BULK DEALS, ABNORMAL RETURNS AND FRONT- RUNNING: EVIDENCE FROM INDIAN MARKETS

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ABSTRACT

The paper examines the evidence of front-running activities by informed traders around the bulk deals of stocks traded from 2012 to 2021 on the National Stock Exchange (NSE) of India. For the purpose of the study, Bulk deals are divided into Buy and Sell trades. The paper studies the influence on the share prices if the bulk deal transactions are initiated by single investor or a group of investors. It also examines the role of volume and delivery in explaining the Cumulative Average Abnormal Returns (CAAR) earned in the pre-event period. The results of the study shows Average Abnormal Returns before the deals are higher for 'Buy' and 'Sell' deals for individual trader than for Multiple Buy and Sell Traders. Trading volume and delivery percentage both rise significantly before bulk transactions and fall drastically once it crosses the event day. Therefore, bulk trades have a considerable impact on share prices, with very high cumulative returns around the trades for the NSE.

Key Words: Bulk Deals, Front-running, Event Study, Abnormal Returns.

1. INTRODUCTION

According to the estimate of Economic Times in the year 2018, 60 million retail investors invest in equity market either through direct investment or through mutual funds. Aggarwal & Wu (2006) discovered the evidence of price manipulation in the US market. Also, few studies (Khwaja & Mian, 2005 and Imisiker & Tas, 2013) have identified the existence of pump and dump in developing countries. Similarly, numerous researches show that stock price manipulation occurs in emerging market environments (Ögüt et al, 2009). However, any kind of price manipulation in industrialised countries invites legal action as a result, it's uncertain to look at the issues of stock price manipulation in emerging markets. The Securities and Exchange Board of India (SEBI) has implemented Bulk Deals and Block Deals with a motive to promote openness and discourage rumours and speculation in bulk/block deals.

According to the Securities and Exchange Board of India (Block Deals, 2005), "A bulk deal constitutes all transactions in a scrip (on an exchange) where the total quantity of shares bought/sold is more than 0.5% of the number of equity shares of the company listed on the exchange. The quantitative limit of 0.5% can be reached through one or more transactions executed during the day in the normal market segment". Bulk deals are performed during regular trading hours and comprise of single or multiple transactions. In bulk deals sometimes, manipulation of trade takes place either from company side or a buyer or sellers' side and the purpose can be either to increase the company value or manipulation by either of the parties during the deal.

The study intends to investigate the impact of bulk deals on share prices of the selected companies listed on the National Stock Exchange (NSE). This study includes the effect of volume and delivery in explaining the pre-event window's cumulative abnormal returns (CAR). It examines the evidence of front-running in bulk stock deals at the NSE. The study is spread over a period of 10 years from 2012 to 2021 of the 25 listed stocks on Nifty Midcap Select. The major Nifty 50 Index was not considered as the sample size of Bulk deals was not adequate for this study. The impact of bulk deal transaction announcements is investigated using an event study methodology and cross-sectional regression. The findings strengthen the case for front-running in the Indian stock market.

2. LITRATURE REVIEW

According to Ganesh & Naresh (2018) the Bulk & Block trades have a big volume of transactions in each of the evaluated trades, and each trade has a major impact on the market. Bulk deals have a considerable impact on share prices, with very high cumulative returns around the trades for both the BSE and the NSE (Chaturvedula et al., 2015). Price impact is positively related to market circumstances, lagged stock returns, and bid–ask spreads, with block deals performed in the first hour of trading having the highest price impact. The bid–ask spread explains the majority of the variance (Alex, 2008). Usual anomalous returns are found for equities after both buyer and seller-initiated block trades are small and insignificant, and that there is no big systematic price reversal after both block purchase and sale. Block transactions, in general, are stimulants for the market, which responds positively to both buy and sell block trades (Jiauguo & Dar-Hsin, 2005).

Active investors were more likely to buy large blocks of shares in highly diversified companies with low profitability. This evidence supports the notion that the market for partial corporate ownership plays a significant influence in lowering agency costs in American businesses (Bethel et al., 2009). Money managers who expect a lot of immediacy are more likely to have a big market influence (Louis & Josef, 1995). Raw volume measurement prediction errors are strongly positive skewed, with thin left tails and big right tails. The results of the research for event clustering and different firm sizes are displayed (Bipin & Jain, 1989).

