotheses are as follows:

H3: There exists a negative influence between Crisis on Dividend per Share.

H4: There exists a negative influence between Crisis on Dividend Payout Ratio.

Stock Market Reaction due to Dividend Announcements during the COVID-19 Pandemic Crisis

Companies' issuance of dividends to shareholders as a remuneration for their stock investments is believed to exert an influence on the stock market (Mirbagherijam, 2014). This perception arises from the notion that dividend distribution serves as a positive signal to the market regarding a company's performance and growth trajectory (Robiyanto & Yunitaria, 2022). The stock market's reaction to dividend announcements is typically measured through the occurrence of positive abnormal returns and cumulative abnormal returns surrounding such declarations (Hartono & Raya, 2022). During periods of crisis, however, the stock market's response tends to be subdued compared to normal circumstances (Khanal & Mishra, 2017). This phenomenon can be attributed to heightened investor selling activities, as the adage "cash is king" holds particularly true amidst crises and uncertainties (Chang & Yang, 2022; Mahata et al., 2021).

Several preliminary inquiries have illustrated the reaction of stock market to dividend disclosures. Anwar et al. (2017) observed a positive market reaction to dividend allocation during the 2008-2009 economic downturns. Specifically, amidst the COVID-19 crisis, Tinungki, Robiyanto, et al. (2022) documented a favorable stock market response to dividend announcements among entities in Indonesia during the pandemic. It is widely acknowledged that dividends represent a dependable yield on stock investments during economic contractions. Furthermore, Usman et al. (2024) also observed a positive market response to dividend announcements during the COVID-19 crisis. In contrast, Pandey & Kumari (2022) revealed a subdued market reaction during the 2020 crisis compared to the pre-crisis period in 2019. In alignment with these findings, Robiyanto & Yunitaria (2022); Tinungki, Hartono, et al. (2022); and Hartono & Raya (2022) documented analogous patterns for green indexed firms, manufacturing enterprises, and LQ-45 companies in Indonesia. Consequently, we propose the ensuing hypothesis:

H5: There is a significant abnormal return around dividend announcements.

H6: There is a significant cumulative abnormal return around dividend announcements.

Methods

Design

This investigation employs a quantitative method for the empirical assessment of the formulated hypotheses (Sekaran & Bougie, 2016). The analysis of the impact of the COVID-19 crisis on dividend policies entails examining causal relationships between variables within the established model (Tinungki, 2019). In order to scrutinize the reactions of the stock market to distributed dividend announcements, an event study is conducted to assess abnormal returns surrounding dividend announcement days (Ashraf, 2021). Secondary data is sourced from various platforms including the Bloomberg terminal, the official website of the Indonesia Stock Exchange, and finance.yahoo.com. The study duration encompasses the period from 2014 to 2021 comprehensively. Sample selection is carried out through purposive sampling techniques (Sekaran & Bougie, 2016). In analyzing the impact of COVID-19 on dividend policies, certain criteria were established. These included focusing on manufacturing sector entities listed on the Indonesia Stock Exchange that had made at least one dividend payment during the observation period, while excluding those involved in IPO or delisting. Rigorous scrutiny of financial reports was undertaken to ensure precise variable measurement.

Additionally, specific conditions were set for examining stock market reactions, such as excluding firms with significant corporate events during the event window, avoiding data delays or substantial revisions, and filtering out actions like stock splits or acquisitions that might affect abnormal returns (Hartono & Raya, 2022; McWilliams & Siegel, 1997). From the pool of 766 firms listed on the IDX in 2021, 195 were in the manufacturing sector. Consequently, a sample of 91 manufacturing firms was chosen for the observation period. Throughout the 8-year timeframe, a total of 728 observations were available to assess the crisis's impact on dividend policies. Furthermore, the event study encompassed 53 firms in 2020, 69 in 2019, and 60 in 2021. This method represents

an advancement over Hartono & Raya's (2022) investigation, which examined the crisis's effects on dividend policies in only 87 companies and assessed market reactions in a mere 49 firms during 2020.

Variables and Their Measurements

In evaluating the crisis's impact on dividend policies, a primary predictor and corresponding response variable are identified. As part of one of the robustness checks, the principal predictor comprises the COVID-19 crisis, measured using a binary dummy variable and year-on-year GDP growth. Furthermore, Dividend Payout Ratio and Dividend per Share serve as proxy response variables (Hartono & Raya, 2022; Labhane & Mahakud, 2016; Lestari, 2018; Sari, 2017). Additionally, this investigation integrates various control predictor variables postulated to influence dividend policies, as evidenced by prior studies, reported by Yusof & Ismail (2016), Thakur & Kannadhasan (2018), Singla & Samanta (2018), Ranajee et al. (2018), and also by Sharma & Bakshi (2019), Wahjudi (2020), Hartono et al. (2021), and Hartono & Robiyanto (2023). Recent research supporting these postulations involves profitability, financial leverage, firm size, and investment opportunity variables. Moreover, past dividends serve as an instrumental variable for testing the empirical model within the dynamic dividend policy framework. Detailed descriptions of these variables are provided in Table 1.

Table 1. Variable, Proxy, and formulation of endogenous, exogenous, and control variable.

Variable	Proxy	Formulation	Reference
Dividend Policy	Dividend per Share (DPS)	$\text{DPS} = \frac{\text{Total Dividend}}{\text{Outstanding Shares}}$	Lestari (2018); Singla & Samanta (2018)
	Dividend Pay-out Ratio (DPR)	$\text{DPR} = \frac{\text{Dividend per Share}}{\text{Earning per Share}}$	Hartono & Matusin (2020); Hartono et al (2021)
COVID-19 Crisis	Gross Domestic Product (GDP) growth	$\text{GDP} = \frac{\text{GDP}_t - \text{GDP}_{t-1}}{\text{GDP}_{t-1}}$	Dao & Nguyen (2020); Hartono & Raya (2022)
	Binary Dummy Variable of Crisis (CRS)	Crisis = 1; Non-Crisis = 0	Tinungki, Hartono, et al. (2022); Usman et al. (2024)
Profitability	Earning per Share (EPS)	$\text{EPS} = \frac{\text{Net Income}}{\text{Outstanding Shares}}$	Almumani (2014); Sharma (2021); Sharma & Bakshi (2019)
Financial Leverage	Debt to Equity Ratio (DER)	$\text{DER} = \frac{\text{Total Liability}}{\text{Total Equity}}$	Ranajee et al. (2018); Wahjudi (2020)
Firm Size	Size	$\text{Size} = \ln(\text{Total Asset})$	Hartono, Wijaya, et al. (2023); Muchtar et al. (2020); Tinungki, Robiyanto, et al. (2022)
Investment Opportunity	Market Price to Book Value Ratio (MPBV)	$\text{MPBV} = \frac{\text{Market Price}}{\text{Book Value}}$	Hartono et al. (2021); Sharma & Bakshi (2019)
COVID-19 Crisis	Lagged-1 of Dividend per Share	$\text{DPS}_{i,t-1}$	Bostanci et al. (2018); Hartono & Raya (2022)
	Lagged-1 of Dividend Pay-out Ratio	$\text{DPR}_{i,t-1}$	Hartono & Raya (2022); Sharma (2021)

Following this, the study investigates the influence of dividend announcements as a predictor variable on stock prices, the dependent variable. The stock price analysis employs a daily-based method. An event study is conducted by examining the presence of significant abnormal returns and cumulative abnormal returns during events of dividend announcements (Khanal & Mishra, 2017; Robiyanto & Yunitaria, 2022). The event study's analysis period spans from five days prior to the dividend announcement (t-5) to one day before the announcement, the announcement day itself, one day after (t+1), and up to five days after the announcement (t+5). Abnormal returns and cumulative abnormal returns are determined by assessing realized returns, as defined in equation (1), and expected returns, as defined in equation (2). Subsequently, abnormal returns are calculated using equation (3), and cumulative abnormal returns are calculated using equation (4) (Ashraf, 2021; Hartono & Raya, 2022). The formulations are as follows:

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

$$E(R)_{i,t} = \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}} \quad (2)$$

where:

$R_{i,t}$ realized return on the i-th company and the t-th day;

$E(R)_{i,t}$ expected return on the i-th company and the t-th day;

$P_{i,t-1}$ adjusted close price on the i-th company and the $(t-1)$-th day;

$IHSG_{i,t}$ IDX composite on the t-th day;

$IHSG_{t-1}$ IDX composite on the $(t-1)$-th day.

$$AR_{i,t} = R_{i,t} - E(R)_i \tag{3}$$

$$CAR_{i,t}(t,K) = \sum_{t=-5}^{K} AR_{i,t} \tag{4}$$

where:

$AR_{i,t}$ abnormal return on the i-th company and the t-th day;

$CAR_{i,t}(t,K)$ cumulative abnormal return on the i-th company and the t-th day;

$t = -5, -4, \dots, +4, +K$; $K = 5$.

Statistical Analysis Instrument, Empirical Model, and Endogeneity Issue

The analysis of the crisis's influence on dividend policy utilized Dynamic Panel Data Regression (Biørn, 2017). Estimation of parameter employed the System-Generalized Method of Moments (SYS-GMM) with the Two-Step estimator approach. This method addresses the imbalance present in the First-Difference method and demonstrates greater proportionality compared to other general moment estimation methods (Blundell & Bond, 1998). Additionally, the Two-Step estimator technique has been found to be more efficient, yielding parameter estimations that are more consistent and unbiased (Chinoda & Kwenda, 2019). The analysis commenced with a model specification test, including, an autocorrelation test using the Arellano Bond test, an instrument validity test using the Sargan test, and an unbiased test comparing the lagged-1 parameter coefficients of SYS-GMM estimation method, the Least Square Dummy Variable Robust method, and the Ordinary Least Square Robust method. Furthermore, the parameter significance test was conducted with a simultaneous test using the Wald Chi-Square test and a partial test using the Z-test to investigate the hypotheses of research (Baltagi, 2005). Thus, this examination was structured into four regression models formulated based on the consistency of proxy robustness checking. Models 1 and 2 assessed the crisis's impact using the GDP growth approach on dividend per share (DPS) and dividend payout ratio (DPR), as depicted by equations (5) and (6). Additionally, models (3) and (4) evaluated the binary dummy variable proxy as the predictor's proxies, as illustrated by equations (7) and (8). The empirical models are represented by the following equations:

$$DPS_{i,t} = \beta_{0_{i,t}} + \delta DPS_{i,t-1} + \beta_1 GDP_{i,t} + \beta_2 EPS_{i,t} + \beta_3 DER_{i,t} + \beta_4 Size_{i,t} + \beta_5 MPBV_{i,t} + \varepsilon_{i,t} \tag{5}$$

$$DPR_{i,t} = \beta_{0_{i,t}} + \delta DPR_{i,t-1} + \beta_1 GDP_{i,t} + \beta_2 EPS_{i,t} + \beta_3 DER_{i,t} + \beta_4 Size_{i,t} + \beta_5 MPBV_{i,t} + \varepsilon_{i,t} \tag{6}$$

$$DPS_{i,t} = \beta_{0_{i,t}} + \delta DPS_{i,t-1} + \beta_1 CRS_{i,t} + \beta_2 EPS_{i,t} + \beta_3 DER_{i,t} + \beta_4 Size_{i,t} + \beta_5 MPBV_{i,t} + \varepsilon_{i,t} \tag{7}$$

$$DPR_{i,t} = \beta_{0_{i,t}} + \delta DPR_{i,t-1} + \beta_1 CRS_{i,t} + \beta_2 EPS_{i,t} + \beta_3 DER_{i,t} + \beta_4 Size_{i,t} + \beta_5 MPBV_{i,t} + \varepsilon_{i,t} \tag{8}$$

Moreover, for testing the stock market reaction to announcement dividend using an event study. This analysis was conducted using a one-sample T-test (Robiyanto & Yunitaria, 2022). This test was performed to examine the difference in means between cumulative abnormal return and abnormal return data against $\mu = 0$ (Hair et al., 2018), with the assumption that 0 signifies the absence of cumulative abnormal return/ abnormal return. The parameter estimation data processing was conducted utilizing STATA version 14 and SPSS version 22.

