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A Perspective on Industry Classification and Market Reaction to Corporate News: Evidence from India

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Abstract

In this paper, we provide a cross-industry perspective on the market reaction to different corporate news in the context of Indian stock market. We have studied the price and volume movements associated with eight broadly defined news categories namely Analyst Calls, Earnings, Earnings Forecasts, Finance, Legal and Regulatory, Management, Operations and Restructuring. We have employed the standard event study methodology on a sample of stocks listed on the National Stock Exchange of India for the purpose of our study. We observe that the market reaction to firm specific corporate news varies according to the type of news across different industry groups. We also observe that the sentiment of the news is a critical factor which influences the market reaction to such news flow across industry groups. We also provide a cross- industry perspective on the relative importance of different corporate news categories after taking into account the sentiment of the news in the context of Indian stock market.

Keywords: corporate news; event study; industry classification; abnormal return; trading volume.

JEL classification: G12; G14.

1. INTRODUCTION

Market participants are exposed to a constant stream of corporate news flow owing to rapid increase in ease of access to internet and satellite television besides regulation driven stock exchange filings by companies facilitating wide spread dissemination of news almost instantly. In the context of Efficient Market Hypothesis proposed by Fama (1970, 1991), the market reaction to the arrival of corporate news in the public domain has been widely researched. Researchers commonly use the standard event study methodology (Campbell *et al.*, 1997) to investigate the impact of a specific type of news flow (event) such as earnings announcement (Ball and Brown, 1968), dividend announcement (Michaely *et al.*, 1995),

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acquisition (Agrawal *et al.*, 1992), impact of analyst forecast (Ryan, 2001), impact of buyback announcement (Otchere and Ross, 2002) or initial public offer (Ritter, 1991). However, such studies which restrict the attention to a specific news are inherently limited since they fail to examine the entire information set which might influence the decisions made by market participants. Besides, such studies are undertaken at different time periods and different samples are used which makes them unsuitable for comparison and assessing the relative importance of different news flows in the eyes of market participants. Among the handful of studies which have attempted to study the market reaction to a wide variety of corporate news flows simultaneously, Sprenger and Welpe (2011) observed that industry classification may explain the differences observed in market reaction to different corporate news flows. However, the authors pointed out that prior studies to explore the relationship between industry classification and market reaction to news are nonexistent.

In this paper, we make a humble attempt to provide a cross- industry perspective on the market reaction to a wide variety of corporate news categories after taking into account the sentiment of the news flow (positive and negative news). We examine the market reaction to a corporate news flow for a sample of stocks listed on the National Stock Exchange (NSE) of India. Following Pritamani and Singal (2001), we use the direction of the event day price reaction (positive or negative) to divide our sample of news events into positive and negative events. Beaver (1968) observed that trading volume reaction reveals the differences in individual investor's belief revision that is averaged out in the price reaction. According to Beaver (1968), a price reaction to a new information reflects a change in expectation of market as a whole while a volume reaction to a new information reflects a change in expectation of investors at the individual level. Karpoff (1986) pointed out that a volume reaction indicates heterogeneous expectation or a heterogeneous interpretation of the new information by individual investors. Hence, we assess the market reaction to a corporate news flow in terms of both price and volume reaction associated with such news flow using the commonly used event study methodology. The price and volume metric used for assessing the market reaction to corporate news flows in our study are complementary in nature and independent of each other.

Schmitz (2007) observed that the main price reaction occurs on the day of the initial release of information. Abnormal returns or trading volume observed on the day of the news release reveals the disclosed news affect. Hence, we choose a one day event window (day of release of the news item on our news source) for our study to restrict our focus on the market reaction observed on the event day. Besides, working with a longer event window in the analysis of daily data would invariably lead to the problem of confounding events and distort the results of the study. We follow Ryan and Taffler (2004) to assess the relative importance of different categories of news flows by comparing the magnitude of the price response to such news flow on the event day. The null hypothesis of our study is that the mean market reaction assessed in terms of price and volume response to a corporate news flow is zero.

The rest of the paper is arranged as follows. In Section 2 we provide a review of the related research work. Then, in Section 3, we provide details of our dataset and the methodology employed in our work. It is followed, in Section 4, by discussion of the results of the study. We conclude, in Section 5, by summarizing our findings and outline the scope for further research.

2. LITERATURE REVIEW

The initial studies which examined the effect of different firm specific corporate news were that of Morse (1982), Ryan and Taffler (2004) and Antweiler and Frank (2006). In the context of US markets, Morse (1982) studied the price as well as trading volume behavior around news events for a sample of 50 companies traded on the New York Stock Exchange and 9 pre specified news categories. The study was limited to company announcements only. Ryan and Taffler (2004) used a novel methodology and instead of studying specific predetermined news categories, the authors identified major price and volume movements and then associated these movements to news items available in the financial press manually to study the relationship between news flows and price and volume movements. The study was done for a sample of UK stocks and 32 news categories. Antweiler and Frank (2006) employed computational linguistic methods and conducted an event study on 48 different types of event using news items published in the Wall Street journal for a sample of US stocks. However, the study did not control for the sentiment of the news and event windows between 5 and 40 days lead to the problem of confounding events. Sprenger and Welpe (2011) used Twitter as a data source and took advantage of computational linguistic methods to perform a automated content analysis of messages on Twitter and studied the price and volume reaction to different company specific news for S&P 500 stocks. The authors emphasized the need for taking into account the sentiment of the news flow and were the first to study the market reaction to different news categories across industry groups. In a more recent work, Neuhierl *et al.* (2013) found a strong market response to news flows. However, the authors were concerned only with corporate press release.

