Dr. R. Sharmila
Associate Professor,
Sakthi Institute of Information
and Management Studies,
Pollachi, Coimbatore District,
Tamil Nadu, India.

Dr. Nanjundaraj Prem Anand
Principal, DJ Academy for
Managerial Excellence,
Coimbatore, Tamil Nadu,
India.

How do stock prices react to change in dividends?

Dr. R Sharmila, Dr. Nanjundaraj Prem Anand

Abstract
This paper explores the market reaction to change in dividend announcements of S&P CNX 500 stocks of National Stock Exchange for the period 2007-2012 using Event study Methodology. The results of the study show that the market reacted positively to dividend increase, decrease and constant announcements. The steady increase in CAAR for all the three changes in dividends shows investors preference towards dividend income. However, the magnitude of return is found to be high for decrease in dividends followed by constant dividends.

Keywords: Event Study Methodology, Average Abnormal Returns (AARs), Cumulative Average Abnormal Returns (CAARs), Dividend Announcements

1. Introduction

Numerous researchers suggested that dividends convey a substantial amount of information to markets, when changes in dividend policies are observed. Increasing, decreasing or constant dividend are accordingly defined as the difference in dividend between two related following times. Lintner (1956) [7]. Is considered to be a pioneer in the research of the relevance between dividend policy and firm value. According to Lintner (1956) [7], under the assumption that capital markets are 'imperfect', the firms' dividend policy plays a prominent role in managements' decision making and hence, in shareholders' wealth. He claimed that changes in corporate dividend policy may convey information to the market about company's current and future financial position; given that there are information asymmetries between managers and investors (the former have information advantage over the investors). Hence Lintner suggested that increases in the amount of dividends that companies give out to their shareholders lead to a positive reaction of the stock prices, in contrary decreases of dividends lead to a negative market reaction. Petit (1972) [10]. Using the market model and monthly data of dividend announcements showed that market participants make considerable use of the information implicit in announcement of changes in dividend payment. The market reacted very dramatically to these announcements when dividends are reduced or when a substantial increase took place.

2. Review of Literature

Aharony & Swary (1980) [1] studied the impact of quarterly dividend and earnings announcements on stockholders return. A sample of 149 firms was selected from those listed on the New York Stock Exchange for the period from 1963 to 1976. The findings of the study indicate that companies that did not change their dividends, earned on average only normal returns over the twenty days surrounding the announcement date. The companies that announced dividend increases realized positive abnormal returns and the companies that reduced their dividends sustained on average negative abnormal returns surrounding the announcement dates.

Arab *et al.* (2004) [2] studied the information content of dividend policy through the share price reaction on the Tunisian Stock Exchange from the year 1998 to 2001. The sample comprises 124 dividend announcements made during the study period and event study methodology was adopted to test the information content of the announcement. The findings support the dividen signaling hypothesis in explaining the positive reaction to an increase in the dividend payment.

Correspondence
Dr. R Sharmila
Associate Professor,
Sakthi Institute of Information
and Management Studies,
Pollachi, Coimbatore District,
Tamil Nadu, India.

Capstaff *et al.* (2004) [4] studied the signaling theory of dividends by investigating the stock price reaction to dividend announcements on the Oslo Stock Exchange, Norway. The results indicate significant abnormal returns were associated with announcements of dividend changes. The results of the study support the signaling hypothesis that changes in dividends convey information to the market.

Hussin *et al.* (2010) [5] investigated the announcement effect of both dividend and corporate earnings on stock prices to examine evidence of semi-strong form efficiency in Malaysian Stock Exchange. The study results support the information content of dividend theory that increasing dividend announcements, on an average, earn positive abnormal return, while decreasing dividend announcements are associated with negative abnormal return.

Taneem & Yuce (2011) [11] examined the information content of dividend announcement and price movements in the emerging Indian Stock Market. The results of the study showed that companies that increased their dividend amounts had a higher abnormal return and higher cumulative abnormal return showing that the market has favourable impression towards companies paying out higher dividends.