On the other hand, regarding the estimation of regression model, testing the causal association encounters the endogeneity issue, resulting in inconsistent and biased parameter estimation (Chinoda & Kwenda, 2019). The impact of leverage and company size on profitability has been documented by (Bangun et al., 2017), while the proved of profitability is impacted by GDP has been reported by Ongore & Kusa (2013). Moreover, Sunardi et al. (2020) found evidence that company size influences leverage. These findings collectively underscore the endogeneity inherent in both profitability and leverage. However, it was demonstrated by Li (2016) that the GMM represents the approach to parameter estimation with the most significant corrective impact when addressing concerns of endogeneity among exogenous variables compared to other alternative methods. Furthermore, this estimation technique has been demonstrated to produce the most suitable parameter coefficients. Additionally, this method addresses endogeneity by employing lagged-1 response variables as instruments for the predictors. However, it can be overcoming with GMM (Blundell & Bond, 1998; Chinoda & Kwenda, 2019).

Robustness Checks

In addition to testing the consistency among proxy variables, this study employs two more approaches to ensure the robustness of the analysis: sub-period checks and sub-sample checks (Lu & White, 2014; Usman et al., 2024; Yang et al., 2022). The sub-period checks are categorized into three intervals: 2014 to 2019, considered as the pre-crisis period; 2015 to 2020, which includes the pre-crisis years (2015 - 2019) and the crisis year (2020); and 2016 to 2021, covering the pre-crisis years (2016 - 2019), the crisis year (2020), and the post-crisis year (2021). Moreover, sub-sample checks categorize the sample into two groups: basic and chemical industries, and consumer goods and miscellaneous industries (Hartono & Robiyanto, 2023). These groups consist of 41 companies from the basic and chemical sectors and 50 from the consumer goods and miscellaneous sectors, chosen from a broader pool of manufacturing firms. Subsequently, the stock market reaction analysis to dividend announcements during crisis spans five days before and after the announcement, creating an eleven-day observation window. This examination extends over three years for comparison purposes: 2019 as the pre-crisis period, 2020 as the crisis year, and 2021 as the post-crisis phase. The three-year timeframe provides an extensive framework for discussing the findings comprehensively.

Results and Discussion

Descriptive Statistics and Correlational Relationship Analyses

Descriptive statistics for each proxy that measures the variable for regression model are presented in Table 2. Overdispersion conditions are in the DPS, DPR, CRS, EPS, MPBV proxies. Equidispersion conditions are the proxies for GDP, DER, and lnTA.

Table 2. Descriptive Statistic for each proxy of variables for Regression Model

Proxy	Mean	St. Deviation	Maximum	Minimum
DPS	118.0963	453.4233	6618.1818	0.0000
DPR	0.2852	0.4977	7.3864	-3.1198
GDP	0.0398	0.0233	0.0517	-0.0207
CRS	0.1250	0.3309	1.0000	0.0000
EPS	254.0329	908.9024	18004.5625	-3049.3810
DER	1.0283	0.9576	8.2613	-4.0946
LnTA	15.0642	1.5993	19.7217	11.8040
MPBV	2.6901	6.7636	82.4444	-0.5247

The negative EPS condition means that the company in that year has a negative profit. The condition of negative GDP growth indicates that in that period, the value of GDP is negative, which indicates a crisis condition. Furthermore, a negative minimum Debt-to-Equity Ratio (DER) value indicates a negative equity value. Hence, the negative values for the negative MPBV proxy are also attributed to the negative book value derived from its equity value.

Table 3. Pearson Correlation Pearson among proxy of variables.

Proxy	DPS	DPR	GDP	CRS	EPS	DER	LnTA	MPBV
DPS	1.000							
DPR	0.217**	1.000						
GDP	0.035	-0.060	1.000					
CRS	-0.029	0.063	-0.982**	1.000				
EPS	0.834**	0.101**	0.052	-0.048	1.000			
DER	-0.074*	-0.139**	0.030	-0.025	-0.074*	1.000		
LnTA	0.157**	0.082*	-0.047	0.038	0.166**	0.110**	1.000	
MPBV	0.230**	0.249*	0.027	-0.021	0.114**	0.144*	0.145**	1.000

Note: Testing using a two-tailed statistical approach. (**) is at the 1% significance level, and (*) at the 5% significance level.

Pearson correlation analysis was performed to support testing the research hypothesis on the parameter significance test. The results of the Pearson correlation estimation are presented in Table 3. The results show that the proxies significantly correlated with DPS are DPR, EPS, DER, lnTA, and MPBV. Furthermore, the results show that the proxies that correlate significantly with the DPR are EPS, DER, lnTA, and SqrtAGE. Each model has no correlation of more than 0.75 for the proxies for each estimated model. This shows that there is no multicollinearity

for each estimated model (Hair et al., 2018). Furthermore, as indicated in Table 3 detailing the correlation between GDP and CRS as a dummy variable, an estimated correlation coefficient of -0.982 was observed, displaying significance at the 1% level. This observation highlights the robust capacity of the GDP proxy to capture the COVID-19 crisis variable, substantiated by the binary dummy variable in both crisis and non-crisis contexts. This finding aligns with the findings reported by Tinungki, Hartono, et al. (2022), Hartono & Raya (2022), and also by Tinungki, Robiyanto, et al. (2022), encompassing both Pearson and Spearman correlation measurements.

Table 4 presents descriptive statistics to evaluate the stock market's reaction to dividend announcements. It outlines the maximum and minimum abnormal return (AR) and cumulative abnormal return (CAR) values observed from 2019 to 2021 on each reporting day. Additionally, mean and standard deviation values are provided to gauge the data's average and dispersion.

Table 4. Descriptive Statistics of Abnormal Return and Cumulative Abnormal Return

Year			Periods										
			T_{-5}	T_{-4}	T_{-3}	T_{-2}	T_{-1}	T_0	T_{+1}	T_{+2}	T_{+3}	T_{+4}	T_{+5}
2019	AR_t	Max	0.212	0.193	0.210	0.086	0.116	0.197	0.109	0.173	0.065	0.095	0.204
		Min	-0.053	-0.256	-0.198	-0.098	-0.045	-0.128	-0.179	-0.053	-0.054	-0.042	-0.113
		$\bar{x}_t$	0.006	-0.001	-0.002	0.002	0.006	-0.001	0.004	0.001	0.003	0.002	0.001
		s_t	0.042	0.041	0.043	0.026	0.024	0.037	0.035	0.028	0.018	0.018	0.036
		n	82	82	82	82	82	82	82	82	82	82	82
	CAR_t	Max	0.212	0.400	0.208	0.211	0.223	0.394	0.396	1.106	0.409	0.409	0.421
		Min	-0.053	-0.278	-0.175	-0.202	-0.194	-0.240	-0.216	-0.301	-0.175	-0.181	-0.196
		$\bar{x}_t$	0.006	0.005	0.003	0.006	0.011	0.010	0.014	0.303	0.018	0.020	0.021
		s_t	0.042	0.068	0.058	0.065	0.063	0.079	0.077	0.318	0.079	0.080	0.081
		n	82	82	82	82	82	82	82	82	82	82	82
2020	AR_t	Max	0.195	0.057	0.155	0.104	0.217	0.149	0.263	0.168	0.168	0.223	0.229
		Min	-0.075	-0.071	-0.084	-0.041	-0.078	-0.056	-0.070	-0.072	-0.043	-0.044	-0.069
		$\bar{x}_t$	0.010	0.000	0.003	0.006	0.002	0.012	0.010	0.003	0.015	0.008	0.000
		s_t	0.039	0.025	0.035	0.030	0.038	0.037	0.058	0.033	0.037	0.041	0.036
		n	62	62	62	62	62	62	62	62	62	62	62
	CAR_t	Max	0.196	0.125	0.245	0.304	0.227	0.263	0.491	0.659	0.732	0.956	1.185
		Min	-0.075	-0.052	-0.133	-0.089	-0.077	-0.070	-0.071	-0.093	-0.101	-0.109	-0.118
		$\bar{x}_t$	0.010	0.010	0.013	0.019	0.022	0.033	0.043	0.046	0.061	0.070	0.070
		s_t	0.039	0.039	0.058	0.064	0.064	0.074	0.101	0.113	0.125	0.151	0.176
		n	62	62	62	62	62	62	62	62	62	62	62
2021	AR_t	Max	0.082	0.102	0.176	0.086	0.137	0.147	0.215	0.252	0.247	0.098	0.074
		Min	-0.080	-0.058	-0.067	-0.068	-0.047	-0.067	-0.057	-0.082	-0.068	-0.075	-0.056
		$\bar{x}_t$	0.002	0.004	0.001	-0.001	0.003	0.004	0.009	0.000	0.011	0.001	0.001
		s_t	0.028	0.032	0.032	0.024	0.025	0.030	0.041	0.042	0.044	0.025	0.021
		n	73	73	73	73	73	73	73	73	73	73	73
	CAR_t	Max	0.082	0.149	0.216	0.163	0.257	0.215	0.232	0.472	0.718	0.774	0.718
		Min	-0.080	-0.122	-0.120	-0.135	-0.119	-0.141	-0.186	-0.197	-0.252	-0.270	-0.295
		$\bar{x}_t$	0.002	0.006	0.007	0.005	0.009	0.013	0.023	0.023	0.034	0.035	0.036
		s_t	0.028	0.038	0.047	0.047	0.056	0.060	0.068	0.084	0.113	0.118	0.115
		n	73	73	73	73	73	73	73	73	73	73	73

Notably, the AR and CAR data for each reporting day across 2019, 2020, and 2021 indicate overdispersion (Smith & Faddy, 2016), suggesting varying degrees of heterogeneity. Moreover, there is a noticeable decline in the number of dividend announcement events, dropping from 82 events in 2019 to 62 events in 2020. However, this trend

reverses in 2021, with the number of events increasing to 73, signifying a recovery from the decline witnessed in 2020.