Research to investigate the market reaction to different corporate news flows simultaneously is limited especially in the context of India and other emerging markets. The challenges involved in data collection for researchers to execute such a study may explain such a research gap. In the Indian context, Chakraborty and Mukhopadhyay (2010) in their study made an attempt to examine the price response to firm specific news regarding technological developments comprising of announcements on Patents, Research Achievements and New Product Introductions and corporate announcements related to Joint-Ventures/Alliances, M&As and Changes of Top Executives in the context of Indian capital markets. However, the authors neither studied the volume reaction nor accounted for industry classification. The dataset for the study had a total of 125 events classified into two broad categories technological development and corporate decisions.

Our work adds to the existing literature on corporate news event study literature in three ways. First, we provide a cross- industry perspective on market reaction to different corporate news flow while taking into account the sentiment of the news flow. Second, by studying both price and volume response to a corporate news flow, we are able to provide a cross-industry perspective on the average market response as well as individual investor's response to such news flow. Third, we provide a cross- industry perspective on the relative importance of news flow after taking into account the sentiment of the news flow. To the best of our knowledge, this is the first attempt in the context of an emerging market to study the market reaction to multiple corporate news events simultaneously while providing a cross industry perspective on the subject after taking into account the sentiment of the news flow.

3. DATA AND METHODOLOGY

3.1 Data and sample

We refer to Moneycontrol website for collecting news items for all firms in our sample and the NSE website was used to collect financial data for the stocks and the market. Our choice of the news source allows us to observe official news releases of the companies, stock exchange filings of the companies besides corporate news releases from other sources. Thus, we are able to uniquely capture the entire information environment of market participants. To fairly represent the broad based Indian stock market, we include stocks which were part of Nifty 50 index[1], Nifty Midcap 50 index[2] and Nifty Smallcap 50 index[3] at the beginning of our study period to form our sample for the study. In this way, we are also able to mitigate the size effect (Banz, 1981) as our sample has no size bias. After excluding stocks with bonus issue and stock split during the period of our study, we were left with 148 stocks across 16 industry groups as part of the initial sample for our study. Table no. 1 shows our dataset with number of firms in each industry group along with total number of events identified in each industry group and its relative share of the total events in our dataset.

Table no. 1 – Data set

Industry group	Number of firms	Total events	Relative share
Automobile	14	361	12.6%
Cement	8	158	5.5%
Chemicals	2	26	0.9%
Construction	10	194	6.8%
Consumer Goods	14	228	8.0%
Energy	15	290	10.1%
Fertilizers and Pesticides	3	25	0.9%
Financial Services	30	624	21.8%
Industrial Manufacturing	6	82	2.9%
IT	10	203	7.1%
Media and Entertainment	5	96	3.3%
Metals	4	109	3.8%
Pharma	13	260	9.1%
Services	5	68	2.4%
Telecom	4	90	3.1%
Textiles	5	53	1.8%
Total	**148**	**2867**	**100.0%**

3.2 Classification of news items into event categories

In this section, we discuss the event categories studied in this paper and the rationale behind the classification of news items into different events categories. It may be noted that out of the sixteen industry groups in the initial sample, we restrict our study to eight industry groups with the largest relative share of total events in our data set in order to include industry groups with reasonable number of observations for our study. The eight industry group included in the study jointly accounted for 81 % of the total events in our initial data set. A review of literature reveals that there is lack of uniformity in classification of news items into event categories. Morse (1982) worked with 9 event categories while Antweiler

and Frank (2006) worked with 48 event categories. We classify our dataset of news items during the period of study into 8 broad event categories namely Analyst Calls, Earnings, Earnings forecasts, Finance, Legal and Regulatory, Management, Operations and Restucturing based on the approach followed by Sprenger and Welpe (2011) and Neuhierl *et al.* (2013). Thus, the final dataset consisted of 2318 new items classified into eight event categories across eight industry groups namely Automobile, Cement, Construction, Consumer Goods, Energy, Financial Services, Information Technology (IT) and Pharma. Certain preconditions were applied for associating a price and a volume movement with a news item which are as follows:

1) Following Ryan and Taffler (2004), news item reported after close of trading hours are associated with a price and a volume movement on the succeeding trading day.

2) Following Ryan and Taffler (2004), we assume that analyst calls are a result of new information being interpreted by analysts and hence on a day where we observe a news item along with a analyst call, precedence is given to the news item which we assume to be trigger for the analyst call.

3) If on a given day and for a given company, we observe a news item apart from a news item related to investor/analyst meetings and presentation, precedence is given to the other news item which we assume to be trigger for the investor/analyst meetings and presentation. Investor/analyst meetings and presentation facilitate greater dissemination of the information to market participants.

The details of the event categories are specified in event space (Annex 1). It may be noted that news items are classified into event categories based on common characteristics though they may differ at a more detailed level. Such broad classification is necessary to facilitate comparison and determine the relative importance of news categories otherwise the analysis remains restricted to overall patterns as pointed out by Sprenger and Welpe (2011). It may be noted that news items which could not be categorized into any of the 8 event categories were excluded from our study as any arbitrary categorization would distort the results of the study. There were instances when multiple news items belonging to different event categories were observed in our new source for a given firm resulting in the problem of what is known as confounding events in event study literature. Existing literature has not been able to isolate the effect of different news items on a given day on the abnormal return observed for a firm on the day. Hence, we exclude such cases from our sample and report our results accordingly.

3.3 Estimation of abnormal return and trading volume

As suggested by Corrado (2011), we use logarithmic returns for calculating the daily share price return for each firm as logarithmic returns provide better specification of statistical tests than tests based on arithmetic returns and is given by:

$$R_{it} = \log\left(\frac{P_{it}}{P_{it-1}}\right) \tag{1}$$

where:

R_{it} is the share price return for firm i for day t,

P_{it} is the closing share price of firm i at the end of day t, and

P_{it-1} is the closing share price of firm i at the end of day t-1.

