

Persistence of calendar anomaly during the financial turmoil in India

Basavangouda¹

¹(MBA student, Dept. of Management Studies, BITM, Ballari (Karnataka))

Dinesh K²

²(Assistant Professor, Dept. of Management Studies, BITM, Ballari (Karnataka))

Dr Janet Jyothi D'souza³

³(Professor, Dept. of Management Studies, BITM, Ballari (Karnataka))

Abstract: We have analyzed COVID 19 pandemic on Indian stock market and Indian steel industry performance with comparison to the Global financial crisis 2008 by employing the econometric models to understand the calendar anomaly persistence during this two financial turmoil. The results from the regression analysis show that, the distress in the returns during the global pandemic is not severe as global financial crisis as evident from the day of the effect. These finding shows the severe effect of the financial turmoil in Indian stock market and in comparison to the Indian steel Industry.

Key words: COVID 19, Indian stock market, Global financial crisis 2008. Indian steel. **JEL classification:** D, G

Persistence of calendar anomaly during the financial turmoil in India:

Introduction:

In this era of globalization and global integration, the whole globe is treated as one country, without any geographical limitations and hence, we are no more impervious to the actions happening outside our nation (Beltratti, Stulz (2009)). While the subprime crisis emanated in the US, but for the reason that of globalization its unfavorable impact travelled deep around the global, triggering economic collapse and uncertainty in the global economy (Kolasa et al, 2009). The last two recessions has affected Indian economy and the world at large and its corporate sector to a great extent. Therefore, there is a quick need to examine what characteristics did Indian steel exhibit during global pandemic with that made them more (or less) vulnerable to recession. In this light, the present article is a humble attempt to examine the impact of Indian steel sector stock index performance for the two most vulnerable recession affected stock market at large.

Domestic Scenario:

Steel industry is the nation has encountered a reasonable headway since the chance of the nation. An unassuming start of the forefront steel exchange was come to in India at kultin west Bengal in the year 1870. Regardless, the start of progressively critical creation gets indisputable with the foundation of the steel plant in Jamshedpur in Bihar in 1907. It began creation in 1912. The new town was called after J.R.D Tata. This endeavor was trailed by Buranpur and Bhadravati steel plants in 1919 and 1923 freely.

It was, in any case, basically after self-administration that the steel business had the choice to locate a stung a solid equality in the nation. Despite the Jamshedpur plant of the Tata's, all are in the open part and managed by steel Authority of India Ltd. (SAIL). Bhili and booker steel plant were set up with soviet alliance. Durgapur and Rourkela thought of British and West German specific aptitude, separately. India is before long the fifth greatest creator of steel comprehensive and is likely become the greatest producer by 2015-16.

The rapid rise in construction has made India the third largest manufacturer of raw steel in 2015 and possibly in 2016. It is a necessary condition for policies to be developed every year. Indian Steel Minister .The purpose of the NSP project is to evaluate the independent steel industry in the global market. The policy includes the placement of iron ore on the Greenfield coast as rain as part of the Agartala project. This is a planned solution, so that it can connect with the inexpensive imported products, because it can try to coke and make records to get the maximum number of solutions. Politicians have also advocated the idea of gas metals and have been ordered to create electricity to reduce the use of Japanese coke explosives. The goal of this strategy is to produce 300 million tones by 2025-30.

Literature Review:

Rohini (2004) stated that technology is the key to competitiveness in the steel business after determining that investment in research and development in the Indian steel sector was insufficient. The authors looked closely at a few key actors in the Indian steel industry both during the slump and after the resurgence.

Jayaraman (2010) measured the financial performance of the Indian steel sector over a five-year period, from 2005 to 2010, using financial ratios in terms of liquidity, profitability, variability, and sustainability. Their research shows that the severe condition the Indian steel sector is in is caused by overcapacity and a downturn in demand, which has led to price reductions.

Bhunja and Khan (2011) tried to analyze the association between the liquidity management and profitability of 230 Indian private sector steel companies. Multiple regression tests confirmed a lower degree of association between the working capital management and profitability.

Venkateshan and Nagarajan (2012) examined the profitability of a few Indian steel companies over the years of 2005–2006 and 2010–2011. SAIL and TATA did better than Bhushan and JSW, while VISA was in an unsatisfactory financial condition during the study period, it was finally concluded.