In an emerging market, manipulators are found to choose illiquid, underperforming, and less volatile equities to manipulate. It also shows that stock liquidity, return, and volatility rise during the manipulation period and fall afterward, resulting in a decline in market quality (Hilal al., 2021). The results of (Rajvanshi 2021) reveal that the frontrunners can earn 5 to 7 percent returns in the week leading up to the event. Results also show that trading volume and delivery percentage increases significantly before the bulk deals. There will be more competition for shares as more people seek information, making it simpler for manipulators to trade and possibly damaging market efficiency. When manipulators sell, prices and liquidity are greater than when they buy. Prices are higher when manipulators sell because liquidity and volatility are higher (Aggarwal & Wu 2006). Trade-based stock-price manipulation, which is notoriously difficult to prevent, is consistent with rational utility maximisation (Gale & Allen, 1992). During the manipulation period, pump-and-dump manipulations result in huge transient price impacts, heightened volatility, big trade volumes, short-term price continuance, and long-term price reversals (Yu & Yao, 2015). The focus is on the practice's spread to the commodities futures business, as well as the regulatory and policy difficulties that various kinds of front-running bring (Markham, 1988). High-frequency trading HFT scalpers are found to be ahead of the order flow, causing market quality and long-term investors to suffer (Viktor, 2016).

For large trades, the informal "upstairs" market provides better execution than the downstairs market, but the differences are insignificant economically. Traders who can credibly communicate that their trades are liquidity motivated, on the other hand, use the upstairs markets. As a result, upstairs market places enable trades that would not otherwise be possible (Madhavan & Cheng, 1997). Price changes before the trade date are found to be considerably positively connected to trade size, implying that knowledge leakage occurs when the block is "shopped" upstairs (Keim & Madhavan,1996). The incentives for trading, the determinants of trade duration, and the order type selection support some of the predictions provided by theoretical models, but they also imply that these models miss significant aspects of trading behaviour (Keim & Madhavan, 1995).

Market frictions in emerging equity markets fail to account for the knowledge asymmetry that exists in block transactions. This shows that the electronic limit order book method may not be the optimal trading technique for emerging markets, (Alzahrania et al., 2012). From the above literature review, it is clear that there are certain gaps in the past studies that have not yet been thoroughly investigated. Bulk trades are the subject of only a few investigations. This present study includes current information on Indian financial markets, as well as how front running is a key worry for small investors investing in the company's stock.

3. DATA

The bulk deal data of firms listed on NSE (Bulk Deals/ Block Deals/ Short Selling Archives., n.d.) and Nifty Midcap Select was extracted from the National Stock Exchange website (Security-wise Archives, n.d.). The study period ranges from January 2012 to December 2021. We have not considered block deals in our sample because of two main reasons. Firstly, block trades constitute only a small portion of all large trades. Secondly, earlier studies have documented no abnormal returns for block trades due to the time restriction associated and the structure of such deals (Chaturvedula et al., 2015). Therefore, in the present study our sample includes a total of 257 bulk deal records. Among them, 127 are 'Buy' trades and 130 are 'Sell' trades. If it is executed by one individual, it is classified as Individual and when multiple investors are involved in trade, they are termed as multiple investors. In this analysis to ensure the robustness of the results, the chosen data of the deals have following features;

- 1. All the stocks selected have listed one year or 365 days prior to occurrence of bulk deals.
- 2. Share price is available for at least 38 days before and 8 days after the event.
- 3. Share price should be more than Rs. 5.
- 4. There should be some trades in three consecutive days.

4. RESEARCH METHODOLGY

Objective 1: To study and analyse the impact of initiating the bulk deal by individual or multiple investors on share price.

 H_1a : Average abnormal returns (AAR) earned by individual investors in the pre-event period, i.e. just before bulk buy and Bulk sell are positive (negative) and significant.

H₁**b:** Average abnormal returns (AAR) earned by Multiple investors in the pre-event period, i.e. just before bulk buy and Bulk sell are positive (negative) and significant

Event Study

The event study methodology is designed to estimate average abnormal returns (AAR) around the bulk deal date for different securities. In the following sub-sections, this paper would first discuss the return event study and then the estimation of abnormal volume. The key assumption of the event study methodology is that the market must be efficient. The following sub-sections, first discuss the return event study and then the estimation of abnormal volume.

Return Event Study

The date on which bulk deal took place is considered as an event date and it is also marked as day 0 i.e. The event window notation [-p, +q] corresponds to an (p + q + 1) –day period, from p trading days before the event date to q trading days after the event date. The daily abnormal return for stock k is calculated as the difference between stock return on day t, $R_{k,t}$, and the expected stock return on day t, $E(R_{k,t})$, estimated using a particular expected returns model.