Impact of Crisis due to COVID-19 on Dividend Policy: Using Robustness Check of the Variable's Proxy Consistency

Testing the Impact of the COVID-19 Crisis on Dividend Policy using Dynamic Panel Data Regression with System-GMM: Preceded by Model Specification Test and Followed by Parameter Significance Test. The Estimation Results for Models 1, 2, 3, and 4 for Each Crisis and Dividend Policy Proxy, over the Period 2014-2021, provided in table 5 and 6. The Sargan Test for Instrument Validity indicated that Models 1, 2, 3, and 4 have χ^2 p-Values > 5%, confirming the validity of instrumental variables in all parameter estimates. Additionally, the Arellano Bond-test for autocorrelation displayed p-Values for order-2 in Models 1, 2, 3, and 4 exceeding 5%, indicating the absence of autocorrelation in each parameter estimate. Furthermore, the unbiased test revealed that all Models 1, 2, 3, and 4 meet the requirement that δLSDV-Robust < δSYS-GMM < δOLS-Robust, thus confirming the absence of bias in all parameter estimates. Therefore, the entirety of parameter estimates using the SYS-GMM method for Models 1, 2, 3, and 4 fulfill the conditions of all model specification tests. Furthermore, Model Significance Test for SYS-GMM Estimation in Models 1, 2, 3, and 4 commences with a global test using the Wald χ^2 test. The results of this examination reveal that all estimates in Models 1, 2, 3, and 4 demonstrate a proper level of goodness of fit.

Table 5. Parameter Estimation using System-GMM, LSDV-Robust, and OLS-Robust Methods for the COVID-19 Pandemic Crisis Variable with GDP Proxy

Proxy	Model 1			Model 2		
	LSDV	SYS	OLS	LSDV	SYS	OLS
$DPS_{i,t-1}$	-0.033 (0.052)	0.038*** (0.002)	0.089* (0.061)	------	------	------
$DPR_{i,t-1}$	------	------	------	-0.104*** (0.014)	0.046*** (0.014)	0.165*** (0.070)
$GDP_{i,t}$	72.672 (171.032)	-348.855*** (23.213)	-293.878 (262.948)	-0.934 (2.555)	-0.694*** (0.318)	-1.527 (1.608)
$EPS_{i,t}$	0.197* (0.143)	0.329*** (0.004)	0.380*** (0.093)	0.000 (0.000)	0.000*** (0.000)	0.000** (0.000)
$DER_{i,t}$	22.603 (34.206)	49.834*** (6.559)	4.178 (18.093)	-0.091** (0.049)	0.002 (0.011)	-0.078*** (0.020)
$LnTA_{i,t}$	8.850 (20.748)	135.208*** (3.755)	-0.509 (6.999)	0.081* (0.056)	0.000 (0.052)	-0.004 (0.014)
$MPBV_{i,t}$	6.797** (3.340)	-1.480*** (0.279)	7.154*** (1.731)	-0.012 (0.013)	-0.006** (0.003)	0.016*** (0.003)
$\beta_{0_{i,t}}$	-115.085 (324.069)	-2060.529*** (54.824)	4.513 (91.415)	-0.756 (0.880)	0.262 (0.781)	0.244 (0.279)
Model Estimation Description						
$N \times T$	637	637	637	637	637	637
No. of Groups	91	91	------	91	91	------
No. of Instrument	------	33	------	------	33	------
Model Specification Test						
Sargan χ^2-stat	------	38.130*	------	------	33.284	------
AR(1)	------	-1.402	------	------	-2.009**	------
AR(2)	------	1.373	------	------	0.652	------
Parameter Significance Test						
Adj-R^2	0.522	------	0.608	-0.008	------	0.120
F-stat	3.42***	------	26.06***	1.97*	------	18.53***
Wald χ^2-stat	------	2641.68***	------	------	77.45***	------

Note: The estimation of regression coefficient parameters employs a one-tailed statistical approach. Values in parentheses represent the standard error for each estimation. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

Partial tests for the main variables yield results indicating that $GDP_{i,t}$ has a negative impact on dividend policy, both $DPS_{i,t}$ and $DPR_{i,t}$, as robustly demonstrated in Models 1 and 2. These findings confirm the rejection of H1 and H2. Consistent with earlier results, $CRS_{i,t}$ is shown to have a positive influence on dividend policy, for both $DPS_{i,t}$ and $DPR_{i,t}$, as robustly evidenced in Models 3 and 4. Therefore, these results affirm the rejection of H3 and H4. The

refutation of H1, H2, H3, and H4 elucidates that during the decline in GDP growth in 2020, manufacturing companies tend to increase dividend distribution. The consistent findings are also substantiated by the examination of the binary dummy variable, which suggests that companies enhance dividend distribution during crises. The outcomes of this study are in line with the research conducted by Tinungki, Hartono, et al. (2022), and Tinungki, Robiyanto, et al. (2022). Additionally, N. Ali et al. (2022), Boumlik et al. (2023), Cejnek et al. (2021), and Krieger et al. (2021) have arrived at similar results. These findings further corroborate the complete findings reported by Hartono & Raya (2022).

Table 6. Parameter Estimation using System-GMM, LSDV-Robust, and OLS-Robust Methods for the COVID-19 Pandemic Crisis Variable with Binary Dummy Variable

Proxy	Model 3			Model 4		
	LSDV	SYS	OLS	LSDV	SYS	OLS
$DPS_{i,t-1}$	-0.033 (0.052)	0.038*** (0.002)	0.089* (0.060)	------	------	------
$DPR_{i,t-1}$	------	------	------	-0.103*** (0.035)	0.046*** (0.014)	0.165*** (0.070)
$CRS_{i,t}$	-2.593 (10.846)	24.918*** (1.468)	21.486 (18.55)	0.073 (0.105)	0.055*** (0.022)	0.113 (0.114)
$EPS_{i,t}$	0.198* (0.143)	0.330*** (0.004)	0.380*** (0.093)	0.000 (0.000)	0.000*** (0.000)	0.000** (0.000)
$DER_{i,t}$	22.866 (34.223)	51.585*** (6.107)	4.146 (18.11)	-0.092** (0.050)	0.002 (0.011)	-0.078*** (0.020)
$LnTA_{i,t}$	7.525 (19.618)	135.380*** (3.851)	-0.467 (7.011)	0.084* (0.052)	-0.004 (0.052)	-0.005 (0.014)
$MPBV_{i,t}$	6.824** (3.341)	-1.624*** (0.274)	7.147*** (1.731)	-0.012 (0.013)	-0.006** (0.003)	0.016*** (0.003)
$\beta_{0_{i,t}}$	-92.328 (304.945)	-2080.02*** (56.174)	-10.379 (90.370)	-0.856 (0.787)	0.284 (0.788)	0.166 (0.217)
Model Estimation Description						
$N \times T$	637	637	637	637	637	637
No. of Groups	91	91	------	91	91	------
No. of Instrument	------	33	------	------	33	------
Model Specification Test						
Sargan χ^2-stat	------	37.014*	------	------	33.321	------
AR(1)	------	-1.400	------	------	-2.011**	------
AR(2)	------	1.363	------	------	0.599	------
Parameter Significance Test						
Adj-R^2	0.524	------	0.604	-0.008	------	0.129
F-stat	3.44***	------	26.07***	1.94*	------	18.56***
Wald χ^2-stat	------	2887.44***	------	------	77.86***	------

Note: The estimation of regression coefficient parameters employs a one-tailed statistical approach. Values in parentheses represent the standard error for each estimation. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

Furthermore, the manufacturing firms' adoption of a positive dividend policy during this crisis is strongly presumed to be an effort to send a positive signal to the market regarding the company's performance and growth (Cejnek et al., 2021; Hartono & Raya, 2022; Krieger et al., 2021). This finding is substantiated by the results of instrumental variable tests, revealing that in Models 1, 2, 3, and 4, past dividends have a positive impact on dividend policy. As a result, even during times of crisis, dividends are maintained at a minimum level consistent with or even higher than the previous year. This move also serves to prevent agency conflicts arising from the accumulation of profits due to limited short-term investment opportunities caused by restrictions (Lambrecht & Myers, 2012). Moreover, it is necessary to examine the stock market's response to this corporate action to evaluate the efforts of providing positive signals to the market.

Several Robustness Checks: Sub-Sample and Sub-Period Approaches

Several robustness checks were conducted to examine the consistency of empirical findings (Lu & White, 2014). Firstly, sub-period robustness checks were performed using 10 empirical models: models 1a, 2a, 3a, and 4a estimated for the period 2015-2020 (provided in table 7 and table 8); models 1b, 2b, 3b, and 4b estimated for the period 2016-2021 (provided in table 8 and table 9); and models 1c and 2c estimated for the period 2014-2019

(provided in table 9 and 10). For the estimation of the 2014-2019 period, estimations were not performed for models 3 and 4 due to the irrelevance of the binary dummy variable during the pre-crisis conditions.

Table 7. Parameter Estimation using System-GMM, LSDV-Robust, and OLS-Robust Methods for Models 1a, 2a, and 3a

Proxy	Model 1a			Model 2a			Model 3a		
	LSDV	SYS	OLS	LSDV	SYS	OLS	LSDV	SYS	OLS
$DPS_{i,t-1}$	-0.179*** (0.069)	-0.016** (0.007)	0.188* (0.143)	------	------	------	-0.179*** (0.066)	-0.016** (0.007)	0.188* (0.143)
$DPR_{i,t-1}$	------	------	------	-0.138 (0.142)	0.164*** (0.063)	0.455*** (0.117)	------	------	------
$GDP_{i,t}$	243.310 (321.088)	-244.691*** (98.007)	-288.798 (290.301)	-0.697 (1.439)	-1.132*** (0.826)	-1.593 (1.609)	------	------	------
$CRS_{i,t}$	------	------	------	------	------	------	-16.521 (22.634)	7.602*** (6.994)	21.390 (20.612)
$EPS_{i,t}$	0.155 (0.260)	0.368*** (0.013)	0.335*** (0.124)	-0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)	0.155 (0.260)	0.369*** (0.014)	0.335*** (0.124)
$DER_{i,t}$	59.042 (92.804)	159.662*** (23.159)	16.429 (23.039)	-0.163* (0.099)	0.048** (0.024)	-0.066*** (0.026)	59.229 (92.779)	159.704*** (23.329)	16.509 (23.040)
$LnTA_{i,t}$	10.761 (28.206)	16.581 (19.249)	-6.353 (9.400)	0.086 (0.098)	-0.063 (0.063)	-0.010 (0.017)	10.191 (28.084)	15.704 (19.219)	-6.368 (9.399)
$MPBV_{i,t}$	-1.018 (3.824)	4.363*** (0.895)	5.834** (2.621)	-0.014 (0.020)	-0.004 (0.009)	0.010*** (0.003)	-1.006 (3.829)	4.304*** (0.894)	5.834** (2.622)
$\beta_{0_{i,t}}$	-141.363 (446.602)	-387.307** (290.356)	85.183 (117.790)	-0.747 (1.477)	1.145 (0.954)	0.419 (0.340)	-120.873 (444.434)	-386.321* (289.342)	70.579 (116.524)
Model Estimation Description									
$N \times T$	455	455	455	455	455	455	455	455	455
No. of Groups	91	91	------	91	91	------	91	91	------
No. of Instrument	------	20	------	------	20	------	------	20	------
Model Specification Test									
Sargan χ^2-stat	------	9.172	------	------	17.068	------	------	9.109	------
AR(1)	------	-1.233	------	------	-2.160**	------	------	-1.233	------
AR(2)	------	0.413	------	------	-0.020	------	------	0.414	------
Parameter Significance Test									
Adj-R^2	0.093	------	0.591	-0.012	------	0.123	0.054	------	0.591
F-stat	4.60***	------	19.75***	5.48**	------	25.20***	4.60***	------	19.63***
Wald χ^2-stat	------	3027.35***	------	------	16.66**	------	------	3044.17***	------

Note: The estimation of regression coefficient parameters employs a one-tailed statistical approach. Values in parentheses represent the standard error for each estimation. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

Secondly, sub-sample robustness checks were conducted, utilizing a subset of 8 models. Specifically, models 1d, 2d, 3d, and 4d were estimated for companies operating within the Basic and Chemical Industry sectors (provided in table 10 and table 11), while models 1e, 2e, 3e, and 4e were employed for firms within the Consumer Goods and Miscellaneous Industry sectors (provided in table 11 and 12).