Likewise, the market return was calculated using log-returns and is given by:

$$R_{mt} = \log\left(\frac{P_{mt}}{P_{mt-1}}\right) \quad (2)$$

where:

R_{mt} is the market return for day t,
P_{mt} is the closing index value at the end of day t, and
P_{mt-1} is the closing index value at the end of day t-1.

Abnormal return for firm i on day t is the excess of actual return observed over expected return on day t and is given by the following equation:

$$AR_{i,t} = R_{i,t} - ER_{i,t} \quad (3)$$

where:

$AR_{i\,t}$ is the abnormal return for firm i at time t,
$R_{i\,t}$ is the actual return for firm i at time t and
$ER_{i\,t}$ is the expected return for firm i at time t.

The expected return for stock i on day t is estimated using the commonly used OLS regressed market model which accounts for the stock's market risk. The expected return generating model is given by:

$$ER_{it} = \alpha + \beta\ R_{mt} \quad (4)$$

where:

ER_{it} is the expected return for firm i at time t,
α is the alpha coefficient estimated using market model,
β is the beta coefficient estimated using market model, and
R_{mt} is the return for the benchmark index CNX Nifty at time t.

The coefficients α (alpha) and β (beta) are estimated by regression of stock i's daily returns on market returns over a prior 120 days estimation window. Our choice of 120 days estimation window is guided by Dyckman *et al.* (1984) and Sprenger and Welpe (2011).

To study the market reaction to different categories of corporate news flows, abnormal returns associated with a particular event type for a firm are aggregated across all firms in the sample for each of the news categories and average abnormal returns (AAR_t) are calculated for each of the news categories as given below:

$$AAR_t = \left(\frac{\sum_{i=1}^{n} AR_{it}}{N}\right) \quad (5)$$

where N is the number of events observed across firms within a particular industry group.

Our measure for abnormal volume is an adaptation of Barron (1995) and Schmitz (2007). We measure abnormal volume by relating the volume observed for a stock on the event day with its median volume in the estimation window and is given by the equation:

$$AVOL_{it} = \frac{\left(VOL_{it} - \overline{VOL_{it}}\right)}{\overline{VOL_{it}}} \quad (6)$$

where:

$AVOL_{it}$ is the abnormal volume ratio for firm i at time t,

VOL_{it} is the actual daily share trading volume, and

$\overline{\text{VOL}}_{\text{it}}$ is the median volume for firm i during time t where t is the 120 days estimation window.

Again, our choice of 120 day estimation window for the volume metric is guided by Dyckman *et al.* (1984) and Sprenger and Welpe (2011). Cready and Ramanan (1995) pointed out that the number of transactions shows how many times investors act and the volume of shares traded indicates the magnitude of the action on the part of investors due to the news flow. Cready and Hurtt (2002) observed that volume based metrics especially based on number of trades provide more powerful tests of market reaction to news release than return based metrics. Hence, we use an abnormal volume metric based on number of trades to assess the volume reaction to news categories. We choose median as the measure of average levels of volume in the estimation window rather than the mean which is more vulnerable to volume spikes in the estimation window (Bamber *et al.*, 2011). The OLS market model for estimation of abnormal trading volume is not employed as the model is poorly specified for volume data as observed by Garfinkel and Sokobin (2006). We estimate the average abnormal volume (AAT_t) associated with a particular category of news for all the firms in our sample to study the volume reaction to a particular news flow across industry groups.

We follow Brown and Warner (1980, 1985) and de Jong and Naumovska (2016) and the statistical significance of average abnormal returns and trading volume for each of the event categories is tested using the cross sectional t- test. Brown and Warner (1985) and Dyckman *et al.* (1984) observed the effect of non normality in daily stock return data on the power of statistical tests and found that the non normality problem does not impact the power of the tests in short-run events study methodology and found the common parametric t-test used in these studies to be well specified. The null hypothesis to be tested is that the average abnormal returns/volume observed on the event day is zero.

4. EMPIRICAL RESULTS

4.1 Price and trading volume reaction to analyst calls

Our dataset had a total of 731 observations for positive Analyst calls and 603 observations for negative Analyst calls across the 8 industry groups. Panel A and B of Table no. 2 show the price and volume reaction to Analyst calls across industry groups with positive and negative sentiment respectively.

Table no. 2 – Price and trading volume reaction to analysts' calls across industry groups by sentiment

Panel A: Positive Analyst Calls					
Industry	**N**	**AAR**	**t -value**	**AAT**	**t –value**
Automobile	132	1.37%	10.02*	0.7	5.97*
Cement	55	1.19%	5.41*	0.61	4.31*
Construction	64	2.12%	6.87*	1.14	4.85*
Consumer Goods	93	1.51%	8.43*	0.92	2.79*
Energy	76	1.37%	7.99*	0.32	3.32*
Financial Services	159	1.79%	12.75*	0.81	6.56*
IT	65	1.0%	5.52*	0.1	1.56
Pharma	87	1.26%	6.43*	0.34	3.45*
Panel B: Negative Analyst Calls					
Industry	**N**	**AAR**	**t value**	**AAT**	**t value**
Automobile	96	-0.71%	-6.28*	0.42	3.00*
Cement	49	-0.88%	-5.49*	0.37	3.42*
Construction	52	-1.52%	-8.97*	0.17	2.40**
Consumer Goods	69	-1.19%	-6.74*	0.32	2.58*
Energy	79	-1.01%	-5.86*	0.27	3.83*
Financial Services	133	-1.2%	-10.85*	0.18	3.13*
IT	56	-1.29%	-7.16*	0.08	1.31
Pharma	69	-0.99%	-6.18*	0.20	2.48**

Note: *, ** and *** denotes statistical significance at 1%,5% and 10 % level respectively

We observe statistically significant price reaction to positive Analyst calls as well as negative Analyst calls across industry groups. We obtain similar results with trading volume data as we observe a significant volume reaction to such calls across industry groups expect IT sector.