Urooj & Zafar (2008) [12] studied the relationship between dividend announcements and share prices. The study was found to have overall positive returns in the 21 day event window after the announcement of positive dividends and negative returns after the announcement of negative dividends. Neutral dividends do not have any impact on abnormal returns as they were negative both before and after dividend announcements.

3. Rationale of the Study
The above studies reveal that with the positive dividend announcement, stock market reacts in a positive manner and share prices go up. Reason being, the investors perceive a company announcing positive dividends as the high growth firms with positive cash flows and high earnings in future. Similarly, when there is negative dividend announcement, the share prices go down as investors does not find such firms as profitable opportunity in future. When dividends are announced without any change in dividend policy, investors do not react in noticeable manner. It does not affect overall market drastically as investors are already expecting this much from company based on their previous performance and they find no bright future prospects for such firms and so their response to firm's share does not change. In light of this context, a sample of 758 dividend increases, 278 decreases in dividends and 375 constant dividend announcements for the study period are considered for the study to investigate whether change in dividends have an impact on stock returns.

4. Objectives and Hypothesis
4.1 Objectives
1) To investigate the stock market reaction to change in dividend announcements of S&P CNX 500 Companies
2) To examine whether there is any abnormal returns around the announcement of Dividends.

4.2 Hypothesis
The following hypothesis is formulated for studying the impact of change in dividends on stock prices.

H₁: There will be positive significant returns (AARs and CAARs) when there is an announcement about dividend increase.

H₂: There will be negative significant returns (AARs and CAARs) when there is an announcement about dividend decrease.

H₃: Constant dividend announcements do not have any significant impact on share price behaviour.

5. Sample and Data
5.1 Sample
The stocks that announced dividend among the stocks listed in CNX 500 of NSE during the year 2007-2012 have been considered for the study. Total number of records was 2588 annual dividend announcements. Stocks that have any price sensitive, lack of information or confounding events during the event window (-30 days to +30 days) are eliminated from the study. A final sample of 758 dividend increases, 278 decreases in dividends and 375 constant dividend announcements for the study period are considered for the study.

5.2 Data
- The first set of data consists of annual dividends made by the sample stock which is collected from Capitaline database. This includes the dates of above corporate events announced by the companies.
- The second set of data consists closing prices of the selected stocks from NSE.
- The third set of data consists of S&P CNX 500 index prices complied and published by NSE on daily basis which have been collected from NSE website (http://www.nseindia.com/)

6. Methodology
The study is descriptive in nature and secondary data has been used. In this study, the two stage approach is used. The first stage consists of estimation of parameters like beta based on the ex-post returns on stocks, market index and expected returns on each of the stocks based on the market model. In the second stage, the estimated parameters are used to calculate abnormal returns around the source date. In this research, the date of dividend announcement is defined as day 0 or source day. If source day is a non-trading day then the immediately following trading day is considered as source day. It can also be mentioned as event day. Pre-announcement period includes 30 trading days prior to the dividend announcement i.e. days -30 to -1. Post-announcement period includes 30 trading days after the dividend announcement i.e. days +1 to +30. Thus, the event window of 61 trading days (including day 0 as the source day) have been considered for the study. The estimated ARs are averaged across securities to calculate Average Abnormal Returns (AARs) and AARs are cumulated to ascertain Cumulative Average Abnormal Returns (CAARs). In this study, the following simplified model of regression is used for estimating the expected returns on each security by taking the actual returns on market.

$$ExpectedReturn = E(Rit) = \alpha i + \beta i Rmt$$

Where,

E (Rit) = Expected return on security 'i' during time period 't'

αi= Intercept of a straight line or alpha coefficient of ith security

βi= Slope of a straight line or beta coefficient of ith security

Rmt= Expected return on index (CNX Nifty index in this study) during period 't'