Across all parameter estimations conducted for various robustness checks using sub-sample and sub-period approaches on models 1a, 2a, 3a, 4a, 1b, 2b, 3b, 4b, 1c, 2c, 1d, 2d, 3d, 4d, 1e, 2e, 3e, and 4e, the results reveal that the validity test of instruments using the Sargan test yields non-significant p-values at the 5% level. Consequently, all parameter estimates are indicated to lack correlation between instrumental variables and the regression model's error. Additionally, in all parameter estimations for the various robustness checks employing sub-sample and sub-period approaches, the Arellano Bond-test for second-order autocorrelation produces non-significant p-values at the 5% level. This finding implies that the entire set of parameter estimates satisfies the assumption of autocorrelation and maintains consistency. The final model specification test across all parameter estimations for the diverse robustness checks involving sub-sample and sub-period approaches, i.e., unbiased test, yields results indicating that all parameter estimates meet the condition δLSDV-Robust < δSYS-GMM < δOLS-Robust, thereby affirming compliance with the unbiased test. As a consequence, it is inferred that all parameter estimates within models 1a, 2a, 3a, 4a, 1b, 2b, 3b, 4b, 1c, 2c, 1d, 2d, 3d, 4d, 1e, 2e, 3e, and 4e successfully pass the model specification tests and warrant significance tests for parameter estimation.

Table 8. Parameter Estimation using System-GMM, LSDV-Robust, and OLS-Robust Methods for Models 4a, 1b, and 2b

Proxy	Model 4a			Model 1b			Model 2b		
	LSDV	SYS	OLS	LSDV	SYS	OLS	LSDV	SYS	OLS
$DPS_{i,t-1}$	------	------	------	-0.200*** (0.061)	0.054*** (0.006)	0.210* (0.161)	------	------	------
$DPR_{i,t-1}$	-0.138 (0.142)	0.168*** (0.064)	0.455*** (0.117)	------	------	------	-0.200*** (0.026)	0.039** (0.021)	0.151** (0.075)
$GDP_{i,t}$	------	------	------	203.508 (244.773)	-328.23*** (76.968)	-346.795 (297.068)	-0.864 (1.424)	-1.120* (0.911)	-1.491 (1.623)
$CRS_{i,t}$	0.051 (0.103)	0.089* (0.059)	0.115 (0.115)	------	------	------	------	------	------
$EPS_{i,t}$	-0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)	0.172 (0.237)	0.325*** (0.012)	0.319*** (0.129)	-0.000 (0.000)	0.000*** (0.000)	0.000** (0.000)
$DER_{i,t}$	-0.163* (0.099)	0.048** (0.024)	-0.066*** (0.026)	-5.877 (27.090)	-29.400* (20.323)	-8.369 (8.930)	-0.015 (0.029)	-0.021 (0.023)	-0.092*** (0.025)
$LnTA_{i,t}$	0.085 (0.098)	-0.066 (0.063)	-0.010 (0.017)	51.912* (35.309)	220.427 (23.080)	-3.755 (8.983)	0.004 (0.106)	0.016 (0.075)	0.002 (0.019)
$MPBV_{i,t}$	-0.014 (0.020)	-0.005 (0.009)	0.010*** (0.003)	7.143** (4.267)	-0.203 (1.130)	5.839** (2.563)	-0.011 (0.015)	0.001 (0.006)	0.017*** (0.004)
$\beta_{0\,i,t}$	-0.760 (1.455)	1.137 (0.948)	0.338 (0.278)	-728.419* (514.284)	-3211.58** (351.641)	69.569 (118.927)	0.382 (1.596)	0.035 (1.142)	0.308 (0.356)
Model Estimation Description									
$N \times T$	455	455	455	455	455	455	455	455	455
No. of Groups	91	91	------	91	91	91	91	91	91
No. of Instrument	------	20	------	------	20	------	------	20	------
Model Specification Test									
Sargan χ^2-stat	------	16.923	------	------	22.204	------	------	17.152	------
AR(1)	------	-2.157**	------	------	-1.266	------	------	-1.951*	------
AR(2)	------	-0.026	------	------	0.469	------	------	0.731	------
Parameter Significance Test									
Adj-R^2	-0.012	------	0.123	0.216	------	0.598	0.048	------	0.089
F-stat	5.49***	------	25.17***	11.57***	------	19.31***	12.48***	------	13.89***
Wald χ^2-stat	------	17.00***	------	------	3718.24***	------	------	23.30***	------

Note: The estimation of regression coefficient parameters employs a one-tailed statistical approach. Values in parentheses represent the standard error for each estimation. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

The findings from the sub-period robustness analysis, covering the timeframe from 2015 to 2020 and presented in models 1a, 2a, 3a, and 4a (as depicted in Tables 7 and 8), consistently corroborate the primary outcomes of models 1, 2, 3, and 4. Specifically, the examination reveals a negative relationship between GDP and dividend policy across both variable metrics in models 1a and 2a. Moreover, in models 3a and 4a, it is evidenced that CRS positively influences dividend policy when employing the both dividend policy metrics. The parameter estimates derived from models 1a, 2a, 3a, and 4a demonstrate robust findings, indicating a tendency among Indonesian manufacturing firms to adopt a favorable dividend policy stance during crisis periods (Cejnek et al., 2021).

Table 9. Parameter Estimation using System-GMM, LSDV-Robust, and OLS-Robust Methods for Models 3b, 4b, and 1c

Proxy	Model 3b			Model 4b			Model 1c		
	LSDV	SYS	OLS	LSDV	SYS	OLS	LSDV	SYS	OLS
$DPS_{i,t-1}$	-0.199*** (0.060)	0.053*** (0.006)	0.209* (0.161)	------	------	------	-0.044 (0.058)	0.008 (0.008)	0.079* (0.056)
$DPR_{i,t-1}$	------	------	------	-0.199*** (0.026)	0.043** (0.021)	0.152** (0.074)	------	------	------
$GDP_{i,t}$	------	------	------	------	------	------	13382.58** (7761.80)	16787.92*** (3382.95)	12661.74 (10946.5)
$CRS_{i,t}$	-9.561 (16.756)	22.183*** (5.028)	23.941 (20.837)	0.063 (0.095)	0.104* (0.068)	0.109 (0.114)	------	------	------
$EPS_{i,t}$	0.173 (0.237)	0.324*** (0.012)	0.319*** (0.129)	-0.000 (0.000)	0.000*** (0.000)	0.000** (0.000)	0.210 (0.211)	0.288*** (0.024)	0.360*** (0.113)

$DER_{i,t}$	-5.130	-239.972*	-8.424	-0.017	-0.026	-0.092***	77.467	119.310***	10.485
	(27.115)	(20.299)	(8.969)	(0.029)	(0.025)	(0.025)	(71.722)	(12.121)	(24.307)
$LnTA_{i,t}$	47.305*	223.830***	-3.645	0.016	0.029	0.002	-32.971	-71.507***	0.768
	(32.104)	(22.987)	(8.995)	(0.108)	(0.075)	(0.019)	(37.140)	(14.804)	(8.772)
$MPBV_{i,t}$	7.188**	-0.245	5.830**	-0.011	0.000	0.016***	-0.687	-1.817	8.525***
	(4.293)	(1.164)	(2.562)	(0.015)	(0.007)	(0.004)	(4.291)	(1.726)	(1.976)
$\beta_{0\,i,t}$	-650.998*	-3276.41***	52.112	0.161	-0.216	0.232	-191.986	-144.195	-671.255
	(458.998)	(349.433)	(118.438)	(1.622)	(1.141)	(0.296)	(648.623)	(217.867)	(526.364)
Model Estimation Description									
$N \times T$	455	455	455	455	455	455	455	455	455
No. of Groups	91	91	------	91	91	------	91	91	------
No. of Instrument	------	20	------	------	20	------	------	20	------
Model Specification Test									
Sargan χ^2-stat	------	22.085*	------	------	16.638	------	------	21.531*	------
AR(1)	------	-1.266	------	------	-1.952**	------	------	-1.406	------
AR(2)	------	0.419	------	------	0.661	------	------	1.408	------
Parameter Significance Test									
Adj-R^2	0.228	------	0.598	0.045	------	0.090	0.243	------	0.579
F-stat	12.23***	------	19.28***	12.46*	------	13.83***	1.77*	------	30.99***
Wald χ^2-stat	------	3616.03***	------	------	21.06***	------	------	692.12***	------

Note: The estimation of regression coefficient parameters employs a one-tailed statistical approach. Values in parentheses represent the standard error for each estimation. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

The results obtained from the sub-period robustness analysis, spanning from 2016 to 2021 and depicted in the parameter estimates of models 1b, 2b, 3b, and 4b (as outlined in Tables 8 and 9), consistently mirror the core findings of models 1, 2, 3, and 4. Specifically, GDP exhibits a negative impact on dividend policy across both variable metrics in models 1b and 2b. Moreover, in models 3b and 4b, it is affirmed that CRS exerts a positive effect on dividend policy utilizing the two dividend policy variable metrics. The parameter estimation outcomes for models 1b, 2b, 3b, and 4b demonstrate robustness, suggesting that amidst crisis scenarios, Indonesian manufacturing enterprises are inclined to embrace a favorable stance towards dividend policy (Krieger et al., 2021).