We observe that both positive and negative Analyst calls have a significant impact on the market and such calls seem to add value on account of analyst's expertise and knowledge. Our findings in the Indian context conform to findings by Sprenger and Welpe (2011) and Ryan and Taffler (2004) who observed a significant market reaction to such calls in the US context and UK context respectively.

4.2 Price and trading volume reaction to earnings news

We had a total of 27 observations for positive Earnings news and 24 observations for negative Earnings news across the 8 industry groups in our dataset. Panel A and B of Table no. 3 show the price and volume reaction to Earnings news across industry groups with positive and negative sentiment respectively.

In the 6 industry groups (Automobile, Construction, Consumer goods, Energy, Financial services and Pharma) with adequate observations, we observe a statistically significant price reaction in all industry groups with the only exception of Automobile sector to positive Earnings news. On the volume metric, we observe a significant market reaction in all industry groups with the exception of Consumer goods and Pharma sector.

On the other hand, in the 6 industry groups (Cement, Construction, Consumer goods, Energy, Financial services and Pharma) with adequate observations, we observe a statistically significant price reaction in all industry groups expect Construction and Pharma sector to negative Earnings news. On the volume metric, we observe a significant market reaction in all industry groups expect Cement, Construction, Financial Services and Pharma sectors.

Table no. 3 – Price and trading volume reaction to earnings news across industry groups by sentiment

Panel A: Positive Earnings News					
Industry	**N**	**AAR**	**t -value**	**AAT**	**t- value**
Automobile	3	0.54%	0.63	0.38	2.2**
Cement	1	Na	Na	Na	Na
Construction	2	-0.33%	-1.77***	1.02	12.22*
Consumer Goods	7	1.15%	6.15*	2.7	1.51
Energy	3	2.55%	2.11**	1.63	1.81***
Financial Services	7	3.36%	4.12*	1.58	3.38*
IT	1	Na	Na	Na	Na
Pharma	3	3.02%	2.91*	7.74	1.21
Panel B: Negative Earnings News					
Industry	**N**	**AAR**	**t- value**	**AAT**	**t- value**
Automobile	1	Na	Na	Na	Na
Cement	2	-2.34%	-1.63***	1.52	0.98
Construction	2	-4.32%	-1.03	0.25	0.56
Consumer Goods	4	-4.25%	-2.79*	2.56	2.43**
Energy	4	-1.65%	-2.2**	1.53	2.62*
Financial Services	6	-3.35%	-2.5**	1.88	1.33
IT	1	Na	Na	Na	Na
Pharma	4	-4.54%	-1.55	0.86	1.55

Note: *, ** and *** denotes statistical significance at 1%, 5% and 10 % level respectively and 'Na' signifies not applicable due to inadequate observations

As one would expect, earnings announcement convey significant new information across industry groups as we observe large magnitude reaction to positive and negative Earnings news on both price and volume metric. Our findings in the Indian context conform to observations made by Sprenger and Welpe (2011) and Ryan and Taffler (2004) who observed a significant market reaction to earnings news in the US context and UK context respectively.

4.3 Price and trading volume reaction to earnings forecasts

Our dataset had a total of 10 observations for positive Earnings forecasts and 20 observations for negative Earnings forecasts across the 8 industry groups. Panel A and B of Table no. 4 show the price and volume reaction to Earnings forecasts across industry groups with positive and negative sentiment respectively.

In the 4 industry groups (Automobile, Consumer goods, IT and Pharma) with adequate observations, we observe a statistically significant price reaction in Consumer goods, IT and Pharma sector to positive Earnings forecast. On the volume metric, however, we observe a significant market reaction in the Automobile sector only.

On the other hand, in the 5 industry groups (Cement, Consumer goods, Energy, IT and Pharma) with adequate observations, we observe a statistically significant price reaction in the Energy and Pharma sector to negative Earnings forecasts. On the volume metric, we observe a significant market reaction in all the industry groups expect Consumer goods and Pharma sector.

Table no. 4 – Price and trading volume reaction to earnings forecast across industry groups by sentiment

Panel A: Positive Earnings Forecast					
Industry	**N**	**AAR**	**t- value**	**AAT**	**t- value**
Automobile	2	0.2%	0.37	-0.45	-14.17*
Cement	0	Na	Na	Na	Na
Construction	1	Na	Na	Na	Na
Consumer Goods	2	1.01%	2.59*	0.12	0.56
Energy	0	Na	Na	Na	Na
Financial Services	1	Na	Na	Na	Na
IT	2	0.97%	41.34*	-0.15	-0.39
Pharma	2	1.16%	3.94*	-0.07	-0.66
Panel B: Negative Earnings Forecast					
Industry	**N**	**AAR**	**t -value**	**AAT**	**t –value**
Automobile	1	Na	Na	Na	Na
Cement	3	-0.7%	-1.1	0.31	1.78***
Construction	1	Na	Na	Na	Na
Consumer Goods	2	-0.1%	-0.07	0.37	0.71
Energy	6	-1.0%	-3.03*	-0.27	-1.73***
Financial Services	1	Na	Na	Na	Na
IT	3	-0.1%	-0.14	-0.24	-1.61
Pharma	3	-2.3%	-1.7***	0.31	0.64

Note: *, ** and *** denotes statistical significance at 1%, 5% and 10 % level respectively and 'Na' signifies not applicable due to inadequate observations

Earnings forecasts are supposed to provide insights about the expected earnings of the firm .We observe that positive Earnings forecasts do not induce investors to trade on such news although it leads to a revision in the market consensus on the value of the firm across industry groups. However, in case of negative forecasts we observe a mixed market reaction to such news flow on price as well as volume dimension. Our findings conform to observations in the US context by Antweiler and Frank (2006).

