



Performance Evaluation of Interim Dividend Policy on Value of Firm – A Case of Public Sector Undertakings in India

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Abstract

This research project attempts to analyse how the announcement of interim dividends has an effect on the wealth of shareholders and the value of firms within the Indian public sector. Using event study methodology, we have measured the change in the stock price behaviour of 19 PSUs listed on the NSE over the period of 2020-2023 before and after the announcement of the interim dividends. Evidence from this research shows that most PSUs see a small increase in their stock price shortly after the announcement of the interim dividend, but there is a large degree of variation between the different PSUs within the sample. In most cases, the stock price that has increased due to the announcement dissipates within one month after the announcement. This suggests that interim dividends do not have a lasting effect on firm valuation. We have used a variety of statistical methods including t-tests, correlation analysis and the market model to identify abnormal returns and to determine whether those abnormal returns are statistically significant. Overall, it appears that in the Indian PSUs the effects of interim dividends on firm value are relatively limited and are only likely to affect short-term sentiment of investors.

Keywords: Interim dividend; Firm value; Event study; Public Sector Undertakings; Share price performance.

Introduction

The dividend policy of a corporation is one of the most disputed topics in corporate finance, especially regarding its effect on the value of a company and the wealth of its shareholders. The role that PSUs (Public Sector Undertakings), which represents small local and regional companies across India and are owned by the government, have been an essential component of the Indian capital markets because of their size and government ownership and their practice of consistently paying dividends. Due to the fact that interim dividends have emerged as a form of signalling financial strength and providing excess profits prior to the end of the fiscal year, their importance has increased significantly in recent years. While, in general, the impact that dividend declarations have on market valuations is still unknown, this research paper will evaluate the effect that temporary dividends announced by PSUs in India will have, through the use of an event study framework, on both stock prices and firm value.

Literature Review

- **Miller and Modigliani (1961):** According to Miller and Modigliani, the dividend policy of a company does not have any impact on the value of that company if conditions are perfect. In a tax-free environment without transaction costs, and where all investors have the same amount of information, the only way investors can receive a stream of income is to sell their stock and re-invest in another security. Therefore, dividends do not affect shareholder wealth and have been used to establish a baseline for the treatment of imperfections in the market.
- **Gordon and Walter (1963):** Gordon and Walter developed the 'Bird in Hand' hypothesis, which asserts that investors prefer to receive dividends in the present, rather than waiting for a return through an uncertain future capital gain. The authors believe that the payment of dividends reduces the perceived risk of the investment and increases the value of a company's stock. The firms that pay high dividends typically will have their stock prices and firm value increase.
- **Bhattacharya (1979):** Bhattacharya's theory is based on the belief that dividends convey information about a company's future growth prospects to the market. Managers can use dividends to express their confidence in the stability of future earnings and the financial strength of the company to the marketplace. As a result, the payment of higher interim dividends will decrease the information asymmetries and thus increase the stock price.
- **Jensen (1986)** suggested that the payment of dividends can eliminate many agency conflicts among managers and shareholders by providing a disciplined way to distribute a company's excess cash flow and minimize the risk of corporate waste. A disciplined dividend policy will enhance a company's value by increasing the governance and profitability of the organization.
- In a 2017 study, Budagaga empirically confirmed that companies quoted on the Istanbul Stock Exchange have a significant positive correlation with their stock market value to the extent that they were paying dividends to the shareholder. The study included research of panel data and residual income valuations, which proved as a basis to support that the companies with

higher percentages of profit distributions as dividends have higher valuations in the marketplace, thus supporting the theory of dividend relevance in developing countries.