Table 10. Parameter Estimation using System-GMM, LSDV-Robust, and OLS-Robust Methods for Models 2c, 1d, and 2d

Proxy	Model 2c			Model 1d			Model 2d		
	LSDV	SYS	OLS	LSDV	SYS	OLS	LSDV	SYS	OLS
$DPS_{i,t-1}$	------	------	------	-0.267***	-0.045***	0.437***	------	------	------
				(0.108)	(0.001)	(0.121)			
$DPR_{i,t-1}$	0.025	0.245***	0.455***	------	------	------	-0.014	0.136***	0.379***
	(0.0612)	(0.039)	(0.115)				(0.109)	(0.012)	(0.128)
$GDP_{i,t}$	39.788***	28.568***	31.290**	66.311	258.502***	-142.437	1.159	0.498***	0.547
	(15.743)	(0.911)	(13.270)	(86.556)	(1.778)	(157.268)	(1.021)	(0.125)	(0.870)
$EPS_{i,t}$	-0.000	0.000	0.000	0.146***	0.186***	0.146***	-0.000	0.000***	0.000*
	(0.000)	(0.000)	(0.000)	(0.051)	(0.001)	(0.042)	(0.000)	(0.000)	(0.000)
$DER_{i,t}$	-0.001	0.009	-0.049***	-13.287	-76.908***	-12.265**	-0.040*	-0.015	-0.029**
	(0.023)	(0.015)	(0.016)	(18.171)	(2.392)	(6.438)	(0.027)	(0.019)	(0.017)
$LnTA_{i,t}$	-0.040	-0.081**	0.013**	1.398	72.486***	2.559	0.064	-0.039*	0.023**
	(0.056)	(0.044)	(0.007)	(21.443)	(2.681)	(3.259)	(0.060)	(0.024)	(0.010)
$MPBV_{i,t}$	-0.005	-0.002	0.009***	1.000	2.786***	2.556*	0.005	-0.002	0.012*
	(0.004)	(0.003)	(0.002)	(1.277)	(0.294)	(1.643)	(0.009)	(0.002)	(0.008)
$\beta_{0\,i,t}$	-1.119*	-0.034	-1.603***	26.387	-998.33**	-20.715	-0.753	0.740**	0.236**
	(0.804)	(0.561)	(0.665)	(309.681)	(43.281)	(43.358)	(0.900)	(0.348)	(0.140)
Model Estimation Description									
$N \times T$	455	455	455	287	287	287	287	287	287
No. of Groups	91	91	------	41	41	------	41	41	------
No. of Instrument	------	20	------	------	33	------	------	33	------

Model Specification Test									
Sargan χ^2-stat	------	19.962*	------	------	31.864	------	------	31.561	------
AR(1)	------	2.560**	------	------	-1.475	------	------	-2.113**	------
AR(2)	------	1.278	------	------	0.548	------	------	0.300	------
Parameter Significance Test									
Adj-R^2	0.041	------	0.418	-0.019	------	0.555	0.038	------	0.204
F-stat	1.74	------	38.71***	3.21**	------	8.35***	0.86	------	6.97***
Wald χ^2-stat	------	57.34***	------	------	4601.64***	------	------	1087.4***	------

Note: The estimation of regression coefficient parameters employs a one-tailed statistical approach. Values in parentheses represent the standard error for each estimation. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

The parameter estimation findings for models 1c and 2c (provided in table 9 and table 10) are established within the pre-crisis period, spanning 2014 to 2019. The estimation results concerning the key variables of this study reveal that GDP exhibits a positive impact on dividend policy using two measurements. This underscores that during non-crisis conditions, as reflected in the period preceding the COVID-19 crisis, higher GDP growth in Indonesia tends to correspond with manufacturing companies in Indonesia adopting elevated dividend policies, vice versa. This finding aligns with the research conducted by Ongore & Kusa (2013).

Table 11. Parameter Estimation using System-GMM, LSDV-Robust, and OLS-Robust Methods for Models 3d, 4d, and 1e

Proxy	Model 3d			Model 4d			Model 1e		
	LSDV	SYS	OLS	LSDV	SYS	OLS	LSDV	SYS	OLS
$DPS_{i,t-1}$	-0.266*** (0.108)	-0.039*** (0.001)	0.437*** (0.120)	------	------	------	-0.030 (0.052)	0.039*** (0.000)	0.061 (0.051)
$DPR_{i,t-1}$	------	------	------	-0.009 (0.106)	0.143*** (0.012)	0.380*** (0.128)	------	------	------
$GDP_{i,t}$	------	------	------	------	------	------	161.214 (310.538)	-438.489*** (7.791)	-359.646 (388.697)
$CRS_{i,t}$	1.917 (5.687)	-10.892*** (1.156)	11.352 (10.629)	-0.069 (0.070)	-0.023*** (0.007)	-0.034 (0.061)	------	------	------
$EPS_{i,t}$	0.147*** (0.051)	0.187*** (0.001)	0.145*** (0.042)	-0.000 (0.000)	0.000*** (0.000)	0.000* (0.000)	0.217 (0.191)	0.349*** (0.001)	0.420*** (0.109)
$DER_{i,t}$	-12.901 (18.051)	-77.433*** (2.001)	-12.275** (6.432)	-0.037* (0.027)	-0.001 (0.019)	-0.029** (0.017)	33.262 (48.420)	74.812*** (1.832)	24.646 (28.056)
$LnTA_{i,t}$	0.080 (21.167)	71.288*** (2.375)	2.552 (3.263)	0.052 (0.056)	0.047** (0.024)	0.023** (0.010)	22.874 (33.558)	143.671*** (0.648)	1.369 (9.386)
$MPBV_{i,t}$	1.041 (1.287)	2.912*** (0.361)	2.547* (1.645)	0.005 (0.009)	-0.002 (0.002)	0.012* (0.008)	8.364** (4.441)	-0.079 (0.115)	6.519*** (2.001)
$\beta_{0_{i,t}}$	48.381 (304.042)	-969.634*** (38.624)	-27.689 (43.689)	-0.520 (0.820)	0.874** (0.351)	-0.208* (0.129)	-326.062 (522.346)	-2202.95*** (0.351)	-35.466 (128.151)
Model Estimation Description									
$N \times T$	287	287	287	287	287	287	350	350	350
No. of Groups	41	41	------	41	41	------	50	50	------
No. of Instrument	------	33	------	------	33	------	------	33	------
Model Specification Test									
Sargan χ^2-stat	------	30.051	------	------	31.279	------	------	34.550	------
AR(1)	------	-1.450	------	------	-2.104*	------	------	-1.307	------
AR(2)	------	0.567	------	------	0.301	------	------	1.280	------
Parameter Significance Test									
Adj-R^2	-0.020	------	0.555	0.038	------	0.204	0.534	------	0.629
F-stat	3.06**	------	8.25***	0.72	------	18.53***	3.37***	------	21.48***
Wald χ^2-stat	------	3363.28***	------	------	965.09***	------	------	9393.16***	------

Note: The estimation of regression coefficient parameters employs a one-tailed statistical approach. Values in parentheses represent the standard error for each estimation. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

This observation suggests that during the COVID-19 crisis in 2020, dividend policy behavior influenced by economic conditions undergoes a shift; amid the COVID-19 crisis, companies are inclined to embrace positive dividend policies, whereas in ordinary circumstances, the impact is on the contrary. This outcome is substantiated by empirical evidence indicating the negative influence of GDP on dividend policy, as demonstrated across models 1, 2, 1a, 2a, 1b, 2b, 3b, and 4b.

The sub-sample robustness check, utilizing the model 1d, 2d, 3d, and 4d sub-sample approach, represents the companies within the Basic and Chemical sectors (as presented in tables 10 and 11). The yielded parameter estimation results reveal that this sector exhibits a dividend policy behavior contrary to the general trend observed among manufacturing firms in Indonesia. This observation indicates that amid the COVID-19 crisis, companies within the Basic and Chemical industries tend to adopt a negative dividend policy stance. This robust outcome is substantiated within models 1d and 2d, demonstrating a positive impact of GDP on dividend policy using two measurements. Likewise, within models 3d and 4d, the findings illustrate a negative impact of CRS on dividend policy using two variable measurements. These outcomes contravene H1, H2, H3, and H4. These findings align with those of Ongore & Kusa (2013), revealing a positive influence of GDP on dividend policy.

Table 12. Parameter Estimation using System-GMM, LSDV-Robust, and OLS-Robust Methods for Models 2e, 3e, and 4e

Proxy	Model 2e			Model 3e			Model 4e		
	LSDV	SYS	OLS	LSDV	SYS	OLS	LSDV	SYS	OLS
$DPS_{i,t-1}$	------	------	------	-0.030 (0.052)	0.039*** (0.000)	0.061 (0.051)	------	------	------
$DPR_{i,t-1}$	-0.126*** (0.032)	0.021*** (0.006)	0.086* (0.065)	------	------	------	-1.123*** (0.031)	0.032*** (0.006)	0.089* (0.064)
$GDP_{i,t}$	-2.865 (2.791)	-3.090*** (0.410)	-3.434 (2.779)	------	------	------	------	------	------
$CRS_{i,t}$	------	------	------	-8.806 (18.620)	28.536*** (0.471)	22.985 (27.210)	0.197 (0.188)	0.209*** (0.031)	0.241 (0.197)
$EPS_{i,t}$	0.000 (0.000)	0.000*** (0.000)	0.000** (0.000)	0.217 (0.191)	0.348*** (0.001)	0.420*** (0.109)	0.000 (0.000)	0.000*** (0.000)	0.000** (0.000)
$DER_{i,t}$	-0.096** (0.055)	0.000 (0.018)	-0.117*** (0.034)	33.589 (48.344)	75.179*** (1.393)	24.560 (28.073)	-0.099** (0.055)	-0.005 (0.018)	-0.117*** (0.033)
$LnTA_{i,t}$	0.049 (0.094)	-0.006 (0.028)	-0.028 (0.027)	20.899 (31.435)	144.786*** (0.644)	1.483 (9.420)	0.069 (0.086)	0.020 (0.031)	-0.027 (0.026)
$MPBV_{i,t}$	-016 (0.017)	-0.010*** (0.001)	0.019*** (0.003)	8.400** (4.446)	-0.277*** (0.111)	6.512*** (1.998)	-0.017 (0.017)	-0.011*** (0.001)	0.019*** (0.003)
$\beta_{0\,i,t}$	-0.112 (1.528)	0.496 (0.423)	0.904** (0.532)	-289.193 (486.201)	-2239.6*** (38.624)	-54.056 (129.064)	-0.551 (1.317)	-0.046 (0.464)	0.725** (0.418)
Model Estimation Description									
$N \times T$	350	350	350	350	350	350	350	350	350
No. of Groups	50	50	------	50	50	------	50	50	------
No. of Instrument	------	33	------	------	33	------	------	33	------
Model Specification Test									
Sargan χ^2-stat	------	25.006	------	------	34.711	------	------	24.466	------
AR(1)	------	-1.802*	------	------	-1.3064	------	------	-1.808*	------
AR(2)	------	0.786	------	------	1.28	------	------	0.761	------
Parameter Significance Test									
Adj-R^2	-0.012	------	0.123	0.546	------	0.629	-0.012	------	0.123
F-stat	3.49***	------	12.87***	3.39***	------	21.65***	3.44***	------	12.96***
Wald χ^2-stat	------	381.91***	------	------	9666.91***	------	------	278.77***	------

Note: The estimation of regression coefficient parameters employs a one-tailed statistical approach. Values in parentheses represent the standard error for each estimation. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

The findings of the sub-sample robustness check for the second sample group encompass the companies within the consumer goods and miscellaneous industry sectors, as represented in models 1e, 2e, 3e, and 4e (provided in table 11 and table 12). These results consistently mirror the findings of the main model assessment, suggesting that during crisis conditions, companies in the consumer goods and miscellaneous industry sectors are inclined to adopt a positive dividend policy stance. This robust trend is confirmed across all four estimated models. Specifically, in models 1e and 2e, a negative influence of GDP on dividend policy is evident across both variable

measurements. Similarly, models 3e and 4e provide evidence of a positive impact of CRS on dividend policy, using two variable measurements. These findings align with the discoveries of Cejnek et al. (2021) and Krieger et al. (2021). Hence, this sector represents companies that more accurately capture the general conditions of manufacturing firms compared to those in the Basic and Chemical Industry sectors.

