IMPACT OF INSIDER TRADING ANNOUNCEMENT ON SHARE PRICES: EVIDENCE FROM INDIAN SECURITIES MARKET

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Abstract: Insider trading has posed severe problems for stock markets and investor safety. This article looks at the recent insider trading announcements of an Indian company, Infosys, for which an insider trading announcement occurred on July 15, 2020. By using an event study methodology with the help of MS Excel software, analyzes the effects of the announcements on its stock prices. The stock prices prior to and after 81 days from the date of the announcement of insider trading are selected for analysis. The data is collected from the NSE website. It has been discovered that the announcement of insider trading has no significant impact on the price of its shares. It can be implied that, insider trading is a misuse of internal information about a company and is carried out to earn personal financial gain, it has no impact on the public. Even though it is illegal because other investors are disadvantaged as they cannot access such information. The existing literatures has mainly examined the connection between insider trading and abnormal returns or stock prices separately. There is, however, a dearth of research that thoroughly examines the interactions among insider trading, normal returns, abnormal returns, stock prices, and stock returns in the Indian context. For a thorough understanding of how insider trading affects stock prices, it is essential to comprehend how these interrelationships work.

Index Terms - Insider Trading, Share Price, Market Price, Normal Return, Abnormal Return

INTRODUCTION

Insider trading has posed severe problems for stock markets and investor safety. It is unethical to trade in a company's securities using sensitive information that has not been made public. (Antoniadis et al., 2015).As a result of its potential to influence a company's stock price, the information is referred to as "price sensitive." Insider trading refers to the use of such private information to make an erroneous profit or loss. An insider is a person who holds a position with the company whose stock they trade.(Chakraborty, 2022). He could be one of the company's directors, presidents, or senior executives, for instance, who owns more than 10% of the stock. Even if a person is not employed by the company, they may have access to plenty of confidential information about stock performance from a real company executive. This could be legal or unlawful depending on the kind of pertinent information the insider has access to(Chakraborty, 2022). Trading existing shares of the company's stock by an insider who possesses secret information is prohibited. On the other hand, if the information is already widely known, these individuals can trade without fear of legal repercussions. To prevent problems with information asymmetry, laws have been passed in every country requiring insiders to disclose information about purchasing or selling company shares (Antoniadis et al., 2015).

The common assumption regarding insider trading is that a security's price will rise or fall based on material information. Nevertheless, it is only sometimes accurate. For instance, if there is a company insider with

favourable information about it but who cannot buy its stock, the price increase is then avoided for those who sell in the window of time between when the insider learns of the information and when it becomes known to the public. However, there is no absolute evidence supporting the argument that insiders' abnormal profits are due to their access to the company's private information(Hoang et al., 2015)

RESEARCH OBJECTIVES:

- To comprehend the impact of the announcement of insider trading on stock prices.

- To ascertain the impact of insider trading in the relationship between the normal return and abnormal return of shares.

- To ascertain the impact of insider trading in the relationship between stock price and stock return.

HYPOTHESES:

1. H0- Announcements of insider trading does not have an impact on stock price movement
   H1- Announcements of insider trading has an impact on stock price movement.
2. H0- There is no significant relationship between normal return and abnormal return of shares due to insider trading
   H1- There is a significant relationship between normal return and abnormal return of shares due to insider trading
3. H0- There is no significant relationship between stock price and stock return due to insider trading
   H1- There is a significant relationship between stock price and stock return due to insider trading

VARIABLES OF THE STUDY:
➔ Date of insider trading announcement
➔ Stock Price
➔ Market Price
➔ Stock Return
➔ Market Return
➔ Normal Return
➔ Abnormal Return