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

The AAR over the event window [-p, q] is estimated as follows.

$$AAR_{-p,q} = 1/N \sum_{k=1}^{N} AR_{kt}$$

Where *N* is the total number of firms, and $1/N \sum_{k=1}^{N} ARK_{k,i}$ is the average abnormal return on day t. **Objective 2-** To study and analyse the role of volume and delivery of bulk deals in explaining the Cumulative Average Abnormal Returns (CAAR) before the event date.

H₂a: Due to front-running trading volume in the pre-event period increases significantly.

H₂b: Due to front-running delivery in the pre-event period increases significantly.

H₃**a:** Cumulative average abnormal returns in the pre-event period can be explained significantly by the increasing trading volume.

H₃b: Cumulative average abnormal returns in the pre-event period is significantly explained by change in delivery positions

Abnormal Trading Volume

For each firm k, we take dollar traded volume on trading day t. The raw measures of daily trading volume, such as dollar traded volume, usually display a significant positive skew. However, log-transformation yields trading volume measures that are approximately normally distributed (see, for

example, Bipin & Jain, 1989; Cready& Ramanan, (1991). We estimate a daily measure of logtransformed dollar volume, V_{kt} (hereafter referred to as volume for brevity), as follows $V_{kt} = \log (Volume_{kt})$

We use the mean-adjusted daily volume as the measure of abnormal volume, AV_{kt} $AV_{kt} = V_{kt} - \overline{V}_K$

Where, \overline{V}_k is the mean trading volume, calculated as the daily average of trading volume V_{kt} estimated over the pre-event window [-(30+p), - (p+1)] where the event window is [-p, q]

Cross- Sectional Regression

If there is a leak of information about a large deal, investors who have access to the information first strive to take advantage over other investors. This front-running behaviour can be observed both in the pre-event and on the day of the event. Cross-sectional regression analysis is utilised to determine whether such front-running occurs in this sample. This study's regression model is:

 $CAAR_{[-p,-1]} = \gamma_0 + \gamma_1 AvgTrd_Vol + \gamma_2 PctChg_Delv + \gamma_3 LogMktCap + \gamma_4 SD_last30Dys + \varepsilon$

Where, the dependent variable CAAR [-p,-1] denotes the cumulative average abnormal returns earned by individual stocks for the pre-event window [-p, -1]. CAAR for stock k can be computed as:

 $CAAR_{[-p,-1]} = \sum_{t=-p}^{-1} AR_{k,t}$

The main explanatory variables used in these equations are:

AvgTrd_Vol: Trading volume from the average 30 days volume [-37, -8] to volume on day -1; **PctChg_Delv:** Percentage change in delivery positions from the average 30 days positions [-37, -8] to positions on day -1; **LogMktCap:** Proxy for size of firm computed by Logarithm of average Market Capitalization over [-37,-8] period and **SD_last30Dys:** Standard deviation of each day returns computed for [-37,-8] period is used as proxy for volatility of the stock price.

TABLE 1: SAMPLE OF BULK TRADE

	Sample of Bulk Trade						
Year	No. of Records	Average Trade Quantity	Average Trade Volume	Total Trade Value			
	Panel A: All Trades						
2012	22	10,77,241.36	69,69,574	153330628			
2013	14	32,11,591	1,22,94,951.83	172129325.6			
2014	28	17,66,002	1,06,15,000.75	297220021			
2015	12	62,28,186	2,98,28,912.43	357946949.2			
2016	7	29,11,864	1,09,43,119.57	76601836.99			
2017	17	21,75,748	18,21,539.17	30966165.89			
2018	11	26,71,767.18	76,85,902.80	84544930.8			
2019	31	1,24,07,505	4,62,68,264.92	1434316213			
2020	52	79,88,686	6,27,78,795.25	3264497353			
2021	63	1,06,55,474	11,57,98,522.30	7295306905			
Total	257			13166860328			
		Panel B: Buy	Trades				
2012	12	7,09,112	45,15,874	54190488			
2013	7	23,96,768.86	1,55,80,605	109064235			
2014	12	13,71,306.33	95,38,085	114457020			
2015	5	99,07,395.20	3,58,87,401	179437005			
2016	2	10,90,645.50	88,115	176230			
2017	7	25,42,671.57	17,47,394	12231758			

