Impact of Dividend Announcement on Stockholder’s Return – An Empirical Analysis of Indian Healthcare Sector

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Abstract

The dividend-signaling hypothesis is one of the key issues of the field of corporate finance; perhaps no other area of finance has been subject to so much empirical investigation during the last five decades as the behavior of stock prices in relation to dividend announcement. Therefore, an attempt has been made to review previous studies conducted in developed countries of the world as well as in emerging markets. However, very little research efforts have been made so far on the dividend behavior of healthcare sector. The famous statement of Fisher Black (1976) about dividend policy "the harder we look at the dividends picture, the more it seems like a puzzle, with pieces that just do not fit together" is still valid. The present study is an attempt in this direction to solve this puzzle. This paper utilizes event study methodology to examine share price reactions of 57 A& B listed companies in BSE surrounding 20 days of the announcement. The empirical analysis of 511 observations for the period of fifteen years reveals that stock price reaction to dividend announcement are statistically significant. The Section I, presents theoretical background and literature review. Section II describes the data and methodology. In Section III, we examine empirical results of the relation between dividend announcement and stock prices in healthcare sector measured in terms of abnormal earnings. t-test and ANOVA is used to find statistical significance. Section IV concludes the paper.

Key Words: Dividend announcement, Indian Healthcare sector, Event study model, Cumulative Abnormal Return (CAR), t Test

JEL Classification: G 2, G3
1. Introduction

The goal of the corporate entities is to maximize the value of the shareholders’ investment in the firm. Managers pursue this goal through their investment, financing and dividend decision. Investment decision involve with the selection of positive net present value projects while financing decision involve with selection of a capital structure that would minimize the cost of capital of the firm (Hamid & Choudhary, 2005). In addition, managers need to decide dividend decision on a regular basis that involves with whether to payout earnings to shareholders to reduce agency problem (Jensen(Miller & Rock, 2007) and Meckling, 1976). However the question remains whether paying out of earnings would essentially create value for the shareholders or not. In this respect, we have found two schools of thought of dividend policy: (1) dividend irrelevance theory (Miller and Modigliani (M&M) – 1961) and (2) dividend relevance theory. Both of the thoughts have conflict with each other and none of them provides complete and satisfactory guidelines. However, both of the schools are trying to establish their thoughts, which led to dividend controversy.

One imperfection which is critical to the development of theories related to dividend is the asymmetric information problem which lends importance to the Signaling Theory. This is also referred to as the information content of dividend hypothesis. According to this theory, also found by M&M, dividend announcements are hypothesized to have information content, whereby managers use cash dividend announcement to signal changes in their expectation about the future prospect of the company when the markets are imperfect. The information content inherent in a dividend announcement would cause the shareholders to react to the announcement and thus influence the company share prices.

This study examines the implications of dividend announcements in the Indian Stock market. The objective of this study is to see how the signaling hypothesis manifests itself in the Indian health care sector.

2. Literature Review

Gordon (1962 and 1963) and Walter (1963) support the dividend relevance doctrine. The cash flow signaling theory, developed by Bhattacharya (1979, 1980), Easterbrook (1984), John and Williams (1985) and Miller and Rock (1985), theorized that dividend changes are explicit signals about the current and/or future cash flows, sent intentionally and at some costs by management to the company and its stockholders. Aharony and Swary (1980), Kwan (1981), Eades (1982), and Woolridge (1982), have found a significant positive association between announcement of dividend changes and the stock return, using the dividend announcement made in isolation of other firm news report.
John Lintner in 1956 being first to apply regression analysis showed that firms adopted and tended to adhere to optimal long-term dividend payout ratios which were relatively stable, suggested that managers would only raise a firm’s dividend if they were confident that the firm’s future earnings could be maintained at a consistently higher level in the future. An implication of this was that the announcement of a dividend increase might convey useful information about future earnings. His work opened a Pandora’s Box of dividend-related phenomena, the validity of which, other researchers have spent years and decades debating closely. Lipson, Maquieira and Megginson (1998, p.44) observed that, “managers do not initiate dividends until they believe those dividends can be sustained by future earnings”.