Review of Literature

S. Chakraborty, (2022) stated that the act of purchasing, selling, or subscribing to a company's securities while in possession of any unreleased price-sensitive information (UPSI) about the company is known as insider trading. If insiders of a public limited company trade based on price-sensitive, undisclosed information to make a profit or avoid a loss, it will be regarded as illegal, according to the regulations on insider trading. According to B. Cornell and E. Sirri (1992), the method the market uses to obtain information from insider traders is quite convoluted. In contrast to a trade-by-trade analysis, the relationship between the insider's purchase and the rise in the share price can be tracked daily. Observing the overall picture of the stock market T. Hoang, E. Neuhauser, and H. Varamini (2015) suggested that it may be difficult to develop an investment strategy by using insider trading information. Large stocks, where insider trading has little financial value, make up most of the market capitalization. S. Nanda and P. Barai (2020) inferred that Indian investors apparently do not adhere to the information hierarchy hypothesis. If there is abnormal price, return, and volume movement following an insider trade, this indicates that the market is not efficient. D. Rosenfeld (2018) pointed out that there were times when the market failed to recognize the presence of insider traders and that there were times when prices moved the opposite way. It shows that not all market information is disclosed through insider trading. The relationship between firm-year net insider purchases, subsequent returns, and changes in ROA was examined by F. Brochet and P. Lee (2016). They discovered that insiders are more likely to purchase shares prior to rising stock prices but not prior to rising earnings (apart from value stocks). So far, there is little proof that Indian insiders have traded on information about upcoming earnings. I. Antoniadis, C. Gkasis, and A. Sormas (2015) claimed that when insiders sell stocks, the market typically reacts negatively, not immediately after the announcement. It will take a minimum of 10 days. The findings are insufficient to support a nebulous correlation between insider stock purchases and stock prices. Despite evidence of a negative relationship for some event periods, statistical tests have not supported the existence of either a strong or semi-strong form of market efficiency. S. Chakravarthy and J. McConnel (1999) suggested that future studies on the impact of insider trading on market price should first identify the impact of non-insider trading and then ascertain whether insider trading has a different impact than non-insider trading.

RESEARCH METHODOLOGY

Research Design: The study is descriptive and exploratory in nature.

Source and type of Data: This article examines recent insider trading disclosures made by the Indian company Infosys, for which disclosure was made on July 15, 2020. Secondary data were employed here. The share price and market price of the specific share were obtained from the National Stock Exchange's official website.

Period of Study: For analysis, the stock prices before and after 90 days (13/05/2020 to 16/09/2020) from the specific date of the announcement of insider trading are chosen.

Tools used for analysis: An event study methodology were adopted here. T- statistics analysis, Correlation analysis, and regression co efficient using market models were undertaken to check the validity of the hypotheses. All the analysis are done by using Ms Excel -2019 software.

RESULTS AND DISCUSSIONS

Event Study Methodology

An event study is a tool for determining how a specific event affected a company's stock returns.

Event day- July 15, 2020, denoted by 0, the date on which the announcement of the event (insider trading) occurred.

The event window- it is also known as the window period (taken as 81 days), is the time period during which abnormal returns are calculated by taking a few trading days from the sample company's pre- and post-event days into account.

Window estimation- 51 days it is the time frame used to calculate estimated returns.

Table 1- Calculation of Stock Return, Market Return, Normal Return, Abnormal Return, and t Statistics of Abnormal Return.

Period	Date	Stock Price	Market Price	Stock Return	Market Return	Normal Return	Abnormal Return	t-Statistics of AR
-45	13/05/2020	712	703.95	--	--	--	--	--
-44	14/05/2020	707.65	720.85	-0.00612829	0.02372374	0.01283483	-0.01896373	-1.001174882
-43	15/05/2020	664.8	652.3	-0.06246338	-0.09992692	-0.04060535	-0.02185843	-1.153990985
-42	18/05/2020	659.85	663.9	-0.00747307	0.01762957	0.01020508	-0.01767415	-0.933093855
-41	19/05/2020	664	668.6	0.00626913	0.00705438	0.00563161	0.00063852	0.033706493
-40	20/05/2020	668.5	669.55	0.00675247	0.00141971	0.00319952	0.00355896	0.187856923
-39	21/05/2020	666.5	672.2	-0.00299627	0.00395007	0.00428941	-0.00728573	-0.384643792
-38	22/05/2020	675	692.35	0.01267251	0.02953593	0.01534737	-0.00267486	-0.141213885
-37	26/05/2020	693	680.55	0.02631738	-0.01719013	-0.00484723	0.03116451	1.645301539

Source- Secondary data from NSE website analysed using Ms Excel 2019.