6.1 Following are the models used for calculations
6.1.1 Abnormal returns (ARs)

$$ARit = Rit - E(Rit)$$

Where,

Rit= Actual returns

E (Rit) = Expected return on Security

6.1.2 Average abnormal returns (AARs)

$$AARit = \frac{\sum_{i=1}^{N} ARit}{N}$$

Where,

i = Number of securities in the study

N = Total number of securities in the portfolio

t = Days surrounding the event day

6.1.3 Cumulative Average Abnormal Returns (CAAR)

$$CAARt = \sum_{t=-30}^{k} AARit$$

Where,

   t = -30…0…+30

6.1.4 t Value for AAR

$$t(AAR) = \frac{AAR}{\frac{\sigma}{\sqrt{n}}}$$

Where,

σ = Standard deviation

n = Number of records

7. Data Analysis and Interpretation

Table 1 shows the AAR and CAAR around the change in annual dividend announcements measured by Market model with the corresponding t-value for the event period (from day -30 to day +30). During the pre-announcement period AAR is positive for 24 days for increase in dividend announcements and 21 days for decreasing and constant dividends. The AAR is positive for 20 days during the post announcement period for increasing dividends, 21 days for decreasing and 23 days for constant dividend announcements. The AAR is positive and significant on -1 and -2 day during the pre-event days for increasing and decreasing dividends as well as it is positively significant at 1% level for constant dividends. This shows that dividend announcements conveyed favourable information to the market before the announcement resulting in positive returns for all the three categories of dividends. In the 61 days event window AAR is positive and significant for 7 days, 22 days and 15 days for increasing, decreasing and constant dividends respectively. The CAAR on the event day is 2.90% for increasing dividends, 4.18% for decrease in dividends and 3.44% for constant dividends. The CAAR on +30 day shows that the decreasing dividends earned a higher return of 8.25%, followed by constant dividend of 6.53% and 3.60% for increasing dividend announcements.

Table 1: AAR and CAAR around the Change in Annual Dividend Announcements

(Returns in Percentage)

Event Window	Increase			Decrease			Constant		
	AAR	CAAR	t(AAR)	AAR	CAAR	t(AAR)	AAR	CAAR	t(AAR)
-30	0.2175	0.2175	2.071**	0.02337	0.02337	0.112	0.49385	0.49385	3.054***
-29	0.06595	0.28345	0.653	0.34864	0.37201	2.059**	0.00349	0.49733	0.026
-28	0.02793	0.31138	0.3	0.452	0.82401	2.386**	0.32438	0.82172	2.333**
-27	0.11161	0.42299	1.206	0.49628	1.32029	2.600***	0.24985	1.07157	1.864*
-26	0.06967	0.49266	0.719	0.31409	1.63438	1.808*	0.19691	1.26848	1.301
-25	0.04605	0.53871	0.483	0.54914	2.18352	3.243***	-0.17159	1.09689	-1.459
-24	0.04037	0.57908	0.447	-0.24347	1.94005	-0.705	-0.01359	1.08329	-0.122
-23	-0.01248	0.56659	-0.142	-0.09134	1.84871	-0.608	0.05492	1.13821	0.481
-22	0.22278	0.78938	2.31	-0.00493	1.84378	-0.035	0.01766	1.15587	0.156
-21	0.1521	0.94148	1.578	0.07692	1.9207	0.516	-0.04273	1.11314	-0.393
-20	0.0782	1.01967	0.862	0.31874	2.23944	1.821*	-0.04578	1.06736	-0.36
-19	0.31182	1.33149	3.605***	0.36395	2.6034	1.948*	0.49729	1.56464	3.815***
-18	0.02939	1.36088	0.349	0.17824	2.78164	1.022	0.12773	1.69238	0.972
-17	0.17178	1.53266	2.064**	0.16041	2.94205	1.015	0.08471	1.77709	0.676
-16	0.02068	1.55334	0.234	-0.3671	2.57495	-2.376**	0.00057	1.77766	0.005
-15	-0.01603	1.53731	-0.178	0.33997	2.91492	2.001**	-0.00155	1.77611	-0.012
-14	-0.00724	1.53007	-0.086	-0.23569	2.67923	-1.565	0.12769	1.9038	0.845
-13	0.25769	1.78776	2.842**	0.00318	2.68241	0.022	0.27464	2.17844	1.773*
-12	0.08387	1.87163	0.876	0.43193	3.11434	2.456**	-0.09035	2.08809	-0.792
-11	-0.07688	1.79475	-0.86	0.16212	3.27647	0.987	0.01446	2.10255	0.118
-10	0.03162	1.82637	0.354	0.35656	3.63303	2.185**	-0.08723	2.01532	-0.772
-9	0.13191	1.95829	1.498	0.17521	3.80824	1.093	0.16124	2.17656	1.092
-8	0.06913	2.02741	0.82	0.02921	3.83745	0.169	-0.01317	2.16339	-0.113
-7	0.12206	2.14947	1.366	-0.20903	3.62842	-1.304	0.05619	2.21958	0.43
-6	-0.005	2.14447	-0.054	-0.17764	3.45078	-1.111	0.27393	2.49352	1.962**
-5	-0.00722	2.13725	-0.087	-0.22515	3.22563	-1.139	0.29231	2.78582	2.030**
-4	0.14541	2.28266	1.553	0.09734	3.32298	0.59	0.07336	2.85918	0.529
-3	0.1048	2.38747	1.083	-0.13355	3.18943	-1.006	-0.01091	2.84827	-0.078