6. DATA ANALYSIS

2018	7	14,88,737.86	90,60,878	63426146
2019	17	82,18,695.00	6,02,18,363	1023712171
2020	27	79,68,239.26	7,38,12,353	1992933531
2021	31	1,00,37,590.29	16,24,06,898	5034613838
Total	127			8584242422
		Panel C: Sell	Trade	
2012	10	15,18,996.20	69,69,574	69695740
2013	7	40,26,413.43	1,22,94,952	86064664
2014	16	20,62,024.19	76,04,195	121667120
2015	7	36,00,178.71	3,43,76,947	240638629
2016	5	36,40,352.00	1,52,85,122	76425610
2017	10	19,18,901.80	18,21,539	18215390
2018	4	47,42,068.50	72,10,843	28843372
2019	14	1,74,93,918.21	4,31,51,775	604124850
2020	25	80,10,767.52	7,48,46,765	1871169125
2021	32	1,12,54,049.16	12,25,69,744	3922231808
Total	130			7039076308

Source: Authors Compilation

The above table 1 reports the year-by-year history of these bulk deals. The table's Panel A represents all 'Buy' and 'Sell' trades together, whereas Panel B 'Buy' trades and Panel C for 'Sell' trade separately. The quantity of bulk trades appears to peak in 2019 and 2020, according to all three table panels. Bulk trades, on the other hand, reach their maximum value (in MN INR) in 2021. Further, the trades are divided based on the execution. If it is executed by one individual, it is classified as Individual and there are multiple investors involved in trade, they are termed as multiple investors.

	Average Abnormal Returns (AAR)							
Lags	ags Panel A: Individual Investor							
	No of deals	AAR	t- statistics	CAAR	CAAR (%)			
		Panel	A: Only Buy					
-7	57	0.00	-0.11	0.00	-0.24			
-6	57	0.00	-0.17	0.00	-0.40			
-5	57	0.00	0.06	0.00	-0.28			
-4	57	0.00	-0.03	0.00	-0.29			
-3	57	-0.01	-0.71	-0.01	-1.43			
-2	57	0.00	0.03	-0.01	-1.43			
-1	57	0.01	0.35	-0.01	-0.69			
0	57	-0.01	-0.58	-0.02	-2.12			
1	57	0.00	0.04	-0.02	-2.12			
2	57	0.01	0.33	-0.01	-1.42			
3	57	0.00	-0.14	-0.02	-1.53			
4	57	0.00	-0.19	-0.02	-1.74			
5	57	0.00	-0.15	-0.02	-1.91			
6	57	-0.01	-0.36	-0.03	-2.50			
7	57	0.00	-0.05	-0.03	-2.61			

TABLE 2: AVERAGE ABNORMAL RETURNS FOR INDIVIDUAL INVESTORS.

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Panel B: Only Sell						
-7	80	0.00	-0.08	0.00	-0.23	
-6	80	0.00	-0.05	0.00	-0.38	
-5	80	0.00	0.07	0.00	-0.24	
-4	80	0.00	-0.19	-0.01	-0.57	
-3	80	-0.01	-0.60	-0.02	-1.56	
-2	80	0.00	0.20	-0.01	-1.37	
-1	80	0.00	0.13	-0.01	-1.14	
0	80	0.00	0.08	-0.01	-1.04	
1	80	-0.01	-0.34	-0.02	-1.76	
2	80	0.00	0.03	-0.02	-1.89	
3	80	0.00	-0.23	-0.02	-2.19	
4	80	0.00	-0.17	-0.02	-2.36	
5	80	-0.01	-0.37	-0.03	-3.03	
6	80	0.00	-0.06	-0.03	-3.11	
7	80	0.00	-0.08	-0.03	-3.38	

Source: Authors Compilation

Table 2 computes and lists the AAR at different days within the event window of [-7, +7] for buy and sell types of trades performed by Individual traders. Interestingly, 'Buy' and 'Sell' trades within bulk trade records show different market reactions. For individual buy the abnormal return is positive before the event day and after the event day its starts declining. On the other hand, abnormal return for individual investors for Sell shows no abnormal return before an event day but after the event day it becomes negative. For 'Buy' at Individual level, the AARs are significantly increasing from some days before the event date till the event date and start getting reversed from one or two days after the event. Therefore, it seems that bulk Buys and Sells are anticipated by the market beforehand. In both scenarios, the impact has been seen before the event date itself. Thus, by and large, this finding supports our hypothesis H₁a. Cumulative Average Abnormal Returns (CAAR) starts declining further after the event day up to -2.61% for Buy and -3.38% for sell trade.