A more convincing argument in favour of dividends is the signalling hypothesis, which is associated with propositions put forward in Bhattacharya (1979), John and Williams (1985), and Miller and Rock (1985). In general, these models are based on several assumptions. There is asymmetric information between corporate insiders (managers) and outside investors (shareholders). Dividends contain information about the firm’s current and future cash flows, and managers have incentives to convey their private information to the market through dividend payments in order to close the information gap. The announcement of a dividend increase will be taken as good news and the market will bid up share prices accordingly. Similarly, an announcement that a dividend will be cut suggests unfavourable prospects and will tend to see the firm’s share price fall. Dividends are considered a credible signalling device because of the dissipative costs involved. For example, in Bhattacharya’s (1979) model the cost of signalling is the transaction cost associated with external financing. In Miller and Rock’s (1985) model the dissipative cost is the distortion in the optimal investment decision, whereas in John and William’s (1985) model the dissipative signalling cost is the tax penalty on dividends relative to capital gains. Therefore, only good-quality firms (undervalued) can use dividends to signal their prospects, and poor-quality firms cannot mimic by sending a false signal to the market because of the costs involved in that action.

The Efficient Market Hypothesis proposed by Fama (1965) suggests three types of market efficiency: (i) weak, (ii) semi-strong, and (iii) strong. The weak form of market efficiency proposes that current stock prices reflect all past information. It also suggests that changes in stock prices are random and no investment strategy that is based on past information can yield above average returns to the investor. The semi-strong form of market efficiency (informational efficiency) proposes that current stock prices incorporate material public information and changes in stock prices will only lead to unexpected public information. The semi-strong form of efficient market hypothesis states that stock prices reflects all the publicly available information instantaneously and accurately. Finally, the strong form of
market efficiency proposes that insider trading will not be rewarded as current stock prices incorporate all material nonpublic information (Reilly and Brown, 2008).

2.1 Signaling Models

2.1.1 Akerlof Model (1970)

Akerlof’s model of the used car industry as a pooling equilibrium in the absence of signaling activities serves as a primer to signaling models in the financial economics considering the costs of informational asymmetries. The generalization of Akerlof’s model by Spence (1974) became the prototype for all financial models of signaling. The model defines a unique and specific signaling equilibrium in that market participants seeking employment in a world of uncertainty and asymmetric information rely on signals of their quality rather than reputation acquisition to find positions. A necessary condition for signaling to be successful is an inverse relationship between a signal’s costs and true productivity because costs are relatively higher for inferior workers to signal.

2.1.2 Bhattacharya Model (1979)

A complementary approach to the dividend-signaling problem, which deals with signaling of insiders’ information in the presence of indicators of ex post profitability that are not exogenously costly, is developed in Bhattacharya (1977). A synthesis of the two types of models would provide a richer framework that could incorporate an interesting “partial” role for sources of information like accounting reports. He developed a model in which managers signal the quality of an investment project by “committing” to a dividend policy. The project quality, measured, as the expected profitability of the project is the private information known only to managers.

2.1.3 John and Williams Model (1985)

The John and Williams (1985) model provide a compelling explanation for the generous dividend payout policies pursued by firms even when cash dividends have adverse tax consequences. It explains why firms pay cash dividends even when alternative methods of distributing cash exists, such as share repurchase, which do not have adverse tax consequences. The J&W model also explains why a firm may find it optimal to pay cash dividends and raise new equity financing or repurchase stock in the same planning period. The model states in the signaling equilibrium, firms expecting higher future operating cash flows optimally pay larger dividends and the optimal dividend policy involves dividend smoothing relative to future operating cash flows so that dividend variability is lower than operating cash flow variability.