Stock Market Response to Dividend Announcements in the Pre-, During, and Post-COVID-19 Crisis Periods

The event study, aimed at scrutinizing the stock market reaction to dividend announcements, employs two methods: firstly, assessing the significance of abnormal returns, and secondly, gauging the significance of cumulative abnormal returns. Table 13 presents the event study using the abnormal return method. Notably, in 2020, amidst the crisis, noteworthy abnormal returns manifest five days before the announcement, on the dividend announcement day and the subsequent three days. Consequently, these outcomes bolster Hypothesis 5. Moreover, juxtaposed with the pre-crisis period of 2019, significant abnormal returns are discernible solely on the day prior to the dividend declaration. In 2021, during the post-crisis phase, significant abnormal returns are evident on the day after the announcement and the subsequent three days. This underscores a favorable market reaction during crises, evident from the positive T-stat values. Relative to pre and post-crisis epochs, the salience of abnormal returns exhibits a more positive trend during crisis situations. This pattern resonates with Tinungki, Robiyanto, et al. (2022).

Table 13. Estimation using One-Sample T-Test for Abnormal Returns from 5 Days Prior to Dividend Announcement to 5 Days Following Dividend Announcement.

t_K	2019			2020			2021		
	$\overline{AR_t}$	$d.f.$	T-stat.	$\overline{AR_t}$	$d.f.$	T-stat.	$\overline{AR_t}$	$d.f.$	T-stat.
t_{-5}	0.006	81	1.279	0.010	61	1.969*	0.002	72	0.588
t_{-4}	-0.001	81	-0.183	0.000	61	0.120	0.004	72	1.070
t_{-3}	-0.002	81	-0.376	0.003	61	0.777	0.001	72	0.186
t_{-2}	0.002	81	0.796	0.006	61	1.564	-0.001	72	-0.410
t_{-1}	0.006	81	2.117**	0.002	61	0.487	0.003	72	1.202
t_0	-0.001	81	-0.243	0.012	61	2.472**	0.004	72	1.208
t_{+1}	0.004	81	0.990	0.010	61	1.377	0.009	72	1.955*
t_{+2}	0.001	81	0.432	0.003	61	0.626	0.000	72	0.099
t_{+3}	0.003	81	1.399	0.015	61	3.125***	0.011	72	2.108**
t_{+4}	0.002	81	0.810	0.008	61	1.614	0.001	72	0.466
t_{+5}	0.001	81	0.248	0.000	61	0.004	0.001	72	0.412

Note: Parameter estimation for the test of mean differences employs a one-tailed statistical approach. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

The second approach of the event study involves examining the market response through cumulative abnormal returns, as depicted in Table 14. The outcomes of the event study for the year 2020 unveil a markedly robust and affirmative market reaction, as denoted by the significant and positive cumulative abnormal returns observed from five days preceding the dividend announcement to five days subsequent to the declaration. Hence, these findings substantiate Hypothesis 6. This revelation underscores the heightened sensitivity of the stock market's response to dividend announcements, portraying them as definitive returns on equity investments amid the COVID-19 crisis. This observation resonates with Anwar et al. (2017), who reported a strong market reaction to dividend announcements during the 2008-2009 crisis. Moreover, Tinungki, Robiyanto, et al. (2022) also corroborated the significance of cumulative abnormal returns in the context of dividend declarations among entities in Indonesia. Importantly, these findings affirm that dividend announcements within the manufacturing sector carry greater weight compared to the broader spectrum of firms in Indonesia at large.

Moreover, the comparison between the years 2019 and 2021 consistently aligns with the cumulative abnormal return method, wherein both years exhibit lower sensitivity in contrast to 2020. Noteworthy is the occurrence of cumulative abnormal returns solely from two days post the dividend declaration until five days thereafter in 2019. Similarly, in 2021, notable cumulative abnormal returns are witnessed from the day of the dividend announcement up to five days post the announcement. Thus, the juxtaposition of 2019, 2020, and 2021 underscores the heightened reactions to dividend announcements during the crisis period, surpassing that of non-crisis circumstances (Anwar et al., 2017; Hartono & Raya, 2022; Tinungki, Robiyanto, et al., 2022). The study's findings, which indicate a positive market reaction to dividend announcements from Indonesian manufacturing firms, shed light on the perceived attractiveness of stocks from these firms. Furthermore, investors can anticipate favorable

dividend policies adopted by manufacturing companies amidst the COVID-19 crisis through an analysis of financial reports and historical dividend payout ratios of such firms (Anwar et al., 2017; Damodaran, 2015; Miller & Rock, 1985).

Table 14. Estimation using One-Sample T-Test for Cumulative Abnormal Returns from 5 Days Prior to Dividend Announcement to 5 Days Following Dividend Announcement.

t_K	2019			2020			2021		
	$\overline{CAR_t}$	$d.f.$	T-stat.	$\overline{CAR_t}$	$d.f.$	T-stat.	$\overline{CAR_t}$	$d.f.$	T-stat.
t_{-5}	0.006	81	1.279	0.010	61	1.969*	0.002	72	0.588
t_{-4}	0.005	81	0.671	0.010	61	2.012**	0.006	72	1.315
t_{-3}	0.003	81	0.499	0.013	61	1.815*	0.007	72	1.211
t_{-2}	0.006	81	0.771	0.019	61	2.403**	0.005	72	0.996
t_{-1}	0.011	81	1.594	0.022	61	2.684***	0.009	72	1.366
t_0	0.010	81	1.151	0.033	61	3.562***	0.013	72	1.887*
t_{+1}	0.014	81	1.650	0.043	61	3.413***	0.023	72	2.859***
t_{+2}	0.303	81	8.624***	0.046	61	3.225***	0.023	72	2.357**
t_{+3}	0.018	81	2.069**	0.061	61	3.848***	0.034	72	2.574**
t_{+4}	0.020	81	2.231**	0.070	61	3.619***	0.035	72	2.658**
t_{+5}	0.021	81	2.313**	0.070	61	3.107***	0.036	72	2.695***

Note: Parameter estimation for the test of mean differences employs a one-tailed statistical approach. The notation (***) indicates significance at the 1% level, (**) at the 5% level, and (*) at the 10% level.

Conclusion

The study's findings indicate manufacturing companies in Indonesia tend to adopt positive dividend policies within the COVID-19 issue. This conclusion is supported by the main model and further reinforced by robustness tests using several proxies to measure the main variables. Moreover, the sub-period robustness check consistently demonstrates that manufacturing enterprises exhibit a positive causality relationship between the occurrences of the COVID-19 crisis on dividend policy. This implies that when a crisis arises, companies tend to establish dividend policies in a positive direction. The findings indicate a contrasting result, as evidenced by the sub-sample robustness check analysis. Specifically, companies operating in the Basic and Chemical Industry sectors exhibited a negative inclination towards their dividend policies amidst the COVID-19 crisis. This sector experienced a notable reduction, and in some cases, a complete elimination of dividends during this period. Furthermore, when examining the robustness check sub-sample, the findings align with the overall state of manufacturing firms, specifically those operating in the Consumer Goods and Miscellaneous Industry sectors, who adopt a positive dividend policy.

Furthermore, due to the positive dividend policy adopted by these manufacturing firms, the assertion that such corporations tend to convey optimistic signals within a crisis is addressed. Hence, the pertinence of the pecking order theory to the overarching theoretical framework informing the hypothesis regarding the influence of the crisis on dividend policy in this research is irrelevant. Nevertheless, the findings of this study substantiate its pertinence to the dividend signaling hypothesis, which posits that firms with a positive dividend policy want to convey a positive signal through their dividend decisions. Moreover, this position is bolstered by the hypothesis that the COVID-19 crisis has imposed limitations on the movement of individuals and goods, hence constraining the economic cycle of firms. Given these constraints, it is likely that corporations will experience a drop in short-term investment prospects. Consequently, companies may choose to transfer a larger proportion of their earnings as dividends rather than maintaining them as retained earnings (Damodaran, 2015).

Further investigation is required to evaluate the stock market's reaction to the announcement of corporate actions regarding the positive dividend policy of manufacturing enterprises, in order to validate the empirical findings. The results indicate that amidst the COVID-19 crisis in 2020, the stock market exhibited a robust and positive reaction, as demonstrated by the presence of significant abnormal returns and cumulative abnormal returns. A comparative analysis of the stock market's response to dividend announcements in 2019, before to the crisis, and in 2021, post the crisis, reveals that the stock market exhibited a higher level of sensitivity towards dividend announcements during the crisis time compared to non-crisis circumstances. In addition, it has been observed that dividend announcements made by manufacturing companies during the crisis, which convey positive information regarding their dividend policies, have contributed to the emergence of subdued trading conditions. This effect was particularly pronounced in March 2020, when the Indonesian stock market, specifically the IDX composite, experienced a decline (Hartono & Raya, 2022; Pandey & Kumari, 2022). Overall, the findings of this study

encompassed a thorough reevaluation of the research undertaken by Hartono & Raya (2022).

The findings of this study have significant significance for manufacturing companies operating in Indonesia. Initially, it is plausible for corporations to establish dividend policies in a positive way during periods of economic crisis. This corporate activity has demonstrated a positive effect on the stock market. Furthermore, it has been posited by Anggraeny et al. (2020) that the establishment of an optimal dividend policy has the potential to enhance the entire value of a firm. Consequently, implementing an optimal dividend policy during times of crisis can effectively maintain the stability and viability of companies amidst the prevailing uncertainties. Furthermore, companies operating in the Basic and Chemical Industry sectors have the opportunity to establish a dividend policy that is positive even in times of crisis. This is supported by empirical evidence indicating that the payment of dividends during a crisis is perceived as a good signal, leading to a notably robust and positive reaction from investors. Hence, the positive consequences for this company pertain to its participation in stock market transactions notwithstanding the crisis that unfolded in 2020.

This study has limitations of research. The examination of the influence of the crisis on dividend policy is limited to the analysis of the pre-crisis and crisis eras exclusively. The examination of the post-crisis phase of the COVID-19 pandemic has been hindered by the scarcity of data in the context of time, as the observational period extends only until 2021. Furthermore, the examination of stock market responses is constrained to the evaluation of three specific time periods: pre-crisis in 2019, during the crisis in 2020, and post-crisis in 2021. The present study has not conducted a comprehensive analysis of the sub-sample robustness check, which involves dividing of the sample into distinct industrial sector groups. Hence, it is recommended that future research endeavors focus on investigating the post-crisis phase of the COVID-19 pandemic, provided that the duration of this period is sufficient within the framework of the time series context. Subsequently, an analysis was conducted on the stock market's reaction to the dividend announcements, which was further categorized into various sample groups including the Basic and Chemical, Consumer Goods, and Miscellaneous industries.

Acknowledgement

The first and third authors would like to extend their sincere gratitude to the late Assoc. Prof. Agus Budi Hartono for his invaluable contribution as the validator, investigator, data curator and supervisor. His passing on March 14, 2023 has deeply saddened us; nevertheless, his dedication and hard work have laid the foundation for the completion of this research. We will always be grateful for his unwavering commitment and selfless efforts. Moreover, we also extend our utmost gratitude to the late Dra. Maria Tinungki Makapedua for her invaluable contribution to the grammar correction of this research manuscript. Her passing on March 30, 2024, left us in mourning, yet we remain thankful for her contributions, which have made this research worthy of publication.