	Average Abnormal Returns (AAR)						
Lags	Multiple Investors						
	No of deals	AAR	t- statistics	CAAR	CAAR (%)		
		Pane	l A : Buy				
-7	24	-0.02	-0.98	-0.02	-1.61		
-6	24	-0.02	-1.14	-0.03	-3.23		
-5	24	0.00	-0.08	-0.03	-3.47		
-4	24	0.00	0.05	-0.03	-3.42		
-3	24	-0.01	-0.37	-0.04	-4.14		
-2	24	0.00	0.03	-0.04	-3.90		
-1	24	-0.04	-2.44	-0.08	-7.75		
0	24	-0.03	-1.65	-0.11	-10.59		
1	24	-0.01	-0.10	-0.11	-11.25		
2	24	0.00	-0.19	-0.12	-11.72		
3	24	0.00	-0.01	-0.12	-11.58		
4	24	0.00	-0.15	-0.12	-11.78		
5	24	-0.02	-1.19	-0.14	-13.55		
6	24	0.00	-0.32	-0.14	-13.92		

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7	24	0.01	0.22	0.12	12.07		
/	24	0.01	0.33	-0.13	-13.27		
Panel B: Sell							
-7	16	-0.03	-1.80	-0.03	-2.89		
-6	16	-0.02	-1.45	-0.05	-4.94		
-5	16	0.00	0.03	-0.05	-4.98		
-4	16	0.00	-0.16	-0.05	-5.33		
-3	16	-0.01	-0.35	-0.06	-5.94		
-2	16	0.00	-0.01	-0.06	-5.86		
-1	16	-0.05	-3.19	-0.11	-10.74		
0	16	-0.04	-2.42	-0.15	-14.88		
1	16	0.00	0.35	-0.14	-14.49		
2	16	0.00	-0.16	-0.15	-14.53		
3	16	0.00	0.13	-0.14	-14.20		
4	16	0.00	-0.11	-0.14	-14.46		
5	16	-0.02	-1.24	-0.16	-16.05		
6	16	-0.01	-0.60	-0.17	-16.65		
7	16	0.01	0.37	-0.16	-16.02		

Source: Authors Compilation

Table 3 calculates and lists the AAR at different days within the event window of [-7, +7] for Buy and Sell trades of Multiple investors. Remarkably, 'Buy' and 'Sell' trades within bulk trade records show similar market reactions. For multiple Buy the abnormal return is negative before the event day and after the event day also shows same trend. For 'Sell' at Multiple levels, the AARs are negative from some days before the event date till the event date and start declining more further from one or two days after the event. Therefore, it seems that bulk Buys and Bulk Sells are anticipated by the market beforehand. In all scenarios, the negative impact has been seen before the event date itself. Hence, in case of multiple investors our findings do not support H₁b. Cumulative Average Abnormal Returns (CAR) starts falling further after the event day up to -13.27% for Buy and -16.02% for sell trade.

TABLE 4: TEST ASYMMETRY

	Test Asymmetry						
Particulars	No. of Deals	Difference	T-Statistics				
Bulk Buy	127	-0.006447	0.011895032	1.066440636			
Bulk Sell	130						

Source: Authors Compilation

Table 4 lists the abnormal returns generated on the event day by all bulk 'Buy' and bulk 'Sell' deals separately. The 'Buy' trades and 'Sell' trades include both individual and multiple investors. From the table it is evident that an abnormal return earned by both 'Buy' and 'Sell' is less than zero. Further, it computes the difference between mean abnormal returns earned by these two groups of deals. The t-statistic of 1.066 shows that abnormal returns earned by bulk 'Buy' deals are significantly higher than that of bulk 'Sell' deals. Hence, it is in line with the hypothesis H₁b of the study.

	TABLE 5: AVERAGE TRADE VOLUME						
Average Abnormal Trade Volume (AATV)							
Lags	Lags Individual Investor			Mult	iple Investor	5	
	No of	ATV	AV_{kt}	No of	ATV	AV _{kt}	
	deals			deals			
			Panel A: On	ly Buy			
(-37, -8)	57	5.97		24	6.29		
-7	57	6.01	-20.00	24	6.36	-16.77	
-6	57	5.99	-13.83	24	6.41	-15.49	