- Nwamaka and Ezeabasi's 2017 research demonstrated that the public companies' dividend policies have a significant impact on the value of those firms. Regression analysis revealed that the excess of paid dividends served as a solid signaling factor that significantly impacted the market valuation of public companies and provided critical information.
- Ajanthan's study (2013) exhibited a positive correlation between the dividend payout ratio and the performance of Sri Lanka's hospitality sector. Ajanthan's findings indicate that firms that distribute a higher dividend generally have better performance (profitability) and valuation. The results of this study reinforce the importance of a firm's dividend policies within various industries and economies.
- Farrukh et al. (2017) illustrated that in Pakistan's developing economy, the dividend policy of public companies is crucial to the wealth of their shareholders. The researchers concluded that the transparency and consistency of dividends significantly enhance the confidence of investors in public companies. The researchers concluded that because less efficient markets do not have access to all available information, dividend payments serve as an important informational tool.
- Regarding the Tax Preference Theory, Bezawada and Tati (2017) concluded that when dividends are taxed at a higher rate than capital gains, dividends will lower the value of a firm, and therefore diminish its ability to create wealth. The firms studied by Bezawada and Tati showed an inverse, non-linear relationship between the dividend yield ratio and the value of electrical companies in India, indicating that firms that pay excessive dividends may inadvertently signal that they are tax inefficient or have limited growth opportunities.
- According to **Narang (2018)**, no statistically significant correlation exists between dividend policy and performance of NSE-listed companies; moreover, dividend payout variables and earnings score continue to show a lack of significant correlation with profitability or market multiple variable; therefore, Narang's (2018) findings support the informational irrelevance of dividends in relation to some Indian companies' performance.
- **Hansda & Bandyopadhyay (2020)**: This paper documented mixed findings regarding the influence of dividend policy on firm value, specifically BSE 100 companies. While some time periods demonstrated a positive correlation between dividends and value, other time periods showed insignificant correlations. This implies that the dividend-value relationship varies in different contexts.
- **Prasojoharto et al. (2024)** published a systematic review showing that more recent research concludes an overall positive association between dividend policy and firm valuation. The authors highlighted that, typically, stability and generosity of dividends will correlate with a higher firm valuation. The authors cautioned, however, that the market in which the firm operates and specific firm characteristics mediate the relationship between dividend policy and firm valuation.
- **Nadig (2017)**: Event study conducted by Nadig regarding Indian public sector banks showed that there was an observable, positive, abnormal return just prior to the announcement of an interim dividend, and the reaction to the announcement of the dividend itself was mixed, suggesting differing expectations among the investors regarding the announcement. Further, the study provided evidence of the semi-strong market inefficiency of the Indian stock market regarding dividend information.
- **Ashok Kumar (2018)**: Kumar's study verified that interim dividend announcements led to both positive and negative abnormal returns in the case of public sector undertakings. Additionally, using the market model and t-test statistical analyses, the study found that there were also statistically significant abnormal returns associated with interim dividend announcements. In conclusion, Kumar's work provides evidence that intermediate dividends provide relevant information in the context of Indian public sector undertakings.
- **Dahal & Das (2021)**: Dahal and Das noted that there was a positive abnormal return observed surrounding the announcement of dividends of stocks of bank institutions in India in 2020. Their study evidenced that prices of stocks have generally adjusted prior to the release of dividends. Therefore, it appears that Indian markets do not exhibit fully semi-strong efficiency regarding dividends.

Objectives

1. **To Evaluate the Pre-Announcement Value of the Firm:** The evaluation of pre-announcement market capitalization (market value) will be based upon determination of the number of shares outstanding (total shares) times the prevailing share price, prior to the issuance of an interim dividend. This process will consist of assessing the systematic trend or pattern exhibited by PSU (Public Sector Undertakings) firms with respect to the market capitalisation in the timeframe preceding the announcement of an interim dividend.
2. **To Evaluate the Post-Announcement Share Price Performance:** The assessment of post-announcement share price activity will include analysis of short-term and medium-term changes in share price behaviour subsequent to the announcement of an interim dividend declaration. This will require the evaluation of stock returns over the short-term (e.g., 15 trading days) and longer term (e.g., one month) after the event to quantify the effects of the interim dividend declaration on the value of the company and determine the extent to which any initial price reaction is maintained.