4.4 Price and trading volume reaction to finance news

Our dataset had a total of 129 observations for positive Finance news and 138 observations for negative Finance news across the 8 industry groups. Panel A and B of Table no. 5 show the price and volume reaction to Finance news across industry groups with positive and negative sentiment respectively.

Finance news with a positive sentiment was associated with a statistically significant price response across industry groups while on the volume dimension, we observe a significant volume response for firms belonging to the industry group Financial services only. On the other hand, negative Finance news is associated with a significant price reaction across industry groups except Cementin and IT our study. Cement, Financial services, IT and Pharma sector were associated with a significant volume reaction.

Table no. 5 – Price and trading volume reaction to finance news across industry groups by sentiment

Panel A: Positive Finance News					
Industry	**N**	**AAR**	**t- value**	**AAT**	**t -value**
Automobile	10	0.58%	2.33**	0.14	1.17
Cement	7	0.96%	3.51*	0.12	0.64
Construction	6	3.26%	2.55**	0.74	1.26
Consumer Goods	7	0.78%	2.31**	0.16	0.52
Energy	14	0.59%	2.16**	0.12	0.99
Financial Services	70	1.51%	8.31*	0.55	3.17*
IT	10	0.93%	2.18**	0.2	1.13
Pharma	5	0.91%	3.3*	-0.02	-0.09
Panel B: Negative Finance News					
Industry	**N**	**AAR**	**t -value**	**AAT**	**t- value**
Automobile	13	-0.82%	-3.68*	-0.12	-1.1
Cement	6	-1.05%	-1.39	0.65	1.96**
Construction	11	-2.14%	-3.74*	0.15	0.96
Consumer Goods	9	-1.59%	-3.46*	0.11	1.1
Energy	15	-1.29%	-3.1*	0.05	0.48
Financial Services	70	-1.17%	-6.23*	0.23	2.68*
IT	8	-0.67%	-1.3	0.72	1.69***
Pharma	6	-1.20%	-2.25**	0.22	2.08**

Note: *, ** and *** denotes statistical significance at 1%, 5% and 10 % level respectively

While the differential nature of Finance news at a more detailed level explains the asymmetry in the market reaction to such flows across industry groups on the volume dimension, we conclude that Finance related news flows lead to change in the market consensus regarding the value of the firm as observed in terms of significant price reaction to such flows but do not lead to a significant rise in trade owing to individual investor's belief revision of the value of the firm as observed in terms of the abnormal volume to such flows on the event day in the Indian context. It may pointed out that Sprenger and Welpe (2011) in the US context did not observe a significant price and volume reaction to financial news flows at the aggregate level while Ryan and Taffler (2004) in the UK context observed that finance as a news category explained the least proportion of major price and volume movements among all news categories in their dataset.

4.5 Price and trading volume reaction to legal and regulatory news

Our dataset had a total of 24 observations for positive Legal and Regulatory news and 33 observations for negative Legal and Regulatory news across the 8 industry groups. Panel A and B of Table no. 6 show the price and volume reaction to Legal and Regulatory news across industry groups with positive and negative sentiment respectively.

Given the limited number of observations related to Legal and Regulatory news in our dataset, we could examine the market reaction to positive Legal and Regulatory news in four industry groups (Automobile, Cement and Cement products, Energy and Financial Services) while for negative Legal and Regulatory news, the market reaction could be studied for Cement, Construction, Energy and Financial Services sector. Positive Legal and Regulatory news was associated with a statistically significant price response in Cement, Energy and Financial services sector while on the volume dimension, we observe a significant volume

response in Energy and Financial Services sector .On the other hand, negative Legal and Regulatory news is associated with a significant price reaction in all industry groups while Financial services was the only industry group which was associated with a significant volume reaction.

Table no. 6 – Price and trading volume reaction to legal and regulatory news across industry groups by sentiment

Panel A: Positive Legal and Regulatory News					
Industry	**N**	**AAR**	**t-value**	**AAT**	**t-value**
Automobile	3	0.50%	0.86	0.05	0.11
Cement	5	0.60%	1.96**	0.09	0.41
Construction	0	Na	Na	Na	Na
Consumer Goods	1	Na	Na	Na	Na
Energy	11	1.12%	2.67*	0.26	1.68***
Financial Services	3	1.20%	1.63***	0.78	4.69*
IT	0	Na	Na	Na	Na
Pharma	1	Na	Na	Na	Na
Panel B: Negative Legal and Regulatory News					
Industry	**N**	**AAR**	**t-value**	**AAT**	**t-value**
Automobile	1	Na	Na	Na	Na
Cement	8	-1.95%	-3.81*	0.51	1.13
Construction	3	-1.2%	-2.53**	-0.01	-0.02
Consumer Goods	1	Na	Na	Na	Na
Energy	11	-0.8%	-1.76***	-0.10	-1.11
Financial Services	7	-1.4%	-1.71***	0.72	2.3**
IT	1	Na	Na	Na	Na
Pharma	1	Na	Na	Na	Na

Note: *, ** and *** denotes statistical significance at 1%, 5% and 10 % level respectively and 'Na' signifies not applicable due to inadequate observations

We observe that negative Legal and Regulatory news was invariably associated with a significant reaction as compared to positive news on the price dimension. We observe a mixed response across industry groups to Legal and Regulatory news on the volume dimension. Our results conform to findings by Sprenger and Welpe (2011) in the US context.

4.6 Price and trading volume reaction to management news

Our dataset had a total of 29 observations for positive Management news and 27 for negative Management news across the 8 industry groups. Panel A and B of Table no. 7 show the price and volume reaction to Management news across industry groups with positive and negative sentiment respectively.

Out of the four industry groups (Construction, Energy, Financial services and IT) in which the market reaction to management news could be observed, we find a significant price reaction in Construction, Energy and Financial Services to positive Management news while on the volume dimension, the market reaction was significant in Energy, Financial Services and IT sector.