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-5	57	6.01	-20.37	24	6.47	-4.31
-4	57	6.04	-15.04	24	6.16	-4.30
-3	57	6.07	-23.11	24	6.15	-8.18
-2	57	6.04	-19.27	24	6.31	-0.99
-1	57	6.13	-15.29	24	6.38	-2.57
0	57	6.81	13.56	24	6.28	19.65
1	57	6.19	-15.68	24	5.90	-6.94
2	57	6.16	-19.24	24	5.52	-25.62
3	57	6.08	-30.98	24	5.76	-14.97
4	57	6.07	-37.53	24	5.36	-14.45
5	57	6.05	-48.64	24	5.56	-12.65
6	57	6.00	-33.74	24	5.67	-24.53
7	57	6.00	-30.20	24	6.76	-51.32
			Panel B: On	ly Sell		
(-37,-8)	80	5.96		16	5.93	
-7	80	6.00	-16.88	16	6.09	-5.51
-6	80	5.98	-14.60	16	6.14	-4.57
-5	80	5.99	-13.24	16	6.17	-0.09
-4	80	6.04	-12.58	16	6.15	0.34
-3	80	6.06	-21.60	16	6.14	-5.11
-2	80	6.02	-16.99	16	6.39	7.17
-1	80	6.12	-10.28	16	6.43	9.23
0	80	6.80	16.12	16	7.19	19.26
1	80	6.18	-14.47	16	6.65	3.20
2	80	6.14	-18.75	16	6.53	3.89
3	80	6.06	-29.65	16	6.55	-0.04
4	80	6.05	-23.82	16	6.41	-11.41
5	80	6.03	-35.50	16	6.49	-7.05
6	80	5.99	-32.78	16	6.39	-22.10
7	80	5.99	-37.78	16	6.32	-40.16

Source: Authors Compilation

Table 5 shows the value of average trading volume (ATV) generated by bulk deals inside the [-7, +7]event window. In addition, the table computes the average traded volume for the 30 days leading up to the given event window (from -8 to -37 days) and reports it against day delays [-37,-8]. The trading volume follows a similar trend for all types of trades and all categories of investors. It begins to rise a few days before the event, peaks on the day of the event, and then begins to fall following the event. The reason for this pattern is that when insider information is leaked, new investors with prior knowledge begin purchasing shares, and once the bulk deals are completed, they begin selling their shares at a greater rate, eventually causing the volume of shares to fall significantly.

Test on Variables					
Particulars Number of		Mean	Difference	t-	
	Deals			statistics	
Panel A: Percentage Change in Trade Volume					
Average Volume[-37,-8]	113	6.07	0.02	0.25	
Volume [-1]	113	6.10	49%		

Panel B: Percentage Change in Delivery				
Average Delivery[-37,-8]	113	2191566.43	323395.25	0.79
Delivery [-1]	113	2514961.68		

Source: Authors Compilation

Table 6 shows the result in Panel A in which t-test conducted to analyse the difference in average volume [-37, -8] of 30 days before the event window and volume a day before the event. The percentage change in volume (PctChg_TrdVol) a day before the event from the average 30 days position as one of the predictors of CAR. Around 49% volume increase is observed before the event day. T-statistic of 0.259 shows that the volumes increase is significantly higher than the average volume. This provides a clear evidence of front running and contradicts the view of Sanders & Zdanowicz (1992) which suggests that trading volume rise up only after the event. Thus, this finding clearly supports the hypothesis H₂a of the study. Panel B of Table 6 depicts the result of one sample t-test conducted on the variable PctChg_Del i.e. percentage change in delivery positions from the average 30 days positions [-37, -8] to positions on day -1. It has been noticed that delivery positions increase in pre-event period. Significantly higher t-statistics supports the hypothesis H₂b of the study.

	ATV	CAAR	Market Cap	STDEV	PerChg_Delv
ATV	1				
CAAR	-0.89	1			
Market Cap	0.32	-0.59	1		
STDEV	0.84	-0.87	0.45	1	
PerChg_Delv	0.92	-0.75	0.14	0.64	1

Source: Authors Compilation

Table 7 Report the correlations among five explanatory variables in the correlation matrix reported in the above table. The table suggests that the variables exhibit very low correlations among them, the highest absolute correlation is between Percentage change in delivery (perchg_delv) and Average traded Volume (ATV).

Regression on Pre-event CAAR (Individual Investors)					
	Only Buy	Only Sell			
	CAAR [-7, -1]	CAAR [-7, -1]			
AvgTrd_Vol	0.87	0.93			
PctChg_Delv	0.39	0.75			
LogMktCap	0.19	0.07			
SD_last30Dys	0.83	0.13			
Intercept	0.60	0.11			
R-Square	0.93	0.97			
Adj R-Square	0.79	0.90			

TABLE 8: REGRESSION ON PRE EVENT CAR (INDIVIDUAL INVESTORS)

Source: Authors Compilation

Table 8 lists the impact of these factors on the CAAR generated for individual investors during preevent windows [-7, -1]. Table explain the CAAR for 'Only Buy' and 'Only Sell' deals. From the table it is evident that AvgTrd_Vol is positive and significant for individual investors across all deal classifications. This confirms the front running activity and establishes the positive association between the CAAR and change in trading volume of a stock. While examining the impact of change in delivery positions, we find that PctChg_Delv is positive and significant in explaining CAAR for all deals. This clearly evinces that there is a front running and leakage of information about the bulk buy or sell; and hence investors prefer to change their delivery positions accordingly rather than squaring off their position's same day. SD_last 30 days appears to explain CAAR positively and significantly. This corroborates the well-known risk-return relationship of a stock. Effect of size (LogMktCap) are significant for both buy as well as for sell deals pertaining to [-7, -1] event window. Thus, the results display full support of hypotheses H₃a and H₃b.