2.1.4 Miller and Rock Model (1985)

Miller and Rock (1985) picked up the concept of costliness and argued that the relative cost of signalling any particular level of earnings would increase as the level of actual earnings achieved by a firm decreased. Noting that information asymmetry gave managers...
latitude to signal either correctly or duplicitously, Miller and Rock maintained that signalling would be worthwhile for profitable firms since the costs would be worth the effort of ensuring the market did not undervalue their shares. Conversely, the relatively higher cost of duplicitous signalling would be counter-productive for companies whose profitability was under threat. They modeled a net dividend concept – the unexpected net dividend is determined by subtracting external financing from the total dividend paid to signal the expected earnings information that implies future earnings level. The model combines dividends and external financing that are stylized as different sides of the same coin. The announcement effects of dividend increases are positive and the announcement effects of increases in external financing are negative.

2.1.5 Other Theoritical Models

Dividend Smoothing

Lintner (1956) argued that firms tend to increase dividends when managers believe that earnings have permanently increased. This suggests that dividend increases imply long-run sustainable earnings. This prediction is also consistent with what is known as the “dividend-smoothing hypothesis”. John and Nachman (1986) have addressed the problem of dividend smoothing in their theoretical model. The firm’s dividend policy may not change over a period of time, even though earnings may change substantially and used a dynamic version of John and Williams (1985) Model which provided rationale for firms paying a smooth series of cash dividends even though such dividends have some tax disadvantage over alternative methods of distributing cash. A corporation’s prospects can only be partially revealed using dividend policy because managers routinely smooth the payment stream; changes in dividend policy are only a rough signal of future expected earnings.

Kumar (1988) modeled a rational expectations signaling equilibrium in that dividends convey only broad information of changes in a firm’s prospects. The model implies that although dividend increases (decreases) signal important positive (negative) information about the firm’s prospects, dividends are a poor predictor of corporate earnings because of the smoothing process applied by managers. In a two-period model developed by Kale and Noe (1990), dividend increases signal increased future cash flows stability and decreased riskiness of the cash flows. In this model, dividends are positively correlated with share price returns and are inversely related to expected cash flows variance and underwriting costs.

Dividend versus Share Repurchases

The J&W model provided rationale for using cash dividends rather than share repurchases. Firms do not repurchase shares to avoid taxes because it is precisely the tax costs that drive the signaling role of cash dividends. Ambarish, John and Williams (1987) developed a model whereby firms may use dividends or stock repurchases as signals. It indicated when firms would use cash dividends and when firms would use share repurchases
for signaling. Other work, such as reported by Ofer and Thakor (1987), Barclay and Smith (1988), and Brennan and Thakor (1990), also addressed a firm’s choice between cash dividends and share repurchases.

Choice of Signals

The role of dividends as a signal of a firm's prospects when corporate insiders have more information than the market does is well accepted. Recent studies found that firms choose from a variety of signals to convey their private information in a cost-effective manner. Mature firms use large payouts as their primary signal; growth firms deemphasize dividends and use investments as their main signal. John and Mishra (1990) suggested that insider trading could be an important signal by a firm. The announcement effects for capital expenditure announcements are positive for growth firms and negative for mature firms. Also the announcement effects are positive for insider buying and negative for selling. John and Lang (1991) examined the insider trading around announcements of dividend changes. Their model implies that the announcement effect of dividends will be influenced by the nature of a firm's investment opportunities and the productivity of its current capital expenditures.

3. Data and Methodology

To examine the impact of the event - “Dividend announcement” (dividend signaling) - on the stock prices, we analyzed the stock price behavior of the selected healthcare companies surrounding 20 days of the date of dividend announcement. Our null hypothesis is that dividend announcement doesn’t have any significant impact on the stock price movement of the banks listed in BSE. Symbolically,

*Ho*: Dividend announcement doesn’t contain price sensitive information.

*HA*: Dividend announcement contain price sensitive information.