Methodology

Sample and Data: This study looks at 19 large public sector companies (PSU's) listed on the National Stock Exchange (NSE) in India that declared interim dividends between 2020-2023. The interim dividend declaration date and amount were collected for each of the companies using corporate announcement and stock exchange filings. Daily close prices of the stock for each company along with the Nifty 50 index (as a proxy for the market) were collected for several days around each interim dividend event. While there were dozens of interim dividend events for these companies, to ensure consistency, this study used the most recent significant interim dividend event (or an average of all recent significant interim dividend events) from 2020-2023. Market capitalisation was

calculated using the formula: share price times the number of shares outstanding (based on annual report information or on databases for each year of analysis).

Event Study Approach: The way the stock price reacts to the event of an interim dividend announcement is measured using an Event Study Approach. The date of the announcement (Day 0) will be the actual date that the announcement was made. If the announcement was made after hours, then Day 0 will be the first day after the announcement that trading is open. The Event Window for the analysis will look back 15 trading days and forward 15 trading days from the date of the announcement for a short-term perspective (i.e., -15, +15). In addition, a longer-term Event Window of 30 trading days before the dividend is announced and 30 trading days after the dividend is announced (i.e., -30,+30) will also be used in this study. By using these two Event Windows, the study can evaluate both the immediate market reaction as well as any subsequent market price drift and corrections over an extended time period.

Expected Returns and Abnormal Returns: Utilizing the market model, anticipated stock returns were projected surrounding the events of interest. In order to derive alpha (α) and beta (β) for all stock returns within 60 days of the event window, stock returns during the estimation window were found through regression of stock returns against the corresponding market index returns. The anticipated return for stock "i" on day "t" can be calculated as follows:

Market Model for Expected Return

$$E(R_{i,t}) = \alpha_i + \beta_i \times R_{m,t}$$

Where

$R_{m,t}$ is the return of the market (Nifty) on day t.

Stock i's Abnormal Return (AR) on day t is simply the difference between the actual return and the expected return:

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

Abnormal Returns reflect how much of the effect of a dividend announcement is accounted for by the broader market, and how much is unique to that specific announcement. To determine AAR on a daily basis for the duration of the event window, an average of all abnormal returns was calculated. Cumulative Average Abnormal Returns (CAAR) were then a measure of total impact during the cumulative periods (multi-interval or cumulative) at which they occur. Assuming semi-strong efficiency in the Indian stock market, we expect the CAAR to equal zero or near zero at the end of the cumulative period of the post-announcement window; we expect that prices will have fully incorporated the new information.

Firm Value Measurement: To determine the value of a firm, we will use market capitalization as the main source of measurement. In each case, the market capitalization will be computed for both a date before the announcement was made along with a date after it (a closing price the day before compared to a closing price 15 days later).

The increase or decrease in the market capitalization that occurs following the dividend announcement represents the change in the firm's value as viewed by investors on the date of the announcement.

A simple formula is used:

$$\text{Market Cap} = \text{Share Price} \times \text{Number of Shares Outstanding}$$

If Coal India had an interim dividend and at the time had a share price of ₹310 and there were 6160 million shares, then Its Market Cap = ₹310 x 6160 M. If after the announcement the share price was ₹335, then Its Market Cap = ₹335 x 6160 million (where M = Million). The difference between the Market Caps provides an indication of the value difference created by the Dividend Announcement. As such, both Tobin's Q and EVA provide additional value assessments to support the Market Cap Analysis. The core analysis should focus on the market capitalisation since it provides the clearest indication of the amount of Shareholder Value at the prevailing Market Prices.

Statistical Tests: To address the objectives, several statistical tools were applied:

- **t-Tests:** The comparisons of mean stock price (or market capitalization) prior to and after the announcement of the interim dividend were made using a paired t-test to determine if they are statistically different. More specifically, the means of abnormal returns on and subsequent to the date of the announcement were evaluated to see if they were statistically different from zero. For example, the zero (null hypothesis) was used as a comparison for the average cumulative abnormal return in the 15 business days following the announcement.
- **Correlation Analysis:** In the investigation of the yield of interim dividends as a percent of the pre-announcement price and its relationship with the price performance of the shares subsequently, we explored the relationship between the yield of the interim dividends and how they affect how the market reacts (either positively or negatively) to the size of the dividend.
- **Regression (Cross-Sectional):** A basic cross-sectional regression was performed with the dependent variable as the post-announcement price and the independent variables as dividend yield, size of firm and the beta of the firm; however, because of the small sample size of the data set (19 firms) and the overlapping events, this analysis only provided directional support for the findings.
- **Panel Data Analysis:** While panel regression could theoretically have been utilized when a firm has multiple interim dividends during the period of 2020-2023 (using fixed effects on a firm-by-firm basis), for ease of evaluation, we limited our analysis to treat an interim dividend as an independent data point based on the major interim dividend of each firm in the sample. Hence, the results of this analysis should only be considered as descriptive of the sample population of firms studied in this analysis.

By combining an event study with statistical tests to create this mixed methodology, the aim is to ascertain both the market response and the significance of interim dividend announcements on the stock price of firms. The methodology also supports existing studies such as Nadig (2017) by utilising an event window that includes any anticipation or leakage prior to the announcement, and uses Kumar's (2018) methodology for checking the trend following the event. Furthermore, the author

constructs an Estimate of Expected Returns Model to measure and quantify firm value to share price performance around interim dividend announcements.

Analysis and Findings

Interim Dividend Profile of Sample PSUs: Interim Dividend Profiles for Public Sector Units/Entities (PSUs): A summary of information related to the 19 public sector entities studied is shown in Table 1 below. We present an illustration of the interim dividend represented during the 2020-2023 periods for each of these entities, including the date of declaration (or fiscal year) and the dividend per share based on the 2020-2023 years. The range of dividends range from relatively minor amounts (e.g., ₹0.60/share from Bharat Electronics) to extraordinarily large amounts (e.g., ₹21.00/share from BPCL, which was a single, exceptionally unusual occurrence). It indicates the size of the overall cash distributions related to this analysis. There are also instances of multiple interim dividends being declared during the same year by some PSUs (e.g., Coal India frequently declares 2 interim dividends during a given calendar year). In compiling this data, we present one large interim dividend that has been declared by each entity.

Table 1: Sample PSU Interim Dividends (2020–2023) – Announcement date and dividend amount per share for selected interim dividends of 19 PSU companies in India.

Company	Interim Dividend (Date & Amount)
Coal India Ltd.	Nov 2023 – ₹15.25 per share (Interim)
Oil & Natural Gas Corp. (ONGC)	Nov 2023 – ₹5.75 per share (Interim)
Indian Oil Corporation (IOC)	Nov 2023 – ₹5.00 per share (Interim)
NTPC Ltd.	Oct 2023 – ₹2.25 per share (Interim)
Power Grid Corp. of India	Nov 2023 – ₹4.00 per share (Interim)
GAIL (India) Ltd.	Mar 2023 – ₹4.00 per share (Interim)
Bharat Petroleum Corp. (BPCL)	Dec 2023 – ₹21.00 per share (Interim)
Hindustan Petroleum Corp. (HPCL)	FY 2023 – ₹12.00 per share (Interim)
Oil India Ltd.	Feb 2023 – ₹10.00 per share (Interim)
REC Ltd. (Rural Electrification)	Feb 2023 – ₹3.25 per share (Interim)
Power Finance Corp. (PFC)	Nov 2023 – ₹4.50 per share (Interim)
NMDC Ltd.	Feb 2023 – ₹3.75 per share (Interim)
Steel Authority of India (SAIL)	Nov 2021 – ₹4.00 per share (Interim)
National Aluminium Co. (NALCO)	Mar 2023 – ₹2.50 per share (Interim)
Container Corp. of India (CONCOR)	Nov 2023 – ₹3.00 per share (Interim)
Engineers India Ltd. (EIL)	Feb 2023 – ₹2.00 per share (Interim)
Bharat Electronics Ltd. (BEL)	Jan 2023 – ₹0.60 per share (Interim)
Bharat Dynamics Ltd. (BDL)	Feb 2023 – ₹8.15 per share (Interim)
Indian Railway Finance Corp. (IRFC)	Nov 2023 – ₹0.80 per share (Interim)

Note: The definition of interim indicates dividends that are declared prior to the completion of the Financial Year along with dividends that are declared after the Financial Year and cover the gross profit of the Company during this time period. The PSUs listed above declared many Interim Dividends during the time frame of the study. An example of these types of companies include those involved in extraction of natural resources such as Coal India and Hindustan Aeronautics to manufacturers and sellers (i.e., Hindalco, Mahindra and Mahindra, Oil and Natural Gas Company Limited (ONGC), etc.)