Regression on Pre-event CAR (Multiple Investors)					
	Only Buy	Only Sell			
	CAAR [-7, -1]	CAAR [-7, -1]			
AvgTrd_Vol	0.09	0.09			
PctChg_Delv	0.62	0.04			
LogMktCap	0.14	0.03			
SD_last30Dys	0.15	0.75			
Intercept	0.20	1.10			
R-Square	0.97	1.00			
Adj R-Square	0.92	0.99			

TABLE 9: REGRESSION ON PRE EVENT CAR (MULTIPLE INVESTORS)

Source: Authors Compilation

Table 9 reports the explanatory behaviour of different variables in explaining CAAR of multiple investors for the same pre-event windows [-7, -1]. The impact of the variables is mostly similar to that of individual investors, although the impact is much weaker. For example, here also AvgTrd_Vol is positive and significant at 1% level of significance across all deal specifications. This again supports our initial hypothesis of front-running in bulk deals. However, PctChg_Del is positive and significant for both buy and deals in the period of [-7, -1]. Most of other control variables (e.g. LogMktCap, SD_last30dys) are significant. Hence, in case of multiple investors our findings support the hypotheses H₃a and H₃b.

7. CONCLUSION

Evidence is found out on Individual and multiple investors engaging in bulk deals have similar indications on front-running. The findings have significant consequences for the Indian stock market investors and authorities. As previously stated, SEBI has already adopted a number of regulatory measures, including the creation of a separate trading window for Block trades, price controls, and trade execution time limits. Despite this, our research demonstrates that stock price manipulation and front-running exist.

Cumulative average abnormal returns (CAAR) earned after the event day is negative for Individual as well as for multiple investors. Average abnormal returns (AAR) before the event day is positive in case of Individuals traders but for multiple traders it is negative and further it tends to fall more drastically during the post event window.

Furthermore, substantial market reactions have been recorded on 'Buy' trades over 'Sell' trades, indicating that certain investors have more information regarding price increases than decreases. As a result, it exposes the likelihood of information leakage in one-sided exchanges. Study also look into the likely causes of such unusual price movements. The most important aspects in understanding front-running and stock price manipulations in India are trading volume and delivery positions. As a result, additional involvement is essential to protect the interests of ordinary investors.

Although the scope of this study is confined to a particular stock market and evidence of front running, future studies may go into greater depth about SEBI's potential remedies. The behaviour of stock prices after initial public offerings can be studied in general. When large deals between Indian and foreign investors take place, the volatility of these equities can be investigated.

8. REFERENCES

Aggarwal Rajesh & Wu Guojun, (2006)."Stock Market Manipulations". *The Journal of Business*, 2006, vol. 79, issue 4, 1915-1954.