	Date							
-36	27/05/2020	686.05	705.45	-0.010079488	0.035934602	0.018112908	-0.028192396	-1.48839146
-35	28/05/2020	707	707.4	0.030080155	0.00276038	0.003775307	0.026304847	1.388740081
-34	29/05/2020	692.5	691	-0.020722428	-0.023456453	0.007555372	0.013167056	-0.695142541
-33	01/06/2020	698.75	699.55	0.008984786	0.012297447	0.007897142	0.001087644	0.05742117
-32	02/06/2020	700.5	708.1	0.002501341	0.012148055	0.007832576	-0.005331235	-0.281457624
-31	03/06/2020	710.7	701.55	0.014456034	-0.009293154	0.001434121	-0.015890155	0.838906063
-30	04/06/2020	702	707.75	-0.012316996	0.008798751	-0.006385037	-0.018702033	-0.987356535
-29	05/06/2020	707	703.55	0.007097262	0.005951977	$9.90525\text{E-}06$	-0.007087357	-0.374170438
-28	08/06/2020	707.65	720.85	0.000918955	0.024292124	0.013081134	-0.012162178	-0.642090953
-27	09/06/2020	720	717.6	0.017301591	0.004518761	-0.000629328	0.016672262	0.880196676
-26	10/06/2020	715	715.85	-0.006968669	-0.002441663	-0.001527031	-0.008495701	-0.448522658
-25	11/06/2020	712	703.95	-0.004204631	-0.016763317	-0.004662659	-0.000458027	0.024181134
-24	12/06/2020	675.8	692.05	-0.052180737	-0.017049124	-0.004786182	-0.047394555	-2.502151721
-23	15/06/2020	693	687.55	-0.025132825	0.006523653	0.000237168	-0.025369993	1.339385322
-22	16/06/2020	702	701.2	0.012903405	0.019658599	0.011078566	0.001824839	0.096340697
-21	17/06/2020	699.9	703.65	-0.002995936	0.00348792	0.004089744	-0.00708568	-0.374081934
-20	18/06/2020	708.2	713.9	0.011789072	0.014461823	0.008832566	0.002956506	0.156086005
-19	19/06/2020	709	705.55	-0.001128987	0.011765256	-0.002502542	-0.003631529	0.191723194
-17	22/06/2020	707.1	703.7	-0.002683428	-0.002625512	0.001447574	-0.004131002	-0.218092405
-16	23/06/2020	695.7	720.65	-0.016253566	-0.023801454	-0.01286907	-0.029122636	-1.537502628

Index	Date							
-15	24/06/2020	716.9	714.15	0.030017828	-0.009060558	-0.001333596	0.031351424	-1.655169417
-14	25/06/2020	704.85	700.5	-0.016951347	-0.019298659	-0.005758411	-0.011192936	-0.590920711
-13	26/06/2020	710.2	748.2	0.007561606	0.065875956	-0.031053292	-0.023491685	-1.240221805
-12	29/06/2020	735.4	731.75	0.034867948	0.022231396	0.007025913	-0.041893862	-2.211747691
-11	30/06/2020	732.8	735.95	-0.003541756	-0.005723256	0.005055836	-0.008597591	-0.453901885
-10	01/07/2020	737.25	731.9	0.006054234	0.005518289	0.000197341	-0.005856893	-0.309209257
-9	02/07/2020	737.35	756.6	0.00013563	0.03319082	0.01692707	-0.01679144	-0.886488531
-8	03/07/2020	755	762.7	0.023655072	0.008030057	0.006052814	0.017602257	0.929294886
-7	06/07/2020	765.2	764	0.013419488	0.00170302	0.00331326	0.010101162	0.533281524
-6	07/07/2020	769.4	794.15	0.005473753	0.038704571	0.019310064	-0.013836311	-0.730475231
-5	08/07/2020	784.9	774.7	0.019945331	0.024796503	-0.008134529	-0.02807986	1.482450248
-4	09/07/2020	780	781.7	0.006262401	0.008995178	0.006469931	-0.012732332	-0.672191712
-3	10/07/2020	773.5	781.85	0.00836825	0.000191871	0.002665221	-0.011033471	-0.582501881
-2	13/07/2020	788	797.05	0.01857242	0.01925456	0.01090392	0.0076685	0.404851345
-1	14/07/2020	792.95	783.25	0.006262078	-0.017465482	0.004966128	-0.011228206	0.59278277
0	15/07/2020	799	830.95	0.007600778	0.059117695	0.028132432	-0.020531654	-1.08394969
1	16/07/2020	900.1	911	0.119144922	0.091973273	0.042332317	0.076812605	4.055250467
2	17/07/2020	911	903.15	0.012037029	0.008654245	0.001157991	-0.01319502	0.696618859
3	20/07/2020	908.5	934.3	-0.002748009	0.033908933	-0.017237432	0.019985441	-1.055112895
4	21/07/2020	945	936.75	0.03939004	0.002618852	0.00371414	0.035675899	1.883476115