3.1 Sample and Data Selection

This study covers 57 most actively traded healthcare companies listed in Bombay Stock Exchange during the year 2001 to 2016 which have been selected on random basis. This time span coincided with spells of recession, recovery and boom in the Indian economy and during the period there was a considerable influx of foreign direct investment into India. Accordingly, the results should not be specific to anyone stage in the business cycle, but reflective of all economic conditions. We have used three sets of data in this study. The first set of data consists of dividend announcement made by the sample companies. The second set of data consists of daily adjusted closing prices of the stocks selected for the study at the Bombay Stock Exchange for the period covered by this study. The third set consists of the S&P BSE Healthcare index of ordinary share prices compiled and published by the Bombay Stock Exchange on daily basis. Data is collected from BSE website.
Companies that have any price sensitive information during the event window (-10 days to +10 days) are eliminated which are (Ali et al 2010) referred as ‘contaminated events’. The following items caused a dividend announcement to be dropped from the sample:

1. Announcements of special dividends, impending mergers and take-over’s
2. Announcements of changes in capital structure with respect to debt
3. Share buybacks and other announcements of capital reduction
4. Announcements of issue Bonus share, Rights issue, Stock splits
5. Announcements of company revaluations
6. Follow-up announcements of revisions of erroneous data in an announcement
7. Requests published by the BSE requiring a company to explain unusual (and potentially suspicious) changes in the market price of its shares

Number of final observation considered is 512 after filtration from available 607 observations.

3.2 Methodology – Event Study Approach

We measure the stock price reaction to the announcement of dividend payments using standard event-study methodology. Using capital market data, an event study measures the impact of a specific event on the market. In conducting the event study it is important to identify the period over which the prices of relevant financial instruments will be examined. This period is referred to as ‘event window’ (Rony et al 1997). For the purpose of this study, an event window is set equal to 21 days starting from 10 days before the dividend announcement date and ending 10 days after the announcement. The date of dividend announcement is defined as $t=0$, a window of 10 days before the event as ‘pre-event window’ and a window of 10 days after the event as ‘post-event window’. The date of dividend announcement i.e. $t = 0$ has been considered as the date of declaration related to dividend distribution by the respective Board of Directors of the companies. Each firm’s observed event period returns are compared to the market’s return to identify any investor reaction to the event. Expected return is estimated by employing the market model.

The Market model can be expressed mathematically as:

$$\text{AAR} = \text{AR}_{it} - \text{E}(\text{R}_{i,t})$$
$$t=(-15,-14,……,14,15)$$

$$\text{AR}_{it} = \frac{\text{P}_{it} - \text{P}_{it-1}}{\text{P}_{it-1}}$$
$$\text{R}_{mt} = \frac{\text{I}_{t} - \text{I}_{t-1}}{\text{I}_{t-1}}$$

$\text{R}_{it}$ is security changes I’e; $\text{P}_{it}$ is the adjusted closing price of the stock ‘i’ on day $t$.

$\text{P}_{it-1}$ is the adjusted closing price of stock i on day $t-1$ and $\text{R}_{mt}$ is Market Index.

OLS estimates obtained from regressions of firm $i$’s daily returns on the market return over the estimation window from $t = -121$ till $t = -10$
E(Rit) = \beta_i + \alpha_i Rmt + e_{it} for i = 1...N

Where, E (Rit) = Expected return on security ‘i’ during time period ‘t’

\beta_i = Intercept of a straight-line or alpha coefficient of ‘i’ th security.

\alpha_i = Slope of a straight-line or beta coefficient of ‘i’ th security

Rmt = Expected return on index (S&P BSE Healthcare in this study) during period ‘t’.

We use two measures of abnormal returns, the cumulative average abnormal returns, CAAR-10;10, measured over the 21-day interval from t = -10 till t = +10, and the average abnormal return on the announcement day, AAR0. The statistical significance of these returns is measured by the standardized cross-sectional t statistic proposed by Boehmer et al. (1991).