References

Abdulkadir, R. I., Abdullah, N. A. H., & Woei-Chyuan, W. (2015). Dividend policy changes in the pre-, mid-, and post-financial crisis: evidence from the nigerian stock market. *Asian Academy of Management Journal of Accounting and Finance*, *11*(2), 103–126.

Ahmed, M. Y., & Sarkodie, S. A. (2021). COVID-19 pandemic and economic policy uncertainty regimes affect commodity market volatility. *Resources Policy*, *74*, 102303. https://doi.org/10.1016/j.resourpol.2021.102303

Ali, H. (2022). Corporate dividend policy in the time of COVID-19: Evidence from the G-12 countries. *Finance Research Letters*, *46*. https://doi.org/10.1016/j.frl.2021.102493

Ali, N., Rehman, M. Z. U., Ashraf, B. N., & Shear, F. (2022). Corporate Dividend Policies during the COVID-19 Pandemic. *Economies*, *10*(11), 1–12. https://doi.org/10.3390/economies10110263

Almumani, M. A. (2014). Determinants of Equity Share Prices of the Listed Banks in Amman Stock Exchange: Quantitative Approach. *International Journal of Business and Social Science*, *5*(1), 91–104.

Anggraeny, W., Robiyanto, R., & Sakti, I. M. (2020). Determinants of Dividend Payout Ratio in Non-Financial Companies Listed. *International Journal of Social Science and Business*, *4*(4), 543. https://doi.org/10.23887/ijssb.v4i4.29583

Anwar, S., Singh, S., & Jain, P. K. (2017). Impact of Cash Dividend Announcements: Evidence from the Indian Manufacturing Companies. *Journal of Emerging Market Finance*, *16*(1), 29–60. https://doi.org/10.1177/0972652716686238

Ashraf, B. N. (2021). Stock markets' reaction to Covid-19: Moderating role of national culture. *Finance Research Letters*, *41*(May 2020), 101857. https://doi.org/10.1016/j.frl.2020.101857

Attig, N., Boubakri, N., El Ghoul, S., & Guedhami, O. (2016). The Global Financial Crisis, Family Control, and Dividend Policy. *Financial Management*, *45*(2), 291–313. https://doi.org/10.1111/fima.12115

Baig, A. S., & Chen, M. (2022). Did the COVID-19 pandemic (really) positively impact the IPO Market? An Analysis of information uncertainty. *Finance Research Letters Journal*, *46*, 102372. https://doi.org/10.1016/j.frl.2021.102372

Baker, M., Mendel, B., & Wurgler, J. (2016). Dividends as reference points: A behavioral signaling approach. *Review of Financial Studies*, *29*(3), 697–738. https://doi.org/10.1093/rfs/hhv058

Baltagi, B. H. (2005). *Econometric Analysis of Panel Data* (3rd ed.). John Wiley & Sons, Ltd.

Bangun, N., Tjakrawala, F. X. K., Andani, K. W., & Santioso, L. (2017). The Effect of Financial Leverage, Employee Stock Ownership Program and Firm Size on Firm Performance of Companies Listed in Indonesia Stock Exchange. *International Business and Accounting Research Journal*, *1*(2), 82. https://doi.org/10.15294/ibarj.v1i2.7

Basse, T., Gruppe, M., Reddemann, S., & Schwope, F. (2011). Dividend policy issues in the financial crisis: The example of the

German automotive industry. *International Journal of Applied Decision Sciences*, *4*(3), 247–259. https://doi.org/10.1504/IJADS.2011.040881

Basse, T., Reddemann, S., Riegler, J. J., & von der Schulenburg, J. M. G. (2014). Bank dividend policy and the global financial crisis: Empirical evidence from Europe. *European Journal of Political Economy*, *34*. https://doi.org/10.1016/j.ejpoleco.2013.09.001

Biørn, E. (2017). *Econometrics of Panel Data: Methods and Applications* (1st ed.). Oxford University Press.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8

Bostanci, F., Kadioglu, E., & Sayilgan, G. (2018). Determinants of Dividend Payout Decisions: A Dynamic Panel Data Analysis of Turkish Stock Market. *International Journal of Financial Studies*, *6*(4), 93. https://doi.org/10.3390/ijfs6040093

Boumlik, Z., Oulhadj, B., & Colot, O. (2023). The Effect of the COVID-19 Pandemic on Corporate Dividend Policy of Moroccan Listed Firms. *Journal of Risk and Financial Management*, *16*, 350. https://doi.org/10.3390/jrfm 16080350

Cejnek, G., Randl, O., & Zechner, J. (2021). The COVID-19 Pandemic and Corporate Dividend Policy. *Journal of Financial and Quantitative Analysis*, *56*(7), 2389–2410. https://doi.org/10.1017/S0022109021000533

Cepoi, C. (2020). Asymmetric dependence between stock market returns and news during COVID-19 financial turmoil. *Finance Research Letters*, *36*. https://doi.org/10.1016/j.frl.2020.101658

Chang, C. C., & Yang, H. (2022). The role of cash holdings during financial crises. *Pacific Basin Finance Journal*, *72*(February), 101733. https://doi.org/10.1016/j.pacfin.2022.101733

Chinoda, T., & Kwenda, F. (2019). The impact of institutional quality and governance on financial inclusion in Africa: A two-step system generalised method of moments approach. *Journal of Economic and Financial Sciences*, *12*(1), 1–9. https://doi.org/10.4102/jef.v12i1.441

Chowdhury, E. K., Dhar, B. K., & Stasi, A. (2022). Volatility of the US stock market and business strategy during COVID-19. *Business Strategy and Development*, *5*(4), 350–360. https://doi.org/10.1002/bsd2.203

Conlon, T., & McGee, R. (2020). Safe haven or risky hazard? Bitcoin during the Covid-19 bear market. *Finance Research Letters*, *35*(May), 101607. https://doi.org/10.1016/j.frl.2020.101607

Damodaran, A. (2015). *Applied Corporate Finance Fourth Edition* (4th ed.). John Wiley & Sons, Inc.

Dao, B. T. T., & Nguyen, K. A. (2020). Bank capital adequacy ratio and bank performance in Vietnam: A simultaneous equations framework. *Journal of Asian Finance, Economics and Business*, *7*(6), 39–46. https://doi.org/10.13106/JAFEB.2020.VOL7.NO6.039

Ellul, A., Erel, I., & Rajan, U. (2020). The COVID-19 pandemic crisis and corporate finance. *Review of Corporate Finance Studies*, *9*(3), 421–429. https://doi.org/10.1093/rcfs/cfaa016

Fassas, A., Bellos, S., & Kladakis, G. (2021). Corporate liquidity, supply chain and cost issues awareness within the Covid-19 context: evidence from us management reports' textual analysis. *Corporate Governance (Bingley)*, *21*(6), 1155–1171. https://doi.org/10.1108/CG-09-2020-0399

Guedhami, O., Knill, A., Megginson, W. L., & Senbet, L. W. (2022). The dark side of globalization: Evidence from the impact of COVID-19 on multinational companies. *Journal of International Business Studies*, *53*(8), 1603–1640. https://doi.org/10.1057/s41267-022-00540-8

Gunawan, M., & Anggono, A. H. (2021). Cryptocurrency Safe Haven Property against Indonesian Stock Market During COVID-19. *Journal of Economics, Business, & Accountancy Ventura*, *24*(1), 121. https://doi.org/10.14414/jebav.v24i1.2661

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2018). *Multivariate Data Analysis* (8th ed.). Cengage.

Hartono, P. G., & Matusin, A. R. (2020). The Determinants of Dividend Policy on Real Estate, Property, and Building Construction Companies Listed in IDX using Unbalanced Panel Data Approach. *TIJAB (The International Journal of Applied Business)*, *4*(2), 139. https://doi.org/10.20473/tijab.v4.i2.2020.139-156

Hartono, P. G., & Raya, M. Y. (2022). COVID-19 Pandemic, Dividend Policy, and Stock Market Reaction: Evidence from the Manufacturing Companies in Indonesia. *Jurnal Keuangan Dan Perbankan*, *26*(4), 758–778. https://doi.org/10.26905/jkdp.v26i4.8226

Hartono, P. G., & Robiyanto, R. (2023). Factors affecting the inconsistency of dividend policy using dynamic panel data model. *SN Business & Economics*, *3*(2), 53. https://doi.org/10.1007/s43546-023-00431-6

Hartono, P. G., Sari, W. R., Tinungki, G. M., Jakaria, & Hartono, A. B. (2021). The Determinants of Dividend Policy: an Empirical Study of Inconsistent Distribution of Dividends using Balanced Panel Data Analysis. *Media Ekonomi Dan Manajemen*, *36*(2), 89–106. https://doi.org/10.24856/mem.v36i2.2023

Hartono, P. G., Tinungki, G. M., & Susanto, K. P. (2023). COVID-19, Profitability, and Dividend Policy: A Robustness Test for Mediation Model using Covariance-Based SEM. *International Journal of Digital Entrepreneurship and Business*, *4*(1), 1–13. https://doi.org/10.52238/ideb.v4i1.106

Hartono, P. G., Wijaya, R., Hartono, A. B., Dizar, S., Magetsari, O. N. N., Anggara, I. S., & Sujono, M. I. (2023). Factors affecting stock price of maritime companies in Indonesia. *AIP Conference Proceedings*, *2675*(February). https://doi.org/10.1063/5.0116974

Hauser, R. (2013). Did dividend policy change during the financial crisis? *Managerial Finance*, *39*(6), 584–606. https://doi.org/10.1108/03074351311322861

Instruction of the Minister of Home Affairs No. 53 of 2022 regarding the Prevention and Control of COVID-19 during the Transitional Period Towards Endemic, (2022).

Indonesian Ministry of Industry, I. M. of I. (2019, April). Siaran Pers: Kontribusi Manufaktur Nasional Capai 20 Persen, RI Duduki Posisi Ke-5 Dunia. *Kementerian Perindustrian Republik Indonesia*.

Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review*, *76*(2), 323–329.

Kamaludin, K., Sundarasen, S., & Ibrahim, I. (2021). Covid-19, Dow Jones and equity market movement in ASEAN-5 countries: evidence from wavelet analyses. *Heliyon*, *7*(1), e05851. https://doi.org/10.1016/j.heliyon.2020.e05851

Khanal, A. R., & Mishra, A. K. (2017). Stock price reactions to stock dividend announcements: A case from a sluggish economic

period. *North American Journal of Economics and Finance*, *42*(June 2009), 338–345. https://doi.org/10.1016/j.najef.2017.08.002

Khoirunurrofik, K., Abdurrachman, F., & Putri, L. A. M. (2022). Half-hearted policies on mobility restrictions during COVID-19 in Indonesia: A portrait of large informal economy country. *Transportation Research Interdisciplinary Perspectives*, *13*, 100517. https://doi.org/10.1016/j.trip.2021.100517

Krieger, K., Mauck, N., & Pruitt, S. W. (2021). The impact of the COVID-19 pandemic on dividends. *Finance Research Letters*, *42*(September), 101910. https://doi.org/10.1016/j.frl.2020.101910

Kumar, S. (2017). New evidence on stock market reaction to dividend announcements in India. *Research in International Business and Finance*, *39*, 327–337. https://doi.org/10.1016/j.ribaf.2016.09.009

Labhane, N. B., & Mahakud, J. (2016). Determinants of Dividend Policy of Indian Companies. *Paradigm*, *20*(1), 36–55. https://doi.org/10.1177/0971890716637698

Lambrecht, B. M., & Myers, S. C. (2012). A Lintner Model of Payout and Managerial Rents Managerial Rents. *The Journal of Finance*, *67*(5), 1761–1810.