	Date							
5	22/07/2020	938.95	917.9	-0.006422698	-0.020327985	-0.006203276	-0.000219421	-0.011584153
6	23/07/2020	915.65	907.95	-0.025128034	-0.010899141	-0.002128215	-0.022999819	-1.214254193
7	24/07/2020	903.25	922.85	-0.013634826	-0.016277397	-0.009617241	-0.023252066	-1.227571325
8	27/07/2020	921.55	948.45	0.020057665	0.027362365	0.014408064	0.005649601	0.298265446
9	28/07/2020	946	962.85	0.026185534	0.015068563	0.009094794	0.017090741	0.90228984
10	29/07/2020	953.25	954.15	0.00763463	-0.009076745	0.001340591	-0.008975221	0.473838492
11	30/07/2020	962	961.45	0.009137252	0.00762167	0.005876313	0.003260939	0.172158245
12	31/07/2020	969.25	966	0.007508126	0.004721273	0.004622788	0.002885338	0.152328766
13	03/08/2020	960	956.9	0.009589292	-0.009464941	0.001508366	-0.008080926	-0.426624995
14	04/08/2020	960.45	949.85	0.00046864	-0.007394815	0.000613677	0.001082317	0.057139914
15	05/08/2020	952	944.7	-0.00883689	-0.005436661	0.00023262	-0.00906951	0.478816398
16	06/08/2020	953.5	970.85	0.00157439	0.02730456	0.014383081	0.012808691	-0.676222989
17	07/08/2020	969.45	950.9	0.016589475	0.020763072	0.006391317	-0.022980792	-1.21324967
18	10/08/2020	948.9	951.35	-0.021425481	0.000473124	0.002786776	0.024212257	-1.278263737
19	11/08/2020	949.9	948.45	0.001053297	0.003052955	0.001262836	-0.000209539	-0.011062435
20	12/08/2020	948	954.95	0.002002214	0.00682991	0.005534122	-0.007536335	-0.397873854
21	13/08/2020	954.8	951.2	0.007147392	0.003934638	0.000881781	-0.006265611	-0.330787147
22	14/08/2020	955.85	953.6	-0.001099103	0.002519951	0.003671396	-0.002572294	-0.135801866
23	17/08/2020	954.1	957.5	-0.001832509	0.004081425	0.004346251	-0.006178706	-0.326201938
24	18/08/2020	963.9	967.55	0.010219067	0.010441382	0.007094967	0.0031241	-0.164933947