Singla (2013) examined the financial results of SAIL and TATA Steel, two of the top steel producers in India, over a five-year period from 2007–2008 to 2011–2012. The study's findings showed that TATA Steel had higher profitability and inventory control than SAIL.

Anilbhai (2013) examine the financial performance of two chosen Indian steel businesses, SAIL and JSW. It was also recommended that JSW endeavour to use all of its production capacity and utilise its fixed assets effectively to boost performance.

Sinku & Kumar (2014) evaluate Steel Authority of India Limited's financial performance. The research of several ratios revealed that SAIL's ability to generate profits, maintain liquidity, and maintain long-term solvency were all relatively strong during the study period, and the company's risk of bankruptcy was also quite low.

Kavitha and Palanivelu (2014) investigated factors affecting steel industry based on profitability model. It was also suggested that the firms should utilize maximum production capacity and should try to increase production and sales for maximization of profit and to strengthen financial position.

Arab, Masoumi & Barati (2015) analysed the liquidity, solvency, activity, and profitability financial measures to determine the financial performance of selected units in the Indian steel sector. It was determined that there were considerable differences in the liquidity, solvency, activity, and profitability positions of the identified units in the Indian steel industry.

Takeh & Navaprabha (2015) to examine the effects of capital structure on the financial health of a few Indian steel businesses between 2007 and 2012. The outcome showed that the Indian steel industry's capital structure had a major financial performance influence. A negative association between capital structure and financial performance metrics.

Statement of the problem:

“A study on Indian steel stock price journey of crisis from starting from global financial crisis to global pandemic and observe the variability in returns from this two events in common.

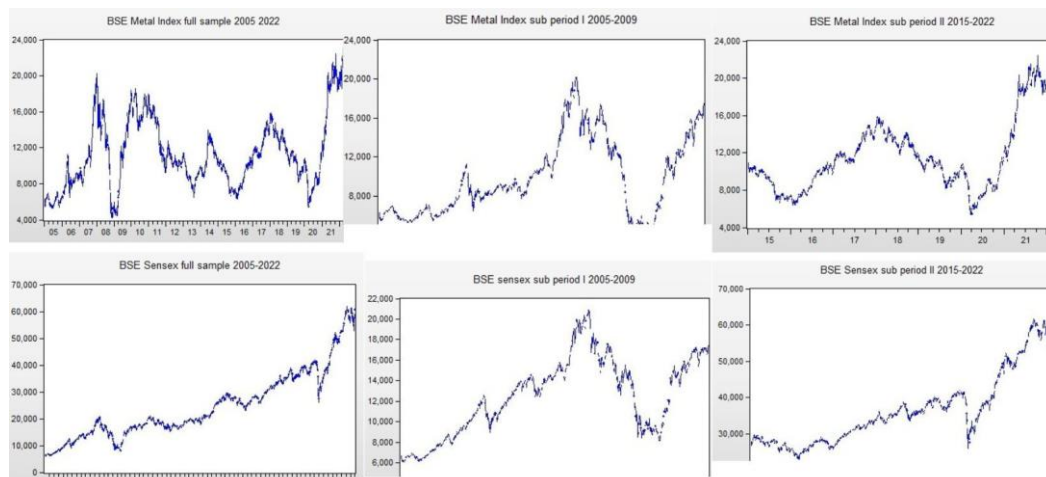
Objectives of the Study:

- 1) To understand the journey of Indian steel stock price from financial crisis to global pandemic.
- 2) To study of Indian steel stock response towards two different crisis.

Research Methodology:

Types of Methodology	Experiment in nature
Data	Secondary
Period	Past 17 years
Sampling technique	Non-probability
Sampling size	BSE Sensex & BSE Metal Indices
Statistical tool	Descriptive Statistics ,Ordinary least square method

Figure 01: showing the stock price trend for BSE Sensex and BSE metal Indices.



From the above figure 01, we observe that volatility is very high in the BSE Sensex compared to that of BSE metal Indices, and more interestingly, the volatility is very short and recovered quickly in the sub-period II for both the Indices compared to that of the Global financial crisis in the sub-period I. It can be stated that markets have learned to cope with the crisis and can quickly respond to manage the impending financial crisis in India.