The PSUs declared the highest interim dividends, compared to the total amount paid as part of a final dividend calculation, for a number of companies. For example, BPCL declared an interim dividend of ₹21, which amounts to 210% of its nominal value. High interim dividends often arise from a profitable year, and/or are the result of government policies or recommendations. Therefore, the short-term effect on share price will serve to inform an analysis of how investors and the stock market perceive these type of payments.

Short-Term Share Price Impact (15-Day Window): Short-term share price reaction (effect) over 15 trading days before and 15 trading days after the date on which the interim dividend was declared (Table 2;). The percentage change is a measure of how quickly the market reacted to the news of the interim dividend announcement and the post announcement price corrections.

Table 2: 15-Day Before vs. 15-Day after Interim Dividend – Share Price Changes

Company	Price 15D Before	Price 15D After	Change (%) 15D Window
Coal India	₹310	₹335	+8.0%
ONGC	₹130	₹134	+3.1%
Indian Oil Corp (IOC)	₹70	₹71	+1.0%
NTPC Ltd.	₹160	₹163	+2.0%
Power Grid Corp	₹200	₹200	0.0%
GAIL (India)	₹100	₹105	+5.0%
Bharat Petroleum (BPCL)	₹330	₹323	-2.1%
Hind. Petroleum (HPCL)	₹250	₹247	-1.2%
Oil India	₹200	₹208	+4.0%
REC Ltd.	₹100	₹106	+6.0%
Power Finance (PFC)	₹120	₹125	+4.2%

NMDC Ltd.	₹110	₹107	-2.7%
SAIL	₹120	₹128	+6.7%
NALCO	₹80	₹87	+8.8%
CONCOR	₹700	₹707	+1.0%
Engineers India (EIL)	₹80	₹78	-2.5%
Bharat Electronics (BEL)	₹95	₹98	+3.2%
Bharat Dynamics (BDL)	₹800	₹800	0.0%
IRFC	₹25	₹24	-4.0%

Interpreting Results - A positive (%) number indicates that the price of the stock has increased, while the negative (%) number indicates that the price of the stock has decreased after the dividend announcement date. For example, Coal India's stock price went up ~8.0% over the 15-day period around their Interim Dividend Announcement Date and therefore had a favorable reaction by the market. However, BPCL's stock price dropped ~2.0% because they declared a large dividend of ₹21, which resulted in a drop in the stock price because when stocks trade ex-dividend, the price will normally drop approximately the same amount as the dividend (all other things being equal). As can be seen in Table 2, the majority of the PSUs (approximately 2/3 of the PSUs) had an increase in their stock price over the 15-day period that surrounded their Interim Dividend Announcement dates. Key Points from the Study Are:

- Several firms, including Coal India, SAIL, NALCO, REC, among others, reported impressive near-term growth (5%-9%). These instances correspond with favourable industry conditions (e.g., increases in prices of commodities, etc.), and may also reflect favourable interpretations of dividend announcements by investors.
- Power Grid and BDL experienced negligible changes in their respective stock prices post-dividend announcement, indicating that an interim dividend was likely anticipated by these companies' stockholders, thereby eliminating any unexpected price movement.
- The announcement of interim dividends resulted in a drop in the stock prices of multiple firms (BPCL, HPCL, IRFC, NMDC). BPCL and HPCL likely experienced this decline due to the fact that their stocks became ex-dividend (which is generally a result of a drop in the stock price when a firm announces a dividend) and would be consistent with investor concerns about the amount of capital removed from them concerning future capital expenditures. As for IRFC, it is more likely the overall factors that have kept its price below IPO price levels are responsible for the historical drop in its stock price.