4. Testing Hypothesis

Results reported in this paper are obtained in terms of the event study methodology wherein the abnormal return of every company is computed thoroughly with a view to study the informational efficiency. The study includes use of Market adjusted Model as here, the abnormal returns can be used to draw conclusion during the study period. Abnormal return means the excess of security return over the index return on a particular date.
Table 3.1: Descriptive Statistics

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(Source: Compiled and calculated by researcher using MS-Excel and SPSS)

To describe data Skewness and Kurtosis has been used (Table 3.1). In addition to that to test the market efficiency necessary statistical tools the t-test analysis is applied. Average Abnormal Return (AAR), Cumulative Average Abnormal Return (CAAR.), Std Deviation, t-test values are shown in Table 3.2. Later, Analysis of Variance (ANOVAs) is computed to statistically test the evidence of the hypothesis in Table 3.3 followed by graphical representation.
Table 3.2(a)
AAR’s, CAAR’s, SD and T stat of Selected Sample Companies around event Window
(Source: Compiled and calculated by researcher using MS-Excel and SPSS)

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Table 3.2 (c): T stat of Selected Sample Companies around event Window

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<th>df</th>
<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>AR -10</td>
<td>.600</td>
<td>510</td>
<td>.549</td>
<td>.0006</td>
<td>-0.001</td>
</tr>
<tr>
<td>AR -9</td>
<td>1.735</td>
<td>510</td>
<td>.083</td>
<td>.0018</td>
<td>.000</td>
</tr>
<tr>
<td>AR -8</td>
<td>1.299</td>
<td>510</td>
<td>.195</td>
<td>.0016</td>
<td>-0.001</td>
</tr>
<tr>
<td>AR -7</td>
<td>1.184</td>
<td>510</td>
<td>.237</td>
<td>.0014</td>
<td>-0.001</td>
</tr>
<tr>
<td>AR -6</td>
<td>2.344</td>
<td>510</td>
<td>.019</td>
<td>.0027</td>
<td>.000</td>
</tr>
<tr>
<td>AR -5</td>
<td>3.191</td>
<td>510</td>
<td>.002</td>
<td>.0039</td>
<td>.002</td>
</tr>
<tr>
<td>AR -4</td>
<td>1.416</td>
<td>510</td>
<td>.158</td>
<td>.0016</td>
<td>-0.001</td>
</tr>
<tr>
<td>AR -3</td>
<td>3.340</td>
<td>510</td>
<td>.001</td>
<td>.0037</td>
<td>.002</td>
</tr>
<tr>
<td>AR -2</td>
<td>.589</td>
<td>510</td>
<td>.556</td>
<td>.0008</td>
<td>-0.002</td>
</tr>
<tr>
<td>AR -1</td>
<td>.192</td>
<td>510</td>
<td>.848</td>
<td>.0002</td>
<td>-0.002</td>
</tr>
<tr>
<td>AR 0</td>
<td>-2.904</td>
<td>510</td>
<td>.004</td>
<td>-0.0076</td>
<td>-0.013</td>
</tr>
</tbody>
</table>
In Table 3.2 the behavior of abnormal Returns (AAR) around the dividend announcement, as shown in table offers some interesting readings. A lesser negative incidence of average abnormal return was noticed around 2 days pre/post announcement for the portfolio. Though the positive incidence of average Abnormal returns in the post announcement period reflects investor’s confidence in the stock performance, yet these results further endorsed the informational efficiency of the stock market. Patterns of CAAR in table reveal that cumulative average abnormal returns have a rising tendency in the post event period. A higher negative incidence of cumulative return in the post event phase window for few days reflects over expectation and irrational to the new information disclosure concerning annual dividend. The t-test value on AAR for portfolio shows that for most of the days during the post announcement event window they are statistically insignificant at 5% level. Thus, we accept null hypothesis (Ho) that dividend announcement does not contain price sensitive information. This proves that average abnormal returns occur randomly. Hence the t-values on AARs indicate that totally accepts the existence of abnormal returns around the event days (pre/post). This provides an opportunity to beat the market and to earn abnormal returns. However this incidence could be considered statistically significant enough to validate market efficiency.