Unit root testing results:

Variable	At level		1 st difference	
	t-Statistic	Prob.*	t-Statistic	Prob.*
BSE Sensex	1.036948	0.9970	-63.45270	0.0001
BSE Metal Index	-1.368451	0.5993	-60.57756	0.0001

Table: 01 Descriptive statistics output:

	Full sample method 2005 – 2022		Sub period-I 2005-2009		Sub period-II 2015-2022	
	BSE Sensex	BSE Metal	BSE Sensex	BSE Metal	BSE Sensex	BSE Metal
Mean	0.0515	0.0304	0.0780	0.0827	0.0365	0.0418
Median	0.0900	0.0887	0.1442	0.2102	0.0348	0.0841
Maximum	15.9900	14.9282	15.5900	14.9282	61.7655	8.42317
Minimum	-14.1020	-14.2716	-11.604	-14.272	22.951.83	-12.713
Std. Dev.	1.4026	2.1300	1.9662	2.7861	9.791.135	1.86708
Skewness	-0.2386	-0.3324	0.0910	-0.392	0.9720	-0.4437
Kurtosis	14.4723	7.1664	8.7527	6.0739	3.0456	
Jarque-Bera	23500.6	3159.002	1700.53	516.613	282.6749	976.793
Prob.	0.000	0.000	0.000	0.000	0.000	0.000
Sum	220.549	129.769	96.119	101.888	165.558	74.9398
Sum Sq.Dev.	8414.28	19319.00	4758.97	9556.01	172.11	6246.86
Obser(N).	4278	4259	1232	1232	1794	1793
D-W test	1.9040	1.8564	1.8422	1.7134	2.0524	2.03461

Source: Eviews output

In the above table 01 showing that BSE metal index for period 2005-2009 founds that, coefficient was on Friday 0.207713, lowest was on Tuesday negative value -0.049688, std. error highest was on Thursday 0.178938, lowest was on Tuesday 0.177483, t-statistic highest was on Friday 1.163196, lowest value was on -0.279959, prob was highest was on 0.8263, lowest was on Friday is 0.2450.

From the table 02 in the below, show the full sample BSE Sensex 2005 – 2022 mean is 0.051554, median is 0.090051, maximum is 15.98998, minimum is negative value -14.10174, standard deviation 1.402616, skew ness is negative value -0.238553, kurtos is 14.47227, probability value is 0.000000. For the BSE metal Index, we can observation that the lowest coefficient value in the week is Tuesday is 0.010272 highest was on Thursday is 0.057579, std error highest value is on Thursday 0.060801, lowest was on Monday 0.053517, z-statistic highest was on Wednesday is 0.942270, lowest was on 0.168948, prob. is 0.8658 was highest, lowest was 0.3461.

Table 02: GARCH (1,1) output for the full sample period

Full sample period: 2005-2022								
BSE Sensex Full sample					BSE metal full sample			
Variable	Co-eff	Std.Error	z-Stat	Prob.	Co-eff	Std.Error	z-Stat	Prob.
MON	0.00628	0.04803	0.13083	0.8959	0.02455	0.05352	0.45869	0.6465
TUE	0.07423	0.04775	1.55458	0.1201	0.01027	0.0608	0.16895	0.8658
WED	0.09708	0.04786	2.02849	0.0426	0.05703	0.06053	0.94227	0.3461
THU	0.01474	0.04797	0.30729	0.7586	0.05758	0.06129	0.93945	0.3475
FRI	0.066	0.04828	1.3669	0.1717	0.03053	0.05585	0.54666	0.5846
Variance Equation								
C	0.07056	0.02227	5.28225	0.0000	0.08202	0.01325	6.19004	0.0000
RESID(-1)^2	0.08234	0.00656	17.2853	0.0000	0.07936	0.00656	12.1072	0.0000
GARCH(-1)	0.71147	0.00792	119.655	0.0000	0.90148	0.00792	113.769	0.0000

Source : Eviews output

Table 03: GARCH (1, 1) output for the sample period I

Sub period I:2005-2009								
BSE Sensex					BSE Metal			
Variable	Co-eff	Std. Error	z-Stat	Prob.	Co-eff	Std. Error	z-Stat	Prob.
Mon	0.15724	0.07699	2.04224	0.0411	0.005418	0.000451	1.580286	0.0852
Tue	0.08731	0.09887	0.88294	0.3773	0.002589	0.000742	3.776451	0.0030
Wed	0.19862	0.08934	2.22336	0.0262	0.000963	0.000268	1.254860	0.1750
Thu	0.174398	0.08521	2.04677	0.0407	0.000784	0.000365	2.125468	0.0285
Fri	0.12477	0.08579	2.50356	0.0123	0.000895	0.000450	1.024442	0.3120
Variance Equation								
C	0.05545	0.01184	4.68178	0.0000	1.250146	4.170154	3.841453	0.0001
RESID(-1)^2	0.12785	0.01461	8.75078	0.0000	0.110255	0.020051	11.36845	0.0002
GARCH(-1)	0.86334	0.013639	63.2982	0.0000	0.658789	0.012568	67.75159	0.0001