On the other hand, out of the four industry groups (Automobile, Construction, Financial services and IT) in which the market reaction to management news could be

observed, we find a significant price reaction to negative Management news in all industry groups expect the IT sector while on the volume dimension, the market reaction was significant in Financial Services sector only.

Table no. 7 – Price and trading volume reaction to management news across industry groups by sentiment

Panel A: Positive Management News					
Industry	**N**	**AAR**	**t value**	**AAT**	**t value**
Automobile	1	Na	Na	Na	Na
Cement	0	Na	Na	Na	Na
Construction	5	1.04%	2.48**	0.06	0.36
Consumer Goods	1	Na	Na	Na	Na
Energy	3	1.54%	1.82***	-0.26	-31.71*
Financial Services	14	1.72%	3.7*	0.73	2.26**
IT	4	0.09%	0.12	-0.26	-1.93***
Pharma	1	Na	Na	Na	Na
Panel B: Negative Management News					
Industry	**N**	**AAR**	**t value**	**AAT**	**t value**
Automobile	3	-0.9%	-6.35*	0.24	0.54
Cement	0	Na	Na	Na	Na
Construction	7	-1.83%	-1.75***	0.35	0.98
Consumer Goods	0	Na	Na	Na	Na
Energy	0	Na	Na	Na	Na
Financial Services	14	-1.16%	-3.54*	0.22	2.22**
IT	2	-0.54%	-1.01	0.05	0.07
Pharma	1	Na	Na	Na	Na

Note: *, ** and *** denotes statistical significance at 1%, 5% and 10 % level respectively and 'Na' signifies not applicable due to inadequate observations

In the Indian context, we observe that both positive and negative news related to Management have a significant impact on the market consensus on the value of the firm while positive Management news have a greater impact at the individual level over negative Management news as shown by the volume reaction. Our results conform to findings by Neuhierl *et al.* (2013) in the US context and Ryan and Taffler (2004) in the UK context.

4.7 Price and trading volume reaction to operations related news

Our dataset had a total of 218 observations for positive Operations news and 190 observations for negative Operations news across the 8 industry groups. Panel A and B of Table no. 8 show the price and volume reaction to Operations news across industry groups with positive and negative sentiment respectively.

For positive Operations news, we observe a significant price reaction across industry groups while on the volume dimension, the market reaction was significant in all industry groups except Consumer goods and Energy sector. For negative Operations news , we observe a significant price reaction across industry groups with the exception of Cement sector while on the volume metric, the reaction was significant in Automobile, IT and Pharma sector.

Table no. 8 – Price and trading volume reaction to operations news across industry groups by sentiment

Panel A: Positive Operation News					
Industry	**N**	**AAR**	**t value**	**AAT**	**t value**
Automobile	50	0.98%	4.97*	0.28	3.54*
Cement	6	1.54%	2.52**	0.79	2.78*
Construction	8	0.46%	2.17**	1.52	1.69***
Consumer Goods	9	1.12%	3.35*	0.51	1.51
Energy	28	0.95%	5.09*	0.12	1.24
Financial Services	54	1.37%	6.04*	0.42	1.72***
IT	16	0.93%	4.67*	0.27	2.23**
Pharma	47	1.6%	5.02*	0.47	2.6*
Panel B: Negative Operation News					
Industry	**N**	**AAR**	**t value**	**AAT**	**t value**
Automobile	38	-0.86%	-5.66*	0.2	2.36**
Cement	4	-0.41%	-0.61	0.22	0.67
Construction	16	-0.95%	-3.11*	0.05	0.3
Consumer Goods	11	-1.4%	-3.24*	0.31	1.26
Energy	25	-0.98%	-5.56*	0.0	-0.06
Financial Services	45	-1.1%	-7.11*	0.11	1.36
IT	25	-0.91%	-4.26*	0.19	1.99**
Pharma	26	-1.72%	-3.68*	0.91	2.87*

Note: *, ** and *** denotes statistical significance at 1%, 5% and 10 % level respectively

Operations news provide greater visibility on future cash flows of the firm and are associated with a significant price reaction across Industry groups while on the volume dimension , the market reaction was mixed to such news flows across industry groups. Our results conform to findings by Antweiler and Frank (2006), Sprenger and Welpe (2011) and Neuhierl *et al.* (2013) in the US context.

4.8 Price and trading volume reaction to restructuring news

Our dataset had a total of 70 observations for positive Restructuring news and 45 observations for negative Restructuring news across the 8 industry groups. Panel A and B of Table no. 9 show the price and volume reaction to Restructuring news across industry groups with positive and negative sentiment respectively.

For positive Restructuring news, we observe a significant price reaction in Cement, Construction, Consumer goods, Energy and Financial services sector while on the volume dimension, the market reaction was significant in Cement and Financial services sector. For negative Restructuring news, we observe a significant price reaction in Cement, Construction, Energy and Financial services while on the volume metric, the reaction was significant in Cement, IT and Pharma sector.

The mixed market reaction to positive and negative Restructuring news across industry groups can be attributed to the differential nature of Restructuring news at a more detailed level. We observe that Restructuring news are frequently associated with a significant price and volume reaction across industry groups. Our results conform to findings by Sprenger and Welpe (2011) in the US context and Ryan and Taffler (2004) in the UK context.