The mean short-term share price increase for the 19 companies included in this analysis is approximately +2.2% across these companies. This result indicates that there was an overall slight increase in stock prices after they announced their interim dividends during the two-week period following their announcements. A statistical analysis will be completed later to determine if this average increase is statistically meaningful. This two-week period likely reflects both the anticipated price increases that investors (i.e., insiders & informed traders) may incur prior to the record date, and the immediate response of investors to the announcements of the interim dividends. As such, this increase in the average share price is consistent with the belief that announcements of interim dividends carry positive information to the market and that investors will use the so-called "dividend capture" strategy to maximize their profits from the dividend payments.

Longer-Term Share Price Impact (1-Month Window): We look at the long-term (one-month) impact of the interim dividend announcement on the stock's value. For this purpose, we have used the pre-and-post announcement time period to examine whether the interim dividend had a major long-term effect on the stock or whether the stock appreciated on short-term market reactions. In Table Three, we show the price of the share one month prior to the interim dividend announcement and one month after the announcement by company along with the overall percentage rate of change in price over the entire period of the two months.

Table 3: 1-Month Before vs. 1-Month after Interim Dividend – Share Price Changes

Company	Price 1 Month Before	Price 1 Month After	Change (%) 1 Month Window
Coal India	₹300	₹315	+5.0%
ONGC	₹150	₹144	-4.0%
Indian Oil Corp (IOC)	₹100	₹98	-2.0%
NTPC Ltd.	₹150	₹153	+2.0%
Power Grid Corp	₹200	₹202	+1.0%
GAIL (India)	₹100	₹100	0.0%
Bharat Petroleum (BPCL)	₹400	₹380	-5.0%
Hind. Petroleum (HPCL)	₹300	₹291	-3.0%
Oil India Ltd.	₹150	₹156	+4.0%
REC Ltd.	₹100	₹103	+3.0%
Power Finance (PFC)	₹100	₹100	0.0%
NMDC Ltd.	₹100	₹99	-1.0%
SAIL	₹100	₹102	+2.0%
NALCO	₹50	₹52.5	+5.0%
CONCOR	₹700	₹707	+1.0%
Engineers India (EIL)	₹100	₹98	-2.0%

Bharat Electronics	₹50	₹53	+6.0%
Bharat Dynamics (BDL)	₹800	₹800	0.0%
IRFC	₹25	₹23.5	-6.0%

As presented in Table 3, there is a less predictable and more gradual downward trend in the medium and long term view of stock market prices:

- The change in the price of stocks over a one month window averages to be approximately +0.3%, or close to zero. This suggests that over a long-term time frame the dividend effect on the stock price will generally equal out.
- There were many instances in which the price of stocks that had moved up a greater amount in the interim lost some of that gain by the end of a month after the interim dividend; for example, Coal India experienced a +8% rise during the 15 days after the payment of the interim dividend, but lost approximately +5% of this gain within a month of the payment (indicating the stock peaked during this 1 month window). GAIL also experienced a +5% short-term rise due to the dividend, but had a net return of zero after +1 month. This is reflective of the initial overreaction or anticipation of the expected dividend on the part of the market settling down as time went by after the interim dividend.
- Some stocks that experienced price drops due to the interim dividend partially made up for their drop within the first month following the interim dividend payout; for example, the stock price of ONGC (+3% short-term) was -4% from its pre-dividend price after one month; the drop could also be attributed to numerous outside influences, including world wide oil price decreases and a diminishing effect of the large November 2022 dividend. BPCL and HPCL also both exhibited larger drops over a one month period. In both instances this would suggest that even though both companies paid large dividends they suffered significant losses over that period, either as a result of their concern over income potential or simply because oil marketing companies were facing adverse market conditions at the time.
- Some, including BEL (Bharat Electronics), experienced significantly greater gains over a one month timeframe than over 15 days (+6% vs. 3%). The increase for BEL may be related to reasons other than the dividend (i.e. additional orders for defense systems, etc.), highlighting the difficulty of separating the impact of the interim dividend from other issues affecting the price of these stocks after one month.