-2	0.18988	2.57735	2.088**	0.57426	3.76369	2.065**	0.44913	3.2974	2.979***
-1	0.17282	2.75017	1.784*	0.36792	4.13161	2.092**	-0.07511	3.22228	-0.521
0	0.15685	2.90702	1.262	0.04901	4.18061	0.236	0.2188	3.44108	1.327
1	-0.04979	2.85723	-0.393	-0.4436	3.73701	-1.374	-0.07907	3.36201	-0.468
2	0.00541	2.86264	0.054	0.05958	3.7966	0.294	-0.20117	3.16084	-1.332
3	0.08013	2.94277	0.809	-0.06392	3.73268	-0.409	0.15484	3.31568	1.131
4	-0.2018	2.74098	-1.794*	-0.05794	3.67474	-0.338	0.1803	3.49598	1.311
5	-0.12235	2.61863	-1.37	-0.19598	3.47876	-1.107	0.0396	3.53557	0.274
6	0.06669	2.68531	0.768	-0.02767	3.45109	-0.189	0.05012	3.58569	0.388
7	-0.09637	2.58894	-1.064	0.09399	3.54508	0.562	-0.04406	3.54162	-0.337
8	-0.08561	2.50333	-1.011	-0.12064	3.42444	-0.789	0.10762	3.64925	0.886
9	0.09674	2.60007	1.015	-0.02475	3.39968	-0.156	0.15064	3.79989	1.105
10	0.01362	2.6137	0.156	0.06411	3.46379	0.486	0.0186	3.81849	0.142
11	0.06305	2.67675	0.698	0.30363	3.76742	2.241**	0.43098	4.24947	3.075***
12	0.13413	2.81088	1.497	0.2231	3.99052	1.57	0.26892	4.51839	1.942*
13	0.06416	2.87503	0.72	0.37981	4.37033	2.317**	0.11616	4.63455	0.868
14	-0.00641	2.86862	-0.07	0.48217	4.8525	2.998***	-0.11632	4.51822	-0.973
15	0.14194	3.01056	1.576	0.23484	5.08735	1.431	0.15288	4.67111	1.213
16	0.14043	3.15099	1.493	-0.05203	5.03532	-0.382	0.31582	4.98692	2.176**
17	-0.04277	3.10822	-0.437	-0.02138	5.01394	-0.143	0.07215	5.05908	0.534
18	-0.06816	3.04006	-0.742	0.04673	5.06067	0.33	0.09048	5.14955	0.6
19	-0.04658	2.99348	-0.563	0.30595	5.36661	1.739*	0.24585	5.3954	1.865*
20	0.05438	3.04787	0.655	0.04752	5.41413	0.286	-0.03801	5.35739	-0.282
21	0.00776	3.05563	0.088	0.33582	5.74995	1.937*	0.02023	5.37762	0.155
22	0.0467	3.10233	0.513	0.13085	5.8808	0.944	0.09658	5.4742	0.818
23	-0.02723	3.0751	-0.312	0.20467	6.08547	1.206	0.20763	5.68183	1.661*
24	0.01882	3.09392	0.214	0.24567	6.33113	1.742*	0.28378	5.96561	2.382**
25	0.02252	3.11644	0.258	0.13216	6.46329	0.984	0.19017	6.15578	1.493
26	0.01022	3.12667	0.121	0.58775	7.05104	3.425***	0.14486	6.30064	1.084
27	0.09539	3.22206	1.105	0.41059	7.46163	2.806***	0.19436	6.495	1.722*
28	0.26586	3.48792	3.112***	0.35587	7.8175	2.537**	-0.14609	6.34891	-1.07
29	0.102	3.58992	1.171	0.21728	8.03478	1.565	-0.00561	6.3433	-0.05
30	0.01139	3.60131	0.14	0.22344	8.25823	1.46	0.18795	6.53124	1.622