25	19/08/2020	970.9	959.3	0.007235922	-0.008563251	0.001118664	-0.008354586	0.441072627
26	20/08/2020	958.9	955.15	-0.012436682	-0.004335456	0.000708551	-0.013145233	-0.693990439
27	21/08/2020	963.05	948.8	0.004318537	-0.006670368	0.000300577	0.004619114	0.24386187
28	24/08/2020	947	947.4	-0.016806238	-0.001476638	0.001944107	-0.018750345	-0.989907117
29	25/08/2020	947.5	938.1	0.000527844	-0.009864837	0.001681198	-0.002209042	-0.116624312
30	26/08/2020	941.25	950.8	-0.006618158	0.013447182	0.008394047	-0.015012205	-0.792555488
31	27/08/2020	960	947.05	0.019724505	0.003951845	0.000874344	0.018850161	0.995176834
32	28/08/2020	951.45	935.25	-0.008946148	-0.012538017	-0.002836522	-0.006109626	-0.322552038
33	31/08/2020	935.25	928.6	-0.017173264	-0.007135798	-0.000501731	-0.016671532	-0.880158117
34	01/09/2020	926.25	914.15	-0.009669697	-0.015683404	-0.00419593	-0.005473767	-0.288982448
35	02/09/2020	915	924	-0.012220111	0.0107174	0.00721426	-0.019434371	-1.026019655
36	03/09/2020	926.5	935.55	0.01248998	0.01242252	0.007951197	0.004538783	0.239620851
37	04/09/2020	915	919.15	-0.01248998	0.017685262	0.005061115	-0.007428866	-0.392200084
38	07/09/2020	918.9	925.05	0.004253237	0.00639846	0.005347653	-0.001094416	-0.057778668
39	08/09/2020	929.95	939.3	0.011953519	0.015287127	0.009189255	-0.002764264	-0.14593676
40	09/09/2020	935	927.75	0.005415708	-0.012372617	0.002765038	-0.008180746	-0.431894907
41	10/09/2020	935.3	940.05	0.000320804	0.013170765	0.008274582	-0.007953778	-0.419912366
42	11/09/2020	934.9	945.7	0.000427762	0.005992329	0.005172127	-0.005599888	-0.295640927
43	14/09/2020	957	978.4	0.02336382	0.03399319	0.017273847	0.006089973	0.321514473
44	15/09/2020	979.5	982.45	0.023238846	0.004130867	0.00436762	0.018871226	0.99628893

16/09/2020 45	954.8	951.2	- 0.025540343	- 0.032325106	- 0.011388324	- 0.014152019	- 0.747142743

The date wise stock price and market price were derived from the website of National Stock Exchange. The stock return and market return are the natural algorithms of stock price and market price respectively. The market model or single factor model is used to find the normal return.

$$NR = \alpha + (\beta * MR)$$

Abnormal return is the difference between Stock Return and Normal Return.

$$AR = SR - NR$$

t statistics of abnormal return= AR/SE, in which SE is the Standard Error, which can be calculated as:

The calculated value of Standard Error $SE = \frac{\sigma}{\sqrt{n}}$ was 0.018942. The values of t statistics are the determinant of significance of the event (here, insider trading) in the share price of the company. Here, the t statistic value of the event date is calculated as -1.08394969. Criteria for hypothesis testing is that if the calculated value of t statistics is greater than the t table value at 95% confidence level i.e. 1.96, then the particular event is significant. Otherwise, the calculated value of t statistics is less than 1.96 the event is said to be insignificant. Hence, the **null hypothesis in hypothesis 1 is accepted** that the Announcements of insider trading does not have an impact on stock price movement. It is evident that for most of the pre- and post-event dates, the t-statistic value is insignificant. Thus, it can be inferred that the announcement of insider training had no significant impact on stock prices on its announcement date or before and after the announcement day.

Table-2 Firm characteristics regression coefficients using market model

Company Name	Pre and post period of Announcement of insider trading	
	α	β
Infosys India Ltd	0.002582	0.432191

Source: Calculation done in Ms Excel 2019.

The Table 2 shows that the vertical intercept or the alpha value of the shares of the company which is calculated as, 0.002582 indicates that the shares of the company has earned a return corresponding with the risk, here risk will be the occurrence of the undesirable event i.e, Insider trading. The occurrence of insider trading does not impact the returns of a share. The slope or beta value of the shares of the company which is calculated as 0.432191, denotes that the share price of the company is less volatile than the market prices. The values of alpha and beta founds to be again evidence that the occurrence or the announcement of insider trading does not make any significant impact on share price, return from share price and market volatility.

Table-3 Karl Pearson's correlation - coefficient between Normal Return and Abnormal Return of the share.