- Alex Frino& Elvis Jarnecic& Andrew Lepone, (2007). "The determinants of the price impact of block trades: further evidence", ABACUS, Accounting Foundation, University of Sydney, vol. 43(1), pages 94-106.
- Alzahrani, Ahmed A. & Gregoriou, Andros & Hudson, Robert, (2012). "Can market frictions really explain the price impact asymmetry of block trades? Evidence from the Saudi Stock Market," *Emerging Markets Review*, Elsevier, vol. 13(2), pages 202-209.
- Bethel, Jennifer E. & Hu, Gang & Wang, Qinghai, (2009). "The market for shareholder voting rights around mergers and acquisitions: Evidence from institutional daily trading and voting," *Journal of Corporate Finance*, Vol. 15(1), pages 129-145.
- Bipin B. Ajinkya & Jain Prem C., (1989)."The behavior of daily stock market trading volume", *Journal of Accounting and Economics*, vol. 11 (1989) 331-359.
- Block Deals, (2005). Securities and Exchange Board of India. Retrieved from<u>https://www.sebi.gov.in/sebi_data/docfiles/8749_t.html</u>.
- Bulk Deals/ Block Deals/ Short Selling Archives. (n.d.). National Stock Exchange. Retrieved from <u>https://www1.nseindia.com/products/content/equities/equities/bulk.htm</u>
- Chaturvedula, Chakrapani Venkata&Bang, Nupur Pavan & Rastogi, Nikhil & Kumar, Satish, (2015). "Price Manipulation, Front Running and Bulk Trades: Evidence from India ",*Emerging Markets Review*, Vol. 23, 2015.
- Cready, William M. & Ramanan, Ramachandran, (1991)."The power of tests employing logtransformed volume in detecting abnormal trading", *Journal of Accounting and Economics*, 14, issue 2, p. 203-214.
- Gale, D., & Allen, F. (1992). "Stock price manipulation". Review of Financial Studies, 5, 503-529.
- Ganesh, R. & Naresh, G. & S, Thiyagarajan. (2018). "Mimicking behaviour in bulk and block trading of institutional investors in the stock market". *Benchmarking: An International Journal*. Vol. 25 No. 7, pp. 2414-2426. https://doi.org/10.1108/BIJ-04-2017-0063.
- Hilal, Ok Ergün& Abdullah, Yalaman&Viktor, Manahov&Hanxiong, Zhang (2021). "Stock market manipulation in an emerging market of Turkey: how do market participants select stocks for manipulation?", *Applied Economics Letters*, 28:5, 354-358, DOI: 10.1080/13504851.2020.1753874.
- Imisiker, Serkan & Tas, Bedri Kamil Onur (2013). "Which firms are more prone to stock market manipulation?". *Emerging Markets Review*, Elsevier, vol. 16(C), pages 119-130.
- Jiauguo, Chen & Dar-Hsin, Chen (2005)."The Effect of Block Trades On Share Prices: Australian Evidence". *International Journal of Finance*. 2005, Vol. 17 Issue 4, 3788-3805.
- Keim, D. B & Madhavan, Ananth (1995)."Anatomy of the Trading Process Empirical Evidence on the Behavior of Institutional Traders". *Journal of Financial Economics*, 37 (3), 371-398. http://dx.doi.org/10.1016/0304-405X(94)00799-7.
- Keim, D. B. & Madhavan, Ananth (1996). The upstairs market for large-block transactions: Analysis and measurement of price effects. *The Review of Financial Studies*, 9(1), 1–36.
- Khwaja, A.I. & Mian, A. (2005)."Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market". *The Quarterly Journal of Economics*, 120, 1371-1411. http://dx.doi.org/10.1162/003355305775097524.
- Louis, K. C. Chan & Josef, Lakonishok (1995). "The Behavior of Stock Prices Around Institutional Trades". Journal of finance, September 1995 <u>https://doi.org/10.1111/j.1540-6261.1995.tb04053</u>.
- Madhavan, Ananth&Cheng, Minder (1997). "In Search of Liquidity: Block Trades in the Upstairs and Downstairs Markets". *Review of Financial Studies* Vol. 10, No. 1 (spring, 1997).
- Markham, Jerry W. (1988). "Front-Running' Insider Trading Under the Commodity Exchange Act (Fall 1988)". Catholic University Law Review, Vol. 38, No. 1, 1988, Florida International University.
- Ögüt,Hulisi&Aktas, Ramazan& Alp, Ali &Doganay M. (2009). "Prediction of financial information manipulation by using support vector machine and probabilistic neural network". *Expert Systems with Applications*, 36. 5419-5423.

- Rajvanshi, Vivek (2021)."Impact of Bulk Trades on Price Discovery in Equity Market". Working Paper Series, Indian Institute of Management Calcutta, WPS No 863 /April, 2021 Retrieved from: http://facultylive.iimcal.ac.in/workingpapers
- Sanders, R. W., &Zdanowicz, J. S. (1992). "Target Firm Abnormal Returns and Trading Volume around the Initiation of Change in Control Transactions". *The Journal of Financial and Quantitative Analysis*, 27(1), 109–129. https://doi.org/10.2307/233130.
- Security-wise Archives (Equities). (n.d.). National Stock Exchange. Retrieved from <u>https://www1.nseindia.com/products/content/equities/eq</u>
- Thukral, Arun (24 April 2018). "For those who do not make much money in stocks, here's the catch". The Economic Times. Retrieved 24th January 2023.
- Viktor, Manahov (2016). "Can High-frequency Trading Strategies Constantly Beat the Market?," *International Journal of Finance & Economics*, John Wiley & Sons, Ltd., vol. 21(2), pages 167-191.
- Yu, Chuan Huang & Yao, Jen Cheng (2015), "Stock manipulation and its effects: pump and dump versus stabilization". *Review of Quantitative Finance and Accounting* volume 44, pages791–815.