*Significant at 10% level,   ** Significant at 5% level,   ***Significant at 1% level

Table 2 shows CAAR in different event windows for the change in annual dividend announcements. It is found that CAAR is positive and significant for all the pre event windows (-30, 0), (-20, 0), (-10, 0), (-5, 0) and (-2, 0) at 1% level of significance for increase in dividends. The CAAR is 4.70% for (-30, +30) event window and 2.106 % for (-20, +20) event window at 1% level of significance for increasing dividends. *Therefore the hypothesis H₁ can be accepted and inferred that increase in dividends results in positive significant AARs and CAARs around the dividend announcements.* The CAAR is positive and significant at 1% level (-30, 0), (0, +30), (-30, +30) and (-20, +20) event windows for decrease in dividends. *The positive significant AARs and CAARs around decreasing dividend announcements rejects the hypothesis $H_{2\ and}$ can be inferred that there are no significant negative returns around decreasing dividend announcements.*

Table 2: CAAR in different Event Windows for the Change in Annual Dividend Announcements

(Returns in Percentage)

Event Window	Increase		Decrease		Constant	
(in days)	CAAR	t (CAAR)	CAAR	t (CAAR)	CAAR	t (CAAR)
(-30, 0)	2.90702	5.738***	4.18061	2.857***	3.44108	3.502***
(-20, 0)	1.96554	4.393***	2.25991	1.901*	2.32794	3.001***
(-10, 0)	1.11227	4.823***	0.90415	1.027	1.33853	2.349**
(-5, 0)	0.76255	4.335***	0.72983	0.986	0.94757	1.951
(-2, 0)	0.51956	18.159***	0.99119	2.163	0.59281	1.303
(0, +2)	0.11247	0.607	-0.33501	-0.673	-0.06144	-0.164
(0, +5)	-0.13154	-0.409	-0.65285	-1.414	0.31329	0.775
(0, +10)	-0.13647	-0.379	-0.66782	-1.308	0.5962	1.424
(0, +20)	0.2977	0.661	1.28253	1.339	2.1351	3.078***
(0, +30)	0.85114	1.616	4.12662	3.442***	3.30896	4.178***
(-30, +30)	3.60131	4.708***	8.25823	4.406***	6.53124	5.238***
(-20, +20)	2.10639	3.139***	3.49343	2.304**	4.24425	4.153***
(-10, +10)	0.81895	1.688	0.18732	0.178	1.71593	2.464**
(-5, +5)	0.47416	1.107	0.02798	0.03	1.04206	1.674
(-2, +2)	0.47517	1.942	0.60717	0.705	0.31257	0.526
(-1, +1)	0.27988	1.301	-0.02667	-0.038	0.06461	0.218