Lestari, H. S. (2018). Determinants of corporate dividend policy in Indonesia. *IOP Conference Series: Earth and Environmental Science*, *106*(1). https://doi.org/10.1088/1755-1315/106/1/012046

Li, F. (2016). Endogeneity in CEO power: A survey and experiment. *Investment Analysts Journal*, *45*(3), 149–162. https://doi.org/10.1080/10293523.2016.1151985

Lim, K. (2016). The Shift of a Dividend Policy and a Leverage Policy during the 2008 Financial Crisis. *International Journal of Finance & Banking Studies*, *5*(6), 09–14. https://doi.org/10.20525/ijfbs.v5i6.600

Lu, X., & White, H. (2014). Robustness checks and robustness tests in applied economics. *Journal of Econometrics*, *178*(PART 1), 194–206. https://doi.org/10.1016/j.jeconom.2013.08.016

Mahata, A., Rai, A., Nurujjaman, M., & Prakash, O. (2021). Modeling and analysis of the effect of COVID-19 on the stock price: V and L-shape recovery. *Physica A: Statistical Mechanics and Its Applications*, *574*(126008). https://doi.org/10.1016/j.physa.2021.126008

Mazumder, S., & Saha, P. (2021). COVID-19: Fear of pandemic and short-term IPO performance. *Finance Research Letters*, *43*(February), 101977. https://doi.org/10.1016/j.frl.2021.101977

McWilliams, A., & Siegel, D. (1997). Event studies in management research: Theoretical and empirical issues. *Academy of Management Journal*, *40*(3), 626–657. https://doi.org/10.2307/257056

Miller, M. H., & Rock, K. (1985). Dividend Policy under Asymmetric Information. *The Journal of Finance*, *40*(4), 1031–1051. https://doi.org/10.1111/j.1540-6261.1985.tb02362.x

Mirbagherijam, M. (2014). Asymmetric Effect of Inflation on Dividend Policy of Iran's Stocks Market. *International Journal of Academic Research in Business and Social Sciences*, *4*(2). https://doi.org/10.6007/ijarbss/v4-i2/652

Młodkowski, P. (2010). Dividend Policy in Crisis. Case of Japan 1991-2008. *The International Journal of Economic Policy Studies*, *5*, 49–74.

Mohammad, K. U. (2022). How bank capital structure decision-making change in recessions: Covid-19 evidence from Pakistan. *Asian Journal of Economics and Banking*, *6*(2), 255–269. https://doi.org/10.1108/ajeb-04-2021-0049

Montasser, G. El, Charfeddine, L., & Benhamed, A. (2022). COVID-19, cryptocurrencies bubbles and digital market efficiency: sensitivity and similarity analysis. *Finance Research Letters*, *46*(PA), 102362. https://doi.org/10.1016/j.frl.2021.102362

Muchtar, S., Hartono, P. G., & Sari, W. R. (2020). The Quality of Corporate Governance and Its Effect on Sharia Bank Financial Performance in Indonesia. *Advances in Economics, Business and Management Research*, *151*, 192–196. https://doi.org/10.2991/iac-17.2018.49

Myers, S. C. (1984). The Capital Structure Puzzle. *The Journal of Finance*, *39*(3), 575–592. https://doi.org/10.1111/j.1540-6261.1984.tb03646.x

Omaliko, E. L., Amnim, A., Okeke, P. C., & Obiora, F. C. (2021). Impact of Covid-19 Pandemic on Liquidity and Profitability of Firms in Nigeria. *International Journal of Academic Research in Business and Social Sciences*, *11*(3). https://doi.org/10.6007/ijarbss/v11-i3/9229

Ong, C. L., Thaker, H. M. T., Khaliq, A., & Thaker, M. A. M. T. (2018). The Determinants of Dividend Payout: Evidence from the Malaysian Property Market. *Iqtishadia*, *10*(2), 1. https://doi.org/10.21043/iqtishadia.v10i2.2863

Ongore, V. O., & Kusa, G. B. (2013). Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial Issues*, *3*(1), 237–252.

Owusu, P., & Bentum-ennin, I. (2021). The impact of COVID-19 on stock market performance in Africa: A Bayesian structural time series approach. *Journal of Economics and Business*, *115*. https://doi.org/10.1016/j.jeconbus.2020.105968

Pandey, D. K., & Kumari, V. (2022). Do dividend announcements override the pandemic impacts? Evidence from the BSE 500 constituent firms. *Asia Pacific Management Review*, *27*(3), 210–219. https://doi.org/10.1016/j.apmrv.2021.09.002

Prasasti, S. R., & Ekananda, M. (2023). Does Fiscal Policy Matter? A Study on Economic Crises in Indonesia. *Jejak*, *16*(1), 13–27. https://doi.org/10.15294/jejak.v16i1.37532

Ranajee, R., Pathak, R., & Saxena, A. (2018). To pay or not to pay: what matters the most for dividend payments? *International Journal of Managerial Finance*, *14*(2), 230–244. https://doi.org/10.1108/IJMF-07-2017-0144

Reddemann, S., Basse, T., & Von Der Schulenburg, J. M. G. (2010). On the impact of the financial crisis on the dividend policy of the european insurance industry. *Geneva Papers on Risk and Insurance: Issues and Practice*, *35*(1), 53–62. https://doi.org/10.1057/gpp.2009.37

Robiyanto, R., Huruta, A. D., Frensidy, B., & Yuliana, A. F. (2023). Sustainable and responsible investment dynamic cross-asset portfolio. *Cogent Business and Management*, *10*(1). https://doi.org/10.1080/23311975.2023.2174478

Robiyanto, R., & Yunitaria, F. (2022). Dividend announcement effect analysis before and during the COVID-19 pandemic in the Indonesia Stock Exchange. *SN Business & Economics*, *2*(2), 1–20. https://doi.org/10.1007/s43546-021-00198-8

Salvatori, E. G., Robiyanto, R., & Harijono, H. (2020). An Analysis of the Relationship Between Earnings and Corporate Taxes on Dividend Policy of Companies in Sri-Kehati Index. *Journal of Management and Entrepreneurship Research*, *1*(1), 1–12. https://doi.org/10.34001/jmer.2020.6.01.1-1

Sari, W. R. (2017). Dividend Policy of Indonesian State-Owned Enterprises. *Telaah Bisnis*, *18*(1), 33–44.

Sekaran, U., & Bougie, R. (2016). *Reserach Methods for Bussiness A Skill-Bulding Approach* (7th ed.). John Wiley & Sons.

Sharma, R. K. (2021). Factors influencing dividend decisions of Indian construction, housing and real estate companies: An empirical panel data analysis. *International Journal of Finance and Economics*, *26*(4), 5666–5683. https://doi.org/10.1002/ijfe.2087

Sharma, R. K., & Bakshi, A. (2019). An evident prescience of determinants of dividend policy of Indian real estate companies: An empirical analysis using co-integration regression and generalised method of moments. *Journal of Financial Management of Property and Construction*, *24*(3), 358–384. https://doi.org/10.1108/JFMPC-02-2019-0012

Singla, H. K., & Samanta, P. K. (2018). Determinants of dividend payout of construction companies: a panel data analysis. *Journal of Financial Management of Property and Construction*, *24*(1), 19 – 38. https://doi.org/10.1108/JFMPC-06-2018-0030

Smith, D. M., & Faddy, M. J. (2016). Mean and variance modeling of under- and overdispersed count data. *Journal of Statistical Software*, *69*. https://doi.org/10.18637/jss.v069.i06

Sunardi, N., Husain, T., & Kadim, A. (2020). Determinants of Debt Policy and Company's Performance. *International Journal of Economics and Business Administration*, *VIII*(Issue 4), 204–213. https://doi.org/10.35808/ijeba/580

Thakur, B. P. S., & Kannadhasan, M. (2018). Determinants of dividend payout of Indian manufacturing companies: A quantile regression approach. *Journal of Indian Business Research*, *10*(4), 364–376. https://doi.org/10.1108/JIBR-02-2018-0079

Tinungki, G. M. (2019). Orthogonal iteration process of determining K value on estimator of Jackknife ridge regression parameter. *Journal of Physics: Conference Series*, *1341*(9). https://doi.org/10.1088/1742-6596/1341/9/092001

Tinungki, G. M., Hartono, P. G., Robiyanto, R., Hartono, A. B., Jakaria, J., & Simanjuntak, L. R. (2022). The COVID-19 Pandemic Impact on Corporate Dividend Policy of Sustainable and Responsible Investment in Indonesia: Static and Dynamic Panel Data Model Comparison. *Sustainability*, *14*(10), 6152. https://doi.org/10.3390/su14106152

Tinungki, G. M., Robiyanto, R., & Hartono, P. G. (2022). The Effect of COVID-19 Pandemic on Corporate Dividend Policy in Indonesia : The Static and Dynamic Panel Data Approaches. *Economies*, *10*(1), 11. https://doi.org/10.3390/economies10010011

Tinungki, G. M., Siswanto, S., & Najiha, A. (2023). The Gumbel Copula Method for Estimating Value at Risk: Evidence from Telecommunication Stocks in Indonesia during the COVID-19 Pandemic. *Journal of Risk and Financial Management*, *16*(10). https://doi.org/10.3390/jrfm16100424

Usman, B., Lestari, H. S., Syofyan, S., & Esya, L. (2024). Exploring the relationship between dividend policy, the COVID-19 crisis, and stock market reaction: empirical insights from Indonesian real estate and property firms. *Cogent Business and Management*, *11*(1). https://doi.org/10.1080/23311975.2024.2302204

Utomo, C. D., & Hanggraeni, D. (2021). The Impact of COVID-19 Pandemic on Stock Market Performance in Indonesia. *Journal of Asian Finance, Economics and Business*, *8*(5), 777–0784. https://doi.org/10.13106/jafeb.2021.vol8.no5.0777

Wahjudi, E. (2020). Factors affecting dividend policy in manufacturing companies in Indonesia Stock Exchange. *Journal of Management Development*, *39*(1), 4–17. https://doi.org/10.1108/JMD-07-2018-0211

Yang, H. C., Cai, Y. F., & Zhang, M. Y. (2022). Political risk and green technology improvement: New insights from global evidence. *Innovation and Green Development*, *1*(1), 100004. https://doi.org/10.1016/j.igd.2022.100004

Yusof, Y., & Ismail, S. (2016). Determinants of dividend policy of public listed companies in Malaysia. *Review of International Business and Strategy*, *26*(1), 88–99. https://doi.org/10.1108/RIBS-02-2014-0030

Zutter, C. J., & Smart, S. B. (2019). *Principles of Managerial Finance* (15th ed.). Pearson.