Table 3.3: Analysis of Variance (ANOVA) Test

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rows</td>
<td>0.468433</td>
<td>511</td>
<td>0.000917</td>
<td>1.221438</td>
<td>0.000607</td>
<td>1.108061</td>
</tr>
<tr>
<td>Columns</td>
<td>0.156083</td>
<td>20</td>
<td>0.007804</td>
<td>10.39849</td>
<td>7.08E-33</td>
<td>1.571552</td>
</tr>
<tr>
<td>Error</td>
<td>7.670193</td>
<td>10220</td>
<td>0.000751</td>
<td>1.0751</td>
<td>0.0000751</td>
<td>1.0751</td>
</tr>
<tr>
<td>Total</td>
<td>8.294709</td>
<td>10751</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Compiled and calculated by researcher using MS-Excel and SPSS)

Table 3.3 presents two-way ANOVA output obtained from Microsoft Excel. Using the 0.05 level of significance and to determine evidence of price sensitive information, the decision rule is to reject null hypothesis that dividend announcement doesn’t contain price
sensitive information as with 511 degrees of freedom in the numerator and 20 degrees of freedom in the denominator, as the $F = 1.22 > F_{crit}=1.11$; as $p-value = 0.00 < 0.05$, we reject $H_0$. We conclude there is sufficient evidence of price sensitive information during dividend announcement.

**Figure 3.1**

Expected Return (ER), Abnormal Return ($AR_{mt}$) and Cumulative Abnormal Return (AR) over window period of 21 days of Healthcare Sector.

![Graph showing expected return, abnormal return, and cumulative abnormal return over a 21-day window period for the healthcare sector.](graph)

Figure 3.1 indicates that before pre-announcement period no much variations in $AR_{it}$, $AR_{mt}$ and $AAR$ and the return behavior of these 52 companies are correlated with the index return in pre-event period but post announcement abnormal returns are generated resulting in to both gain and losses to shareholders and can be concluded that dividend announcement contain price sensitive information.

Hence, findings can be validated on account of statistical significance of $AAR$s and $CAAR$s, t-test and ANOVAs test.

5. **Conclusion**

This paper began with an overview of corporate dividend policy and presented the basic argument and M&M proof of dividend irrelevancy. The paper then explored the main theories that counter the irrelevancy proposition. In order to provide an understanding of dividend policy theories, this article attempted to explain the basic argument for each theory followed by the most important empirical evidence on testing of these theories. Then empirically tested using an event study methodology and paper find that despite of investors do not gain significant value in the period preceding as well as on the dividend announcement day, yet they can gain value in the post announcement period. Investors do shift their security positions at the time of dividend announcement, which indicate that in post announcement period there is a possibility of information content in dividend announcement in BSE. The empirical evidence, depicts that dividend announcement does contain price sensitive
information supporting the Efficient Market Hypothesis as the t-test value on AAR for portfolio shows that for most of the days during the post announcement event window they are statistically insignificant at 5% level.

Thus empirical analysis carried out in this paper is in line with a number of studies found that stock price has a significant relationship with the dividend payment [Ogden (1994), Stevens and Jose (1989), Kato and Loewenstein (1995), Ariff and Finn (1986), and Lee (1995), Patricia Ryan (1994), Kapoor and Kanwal (2008), Mannos Rony (2010), Upandan Pani (2012)] while other found a negative relationship [Loughlin (1989), Eason and Sinclair (1989), Laux, Starks and Yoon (1998), DeAngelo, DeAngelo and Skinner (1996), Saravankumar and Mahadevan (2010)].

As we noted from the empirical analysis referenced above, firms use dividend policy to communicate information about their future prospects to the market, and this provides another possible explanation of why firms pay dividends. Moreover, signalling could play a pivotal role in determining firms dividend policies and their values. The signalling hypothesis makes an important assumption that managers want to signal the proper value of the firm via dividends. To confirm the result of dividend signalling we recommend further research on the signaling effect of other events such as earning announcements, changes in dividend policy and capital structure.

References


Amihud, Yakov, and Kefei Li, 2002, the declining information content of dividend announcements and the effect of institutional holdings, NYU, working paper.