*Significant at 10% level,
** Significant at 5% level, ***Significant at 1% level

In case of no change in dividends the CAAR are significant for event windows (-30, 0), (-20, 0), (0, +20), (0, +30), (-30, +30), (-20, +20) at 1% level of significance and at 5 % level of significance for (-10, 0), (-10, +10) event windows. Hence the hypothesis H₃ can be rejected since significant positive AAR and CAAR around constant dividend announcements are found. The results of the study show that the market reacted positively to dividend increase, decrease and constant announcements. The results of the studies by Aharony & Swary (1980) [1], Arab *et al.* (2004) [2], Capstaff *et al.* (2004) [4], Hussin *et al.* (2010) [5], Lintner (1956) [7],

Petit (1972) [10], Taneem & Yuce (2011) [11], Urooj & Zafar (2008) [12] showed that companies that increased their dividend amounts had a higher abnormal return and higher cumulative abnormal return showing that the market has favourable impression towards companies paying out higher dividends and showed negative returns or insignificant returns for decreasing and no change in dividends. Lonie *et al.* (1996) on investigation the UK market found a positive abnormal returns for increasing and constant dividends and negative returns for decrease in dividends.
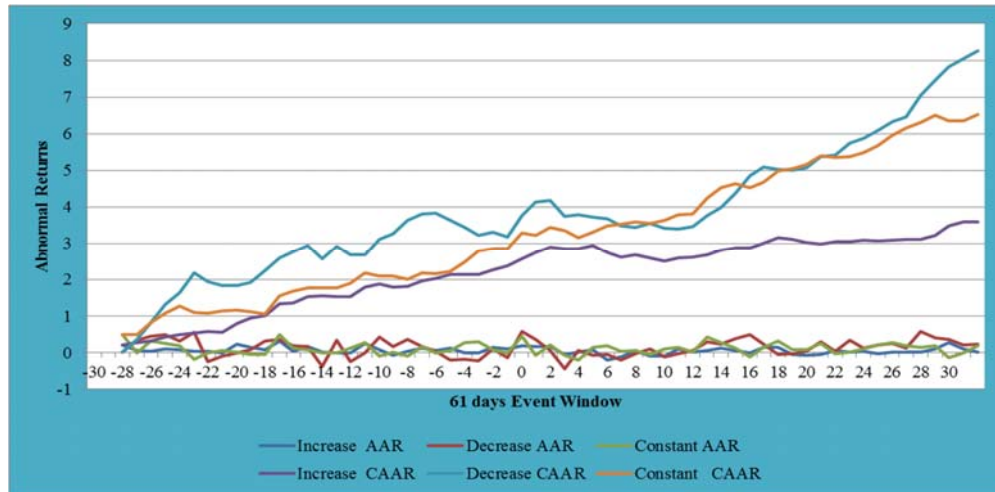

Fig 1: AAR and CAAR around the Change in Annual Dividend Announcements

8. Conclusion
The cumulative effect of the events captured by CAAR shows a higher positive significant return of 8.25%, annualised return of 49.36% for decrease in dividends, 6.53% returns for constant dividends, annualized return of 39.07% and 3.60% for increase in dividends, annual return of 21.54% in (-30, +30) days. This shows that decrease in dividends and constant dividend announcements have more significant positive impact on share prices. The steady increase in CAAR for all the three changes in dividends shows investors preference towards dividend income. However, the magnitude of return is found to be high for decrease in dividends followed by constant dividends.

Dividend signaling hypothesis developed by Bhattacharya (1979) [3], Miller & Rock (1985) [9] and John & Williams (1985) [6] suggest that firms change their dividend payout to signal future performance. Since the management knows more about its firm than outsiders do, the only way for management to relay the information to the market is by changing their dividend payout pattern. The findings are consistent with the signaling hypothesis but no negative reaction to the decreasing dividend group is found. Thus the present study does not fully support the Dividend signaling hypothesis.

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