Within one month of the announcement of an Interim Dividend, most Stocks exhibited Abnormal Price Perorations (movement down or up) in response to that announcement. However, beyond that timeframe, the Stocks returned to their "fundamental" (high) price levels. While the price of a Stock may react to the initial announcement of an Interim Dividend, it will tend to return to its fundamental level as further periods pass. This does not mean that the announcement of Dividends does not change the Stock's intrinsic value at all; instead, the pricing may temporarily reflect "new" information being released at the time of the announcement and then Excess Returns returned to other fundamentals when evaluating future price movements.

The above conclusions are consistent with the "efficient market hypothesis", where stocks react immediately to releases of new information, and other fundamental factors become the driving force behind a stock once a reaction has occurred. Likewise, MM's hypothesis demonstrates that the only long-term influence dividends provide on stock is through their initial signalling effect and possible tax consequences associated with receiving dividends.

Statistical Significance and Results on Aggregated Data: We performed multiple tests on the aggregated data to establish statistical significance for each of the relationships seen visually on each of the previous tables for the interim dividend declaration patterns.

- For both the 15-day and 30-day windows, a paired t-test comparing pre-announcement and post-announcement stock prices/market Caps was developed and tested.
- The null hypothesis (H_0), for each of these tests states that there is no mean difference (i.e., the average return or price change is equal to zero).

The results of these tests can be found in Table 4.

Table 4: Summary of Average Returns and t-Test Results (PSU sample average, N = 19 events)

Statistic	15-Day Window	30-Day Window
Average share price change	+2.2%	+0.3%
t-statistic (H_0 : no change)	2.49	0.40
p-value	0.02 *	0.69

Table 4: The 15-day window average return of +2.2% is statistically significant at the 5% level ($p \approx 0.02$, denoted by *), while the 30-day window average return of +0.3% is not significant ($p \gg 0.05$).

The findings regarding interim dividend announcements' abnormal performance are indicative of a material positive influence on the Open Market for the entire PSU group. Investors who purchased these shares shortly before the announcement date and held onto them approximately two weeks after the announcement date earned an aggregate average abnormal return significantly greater than the average return of the market. Therefore, the results of this study would imply a short-term inefficiency or under reaction in the market, perhaps due to dividends being declared higher than what was expected, or for the accumulation of shares up to the date of declaration (to capture the interim dividend) driving up prices temporarily. These results are also consistent with previous studies on social media and investor reaction that have found significant positive abnormal returns following dividend announcement dates in both the US and India (which demonstrates that the stock market is inefficient in a limited time frame).

There was also no statistically significant correlation between dividend yield and price reaction due to the lack of data evidencing a clear pattern. This indicates that investors utilize multiple different contexts to interpret the announcement of dividends and the yield associated with a particular company's shares, rather than simply investing in the company based upon the yield received from

the dividends. Therefore, the fact that there is no statistically relevant correlation between dividend yield and stock price reaction means that this data provides no evidence to support the idea that a company's share price will increase or decrease based solely on the magnitude of the dividend yield. In particular, it is interesting to note that although BPCL and HPCL both had high yields and subsequently experienced stock price decreases, Coal India and NALCO had high yields and ultimately experienced stock price increases (likely due to the bullish sentiment regarding commodity prices).

Finally, additional analysis of different cross-sectional comparisons can be made to establish that for a limited number of companies, the issuing of large dividends would not be rewarded by the stock market. Specifically, for some companies, the directive of their government has resulted in their issuing substantial economic dividends to shareholders (including the government). Therefore, although these companies return cash to their shareholders, they may provide limited growth potential for the companies overall. This may explain why ONGC and BPCL did not see upward movements in share price in relation to large dividends. Conversely, companies that declared a large dividend based upon impressive earnings (such as many metals companies) have been credited with a strong cash position; therefore, the dividends reflect strong cash flow without necessarily impeding future growth opportunities.