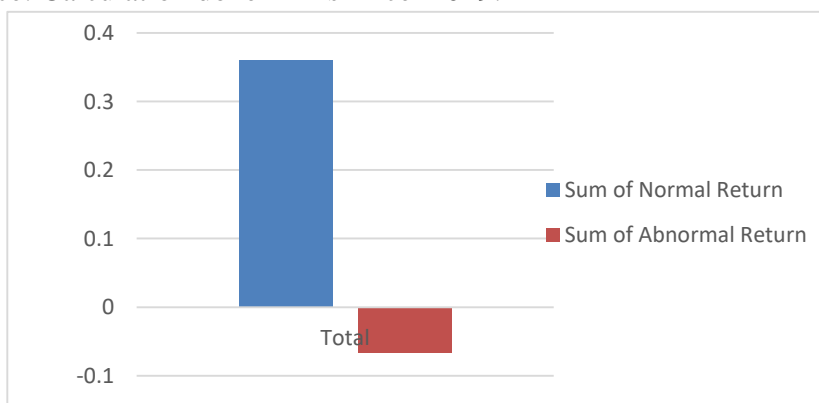|	Normal Return	Abnormal Return
Normal Return	1	
Abnormal Return	0.00694076373081725*	1

Source: Calculation done in Ms Excel 2019.

Figure-1
Pivot table showing the relationship between Normal Return and Abnormal Return of the share.

Source: chart draw upon the calculations done in Ms Excel 2019.

The Table 3 represents the value of correlation co efficient between the normal return and abnormal return of the shares of the company. At 0.01 significant level, the value of correlation co- efficient is 0.00694076373081725. This value indicates that there is no linear relationship between normal return and abnormal return of the shares. The figure 1 also depicting the relationship between the sums of normal return and abnormal return of the shares.

Upon the calculated value of correlation co efficient and the pivot table in the figure the **null hypothesis in the hypothesis 2 can be accepted** that, there is no significant relationship between normal return and abnormal return of shares due to insider trading in a company. It can be inferred that due to the occurrence of insider trading, no relationship is formed between the normal return and the abnormal return of the shares.

Table – 4 Karl Pearson's correlation - coefficient between Stock Price and Stock Return

	Stock Price	Stock Return
Stock Price	1	
Stock Return	0.0681680782470531*	1

Source: Calculation done in Ms Excel 2019

The Table 4 shows the value of correlation co efficient between the Stock price and stock return of the company for the 81 days which include after and before 40 days of the announcement of the insider trading in the company. At 0.01 significant level, the value of correlation co- efficient is 0.068168078247053. The value indicates that there is a weak relationship between stock price and stock return of the company for the given period.

Source: Chart draw upon the calculations done in Ms Excel 2019
Figure-2 Line chart showing the relationship between Stock price and Stock Return

Figure 2 depicts a line chart which represents the stock prices and stock returns of the company for the selected time period. From the chart also it is evident that there is only a weak positive relationship between stock price and stock return and it is not much significant. The values of stock prices are narrowly varying day by day perhaps the value of stock return stood constant all over the period. During the period, the stock price may increase or decrease but the stock return remains constant all over the period.

With the correlation value of 0.06 **the null hypothesis in hypothesis 3 can be accepted** that there is no significant relationship between stock price and stock return due to insider trading in the firm for the time period.

MANAGERIAL IMPLICATIONS

Most previous research on the subject claimed that insider trading is an additional informational advantage held by those who have a direct or indirect relationship with the companies in order to engage in trading activities and profit financially. The statistical analysis revealed that the announcement of insider trading does not have any significant impact on the share price movement of a company.

It is found that the t statistic value of the event day is less than 1.96, hence it is insignificant. The value of the regression coefficients was also stated to be the same. The calculated values of the correlation coefficients between normal return and abnormal return and stock price and stock returns also depict that the occurrence of insider trading does not produce any relationship between the said variables. Whatever the share prices, the stock return remains constant.

CONCLUSION

Insider trading is the practice of using such confidential information to make an unethical profit or loss. The typical view of insider trading is that the price of a security will change based on relevant information. The previous studies on the subject commonly depict that the claim that insiders' abnormal profits are attributable to their access to the company's confidential information is unsupported by any concrete evidence. It is clear from the study's findings that the price of a company's shares is not significantly affected by the disclosure of insider trading. The share's normal return and abnormal return do not correlate in a linear way. The price of a stock and its return have only a weak correlation, thus it is not significant. The stock return is constant regardless of share prices. It can be inferred that; insider trading is the improper use of corporate information for personal gain only; it has no bearing on the general public. Even though it should be regarded as illegal, this is because insider trading disadvantages other investors by preventing them from accessing such information.

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