Table no. 9 – Price and trading volume reaction to restructuring news across industry groups by sentiment

Panel A: Positive Restructuring News					
Industry	**N**	**AAR**	**t -value**	**AAT**	**t -value**
Automobile	3	0.82%	1.05	0.53	0.64
Cement	9	1.34%	1.69***	0.92	2.68*
Construction	12	1.67%	3.26*	0.18	0.87
Consumer Goods	7	0.73%	5.03*	0.27	1.39
Energy	8	1.83%	2.6*	0.27	1.36
Financial Services	23	2.12%	4.46*	0.88	2.57*
IT	6	0.35%	0.71	-0.02	-0.16
Pharma	2	0.35%	0.7	-0.11	-0.45
Panel B: Negative Restructuring News					
Industry	**N**	**AAR**	**t value**	**AAT**	**t value**
Automobile	4	-0.1%	-0.58	1.22	1.07
Cement	3	-5.31%	-7.52*	1.72	2.1**
Construction	4	-1.74%	-2.2**	0.56	1.41
Consumer Goods	5	-0.34%	-0.87	0.0	0.02
Energy	7	-1.52%	-2.74*	-0.09	-0.70
Financial Services	17	-0.91%	-2.83*	0.30	1.44
IT	3	-1.67%	-1.58	0.37	10.43*
Pharma	2	0.08%	0.17	-0.31	-3.18*

Note: *, ** and *** denotes statistical significance at 1%, 5% and 10 % level respectively

4.9 Relative importance of different corporate news flow

In this section, we assess the relative importance of different categories of corporate news with positive and negative sentiment respectively across industry groups According to Ryan and Taffler (2004), an important event would always cause a large magnitude reaction in the market. Based on this argument, we examine the relative importance of different corporate news with positive and negative sentiment respectively on the basis of the magnitude of the price reaction (economic significance) associated with different event types across industry groups. The median magnitude of the price reaction associated with an event category across industry groups would indicate the relative importance of the event perceived by the market participants.

A comparison of the median magnitude of the reactions across industry groups shows that positive Analyst calls (AAR=1.37 percent) are more impactful than negative Analyst calls (AAR=-1.10 percent). Our findings are contrary to observations made by Sprenger and Welpe (2011) in the context of US markets. The authors observed that markets are immune to positive Analyst calls while negative Analyst calls have a significant impact on the market. Negative Earnings news (AAR = -3.8 percent) is more impactful than positive Earnings news (AAR=1.85 percent) on the price dimension. Our findings in the context of India are similar to observations in the context of developed markets like US (Neuhierl *et al.*, 2013) and UK (Ryan and Taffler, 2004). Earnings forecasts with a positive sentiment (AAR = 0.99 percent) is more impactful than negative Earnings forecast (AAR=-0.71 percent) on the price dimension. Our findings in the context of India are contrary to observations in the context of US where a stronger market reaction to negative forecasts has been observed over positive forecasts (Neuhierl *et al.*, 2013). We observe negative Finance

news (AAR =-1.18 percent) to be more impactful than such news flow with a positive sentiment (AAR =0.92 percent). We observe that negative legal and regulatory news (AAR =-1.34 percent) is more impactful than such news flow with a positive sentiment (AAR =0.86 percent). Our findings for Legal and Regulatory news conforms to findings in the US context by Sprenger and Welpe (2011) who observed that legal news have a significant impact on the stock price when the sentiment of the news is negative. On the price metric, positive Management news (AAR=1.29 percent) was more impactful than negative Management news (AAR=-1.03 percent). Our results contradict findings by Neuhierl *et al.* (2013) in the US context and Ryan and Taffler (2004) in the UK context who observed a stronger market reaction to management news with negative sentiment than such news flows with a positive sentiment. Positive Operations news (AAR=1.05 percent) was more impactful than negative Operations news (AAR =-0.97 percent). Our results conform to findings by Sprenger and Welpe (2011) in the US context who observed a strong market reaction to Operations related news with positive and negative sentiment respectively. Restructuring news with a negative sentiment (AAR=-1.22 percent) was more impactful than positive Restructuring news (AAR = 1.08 percent). Our results are similar to findings by Sprenger and Welpe (2011) in the US context who observed a significant market reaction to Restructuring news with both positive and negative sentiment respectively as these decisions have a significant impact on the value of the firm. Panel A and B of Table no. 10 shows the relative importance of corporate news flow across industry groups after taking into account the sentiment of the news flow.

Table no. 10 – Relative importance of corporate new flow across industry groups by sentiment

Panel A: Positive Sentiment		
Events	**AAR**	**Rank**
Earnings News	1.85%	1
Analyst Calls	1.37%	2
Management	1.29%	3
Restructuring	1.08%	4
Operations	1.05%	5
Earnings Forecasts	0.99%	6
Finance	0.92%	7
Legal and Regulatory	0.86%	8

Panel B: Negative Sentiment		
Events	**AAR**	**Rank**
Earnings News	-3.8%	1
Legal and Regulatory	-1.34%	2
Restructuring	-1.22%	3
Finance	-1.18%	4
Analyst Calls	-1.1%	5
Management	-1.03%	6
Operations	-0.97%	7
Earnings Forecasts	-0.71%	8

From panel A and B of Table no. 10, we observe that across event categories with positive sentiment, Earnings news (AAR=1.85 percent) was the most impactful news category. Earnings news (AAR=-3.8 percent) was also the most impactful among event

categories with negative sentiment. Among event categories with positive sentiment, Earnings news was followed by Analyst Calls (AAR=1.37 percent), Management news (AAR=1.29 percent), Restructuring news (AAR=1.08 percent) and Operations news (AAR=1.05 percent) at second, third, fourth and fifth position. The bottom three news categories were Earnings forecasts (AAR=0.99 percent), Finance (0.92 percent) and Legal and Regulatory news (AAR=0.86 percent). Among event categories with negative sentiment, Legal and Regulatory news (AAR=-1.34 percent) was placed at the second position followed by Restructuring (AAR=-1.22 percent), Finance (AAR=-1.18 percent) and Analyst calls (AAR=-1.1 percent) at third, fourth and fifth position respectively. The bottom three news categories were Management (AAR=-1.03 percent), Operations (AAR=-0.97 percent) and Earnings forecasts (AAR=-0.71 percent).