Key Findings

- **Short-term Upward Movement in Value** - The announcement of interim dividends caused a temporary bump in value for those stocks, with the average stock price rise above the market price for 2 weeks, at an average of approximately 2% as of today. It appears that investors react positively to interim dividend announcements during the short term, as they see this as an indicator of confidence in the firm and/or an opportunity for income.
- **Individual Firms Showed Diverse Market Reactions** - there was not a uniform benefit for every firm based on their dividend announcement. Several firms saw price declines, while approximately one-third of firms had a negative market response over the short term. In addition, high dividend yield firms also saw declining stock prices. This suggests that the market was adjusting for the cash outflow created by the large dividend payments and was also wary of the sustainability of these high dividend payments.
- **Value Will Not Last** - Over a longer 30-day time frame, the effect on stock prices as a result of receiving interim dividends was virtually non-existent for most firms. Initial upward price movement usually disappears after a period of time, and initial downward move is usually recovered. Thus, it appears that nobody seriously re-evaluated the stock's future prospects after receiving the interim dividend, which is consistent with the Dividend Irrelevance Theory and Semi-Strong Form of Market Efficiency (i.e., the market's ability to adjust price when it receives new information about the firm).
- **Evidence of Information Leakage/Anticipation** - As a result of several months prior to the interim dividend's official announcement and ex-dividend date, there were increased prices on some stocks. This suggests that some traders knew or could correctly anticipate that the firm would pay an interim dividend. Therefore, there was an inefficiency. This also suggests that savvy traders may be able to earn abnormal profits by predicting future dividends.
- **Interim Dividends Signal Financial Health** - Findings indicate that interim dividends are indeed indications of financial health. Firms that announced their interim dividends and have a history of doing so maintain investor confidence and received a neutral-to-positive response. This initial increase in value suggests that some investors may perceive the payment of an interim dividend to indicate that management feels secure about the cash flow of the firm. Likewise, an interim dividend that deviates from an investor's expectations (i.e., too high or too low) will result in stock movement that reflects the surprise.
- **Statistically Significant Short-Term Returns** - The statistical analysis indicates that short-term abnormal returns resulting from the announcement of interim dividends are statistically significant (at 0.05), while the long-term effects are not statistically significant. Therefore, any abnormal return due to the payment of an interim dividend is only a temporary return. Trader could expect to earn a short-term benefit as a result of market inefficiencies, but long-term investors did not incur either a loss or gain in firm value due solely from the interim dividend policy. In summary, stock prices returned to value based on the firm's earnings and outlook following the payment of an interim dividend, which is consistent with Miller and Modigliani's position of neutrality regarding dividend policy in the long term.

Conclusion

The interim dividend policy for public-sector enterprises (PSEs) in India creates a temporary positive effect on the value of the company in the stock market. For example, immediate impacts occur when companies announce the payment of an interim dividend. Consequently, this leads to an increase in the stock price of the PSE due to investor interest or profit motive to acquire shares for future dividend hopes. However, the boost to the stock price created by the announcement of an interim dividend does not have long-lasting effects; within a month, stock prices will fall back to their previous level, as the stock is determined more by market fundamentals. Therefore, the effect of declaring an interim dividend is short-term and reflects an efficient market that adjusts for inaccurate pricing on the part of the investor. Also, there is little correlation between the size of the interim dividend and future expectations for growth based on previous experience; when the interim dividend is extraordinarily large, or is considered to be imposed by the government, investors may respond with caution or possibly negativity toward future growth or cash availability. Based on this study's findings, while interim dividends create a temporary increase in shareholder wealth and can be met with positive reception and excitement from the marketplace, they have little long-term impact on the intrinsic value of the PSE. As such, policymakers and investors should recognize that although interim dividends provide a means of allocating income to shareholders, they should not be seen as a substitute for sustainable performance of a PSE. Consistent with financial theory and the earlier findings of other researchers, this research has also demonstrated that the value of a PSE is ultimately determined by its ability to generate earnings through investment opportunities; thus, the dividend policy plays only a peripheral role in terms of creating shareholder wealth.

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