5. CONCLUSION

In this paper, we uniquely provide a cross –industry perspective on the immediate market reaction to the arrival of a wide variety of corporate news in the public domain which has been ignored by previous studies. In our study, we capture both price (consensus market reaction) and volume (individual investor's reaction) reaction to such news flows across industry groups after taking into account the sentiment of the news flow. Our results with the price data shows that Analyst calls, Earnings news, Finance news, Management news, Operations related news and Restructuring news invariably results in upward or downward revision of the market consensus on the value of the firm across industry groups. The market reaction to news flows also varies according to the sentiment of the news across industry groups. We observe positive Earnings forecasts to be price sensitive while negative Earnings forecasts were associated with a insignificant price reaction across most industry groups. Likewise, we find that negative Legal and Regulatory news have a greater impact on the stock price as compared to positive Legal and Regulatory news similar to findings by Sprenger and Welpe (2011) and Neuhierl *et al.* (2013).

Using the volume metric, we observe that news categories differ widely in their impact on the individual investor's belief revision with regard to the value of the firm. Analyst calls, Earnings news and Restructuring were associated with a significant market reaction across industry groups while Finance news was largely insignificant on the volume dimension. Legal and Regulatory news and Restructuring news evoked a mixed market reaction on the volume metric. On the volume dimension, the market reaction to news flows also varies according to the sentiment of the news as we observe negative Earnings forecasts to have a greater impact on the market while positive Earnings forecasts were associated with a insignificant market reaction on the volume metric. Another case in point was positive Management news which had a greater impact over negative Management news on the volume dimension.

Our data suggests market reaction to news flows also differs when the sentiment of the news is taken into account. Analyst calls, Management related news, Operations related news and Earnings forecasts with a positive sentiment were associated with a large magnitude reaction on the price dimension as compared to such news flows with a negative sentiment. On the other hand, Earnings news, Legal and Regulatory news, Restructuring news and Finance news with a negative sentiment were associated with a large magnitude reaction on the price dimension as compared to such news flows with a positive sentiment. Thus, we observe sentiment of the news is a critical factor in explaining the market reaction to news flows as pointed out by Sprenger and Welpe (2011) and future event studies should

invariably control for this crucial element of the news flows while analyzing the market reactions to news flows else little impact could be observed at the aggregate level.

Among the handful of studies that examine the relative importance of news flows, our study gains from the comprehensive dataset used in our work and we have provided a perspective on the relative importance of different categories corporate news flow in the Indian context based on the magnitude of the price reaction on the day of the news release associated with such news flows across industry groups. Among the new categories that we have studied, we observe that the largest price reaction was associated with Earnings news for positive as well as negative news sentiment categories indicating the significance of the news category in the eyes of the market participants.

The findings of the study assume both academic and practical significance by facilitating informed decisions by market participants especially retail investors and day traders. The study contributes to the existing literature on the market reaction to corporate news and adds to the limited research in the context of emerging market economies like India. Our findings with regard to market reaction to corporate news flow in the context of Indian markets show that the findings in the context of developed markets like US (Antweiler and Frank, 2006, Sprenger and Welpe, 2011 and Neuhierl *et al.*, 2013) and UK (Ryan and Taffler, 2004) cannot be generalized in the Indian context and needs further research to develop a better understanding of the market reaction to corporate news flows. While it was beyond the scope of this study, future studies should seek to investigate the reasons leading to the observed market reaction to various corporate news flows. Future research could also use intraday data to assess the market impact of such news flows (Gross-Klussmann and Hautsch, 2011).

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ANNEX 1

Event space

Serial no.	Event type	Event description
1	Analyst calls	Fundamental and technical views of analysts, industry experts, brokerage houses etc. on the company (e.g. Buy ACC; target of Rs 1835: Prabhudas Lilladher)
2	Earnings	Financial results of the company (e.g. Grasim Industries Q1 net profit jumps 64% to Rs 830 crs)
3	Earnings forecasts	Forecasts on financial performance of the company (e.g. Dr. Reddy's Q1 PAT seen up 584.3% to Rs 510.5 crs: Edelweiss)
4	Finance	News items on financial issues such as dividend, debt issue , debt redemption, equity share allotment , preference share issue, share buyback, ESOPs, stock split ,stock options ,capital infusion, FII limit, commercial papers issue, conversion of securities, debt recast, share warrants, QIP, credit rating, interest payment, change in capital structure, offer for sale, share warrants, right issue (e.g. Grasim Industries to raise up to Rs 2,000 cr via private placement)
5	Legal and Regulatory	News items on government, regulatory and legal moves (e.g. Telecom stocks dive up to 4% on DoT demand notice worries)
6	Management	News items on appointment, retirement, termination, death compensation concerning to the management of a company (e.g. Sunil Bharti Mittal re-appointed as chairman of Bharti Airtel)
7	Operations	Labour and HR issues like layoffs, product development and launches, product closures, rate changes for banks, ,periodic operational results, project execution and commissioning, auction results, input pricing, regulatory inspection, tie-ups, joint ventures, partnerships ,expansion plans, investment plans, deals ,contracts, sales figures, capacity expansion along with regulatory approvals for such activities (e.g. Aurobindo Pharma receives USFDA Approval for Linezolid Injection)
8	Restructuring	News items on divestment, merger and acquisition, spin offs along with regulatory approvals for such activities (e.g. CNBC-TV18 Exclusive: Vodafone, Idea in 'exploratory' talks for mega merger)

Notes

[1] Nifty 50 is a well diversified stock index consisting of 51 stocks. The index accounts for 12 sectors of the Indian economy and is commonly used for benchmarking fund portfolios, index based derivatives and index funds.

[2] Nifty Midcap 50 index represents the movement of the midcap universe of the market.

[3] Nifty Smallcap 50 Index represents the movement of the smallcap universe of the market.

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