Source: Eviews output

In the above table 03 showing that returns for BSE- sensex, coefficient was lowest was on Tuesday 0.087238 was highest was on 0.214775, std. error lowest was recorded on Monday is 0.076992, highest was recorded Tuesday is 0.098872, z-statistic was highest was on Friday was 2.503559, lowest was on Tuesday 0.882935, prob was on lowest was Friday is 0.0123, highest was on 0.0411

Table 04: GARCH (1,1) output for the sample period II

Sub period II:2015-2022								
BSE Sensex					BSE Metal			
Variable	Co-eff	Std. Error	z-Stat	Prob.	Co-eff	Std. Error	z-Stat	Prob.
Mon	0.00064	0.00037	1.67019	0.0949	0.001882	0.081885	0.022983	0.9817
Tue	0.001341	0.00047	2.87835	0.0040	0.101176	0.091666	1.103747	0.2697
Wed	0.000652	0.00049	1.32408	0.8550	0.012545	0.093458	0.134232	0.8932
Thu	0.000884	0.00042	2.08197	0.0373	0.111321	0.090531	1.229624	0.2188
Fri	0.000454	0.00044	1.02377	0.3060	0.002674	0.087147	0.030681	0.9755
Variance Equation								
C	0.055451	0.01184	4.68178	0.0000	1.250146	4.170154	3.841453	0.0001
RESID(-1)^2	0.127851	0.01461	8.75078	0.0000	0.110255	0.020051	11.36845	0.0002
GARCH(-1)	0.863340	0.013639	63.2982	0.0000	0.658789	0.012568	67.75159	0.0001

Source: Eviews output

In the above table 04 showing for BSE _ Sensex coefficient highest was on Tuesday 0.001344, lowest was on 0.000448, std. error highest was on Wednesday was 0.000489, Monday was recorded lowest is 0.000368, z-statistic highest was recorded on Tuesday 2.878347, lowest was on Friday 1.023717, prob lowest was on Tuesday is 0.0040, highest was 0.3060. While for BSE Metal Index, the coefficient value highest was on Thursday 0.111320, lowest was on Monday 0.001882, std error was lowest recorded on 0.081885, highest was on Wednesday is 0.093458, z- statistic highest was on Thursday is 1.229624, lowest was on 0.022983, prob highest was on Thursday was on 0.9755, lowest was on 0.2188.

Findings & research implications:

- ✓ Coefficient was on Friday 0.207713, lowest was on Tuesday negative value -0.049688, std. error highest was on Thursday 0.178938, lowest was on Tuesday 0.177483, t-statistic highest was on Friday 1.163196, lowest value was on -0.279959, probability value was highest was on 0.8263, lowest was on Friday is 0.2450.
- ✓ RETBSE_ SENSEX, coefficient was lowest was on Tuesday 0.0872 38 was highest was on 0.214775, std. error lowest was recorded on Monday is 0.076992, highest was recorded Tuesday is 0.098872, z-statistic was highest was on Friday was 2.503559, lowest was on Tuesday 0.882935, probability value was on lowest was Friday is 0.0123, highest was on 0.0411
- ✓ RETBSE _ Sensex coefficient highest was on Tuesday 0.001344, lowest was on 0.000448, std. error highest was on Wednesday was 0.000489, Monday was recorded lowest is 0.000368, z-statistic highest was recorded on Tuesday 2.878347, lowest was on Friday 1.023717, probability value was lowest was on Tuesday is 0.0040, highest was 0.3060.
- ✓ Coefficient value highest was on Thursday 0.111320, lowest was on Monday 0.001882, std error was lowest recorded on 0.081885, highest was on Wednesday is 0.093458, z- statistic highest was on Thursday is 1.229624, lowest was on 0.022983, probability value was highest was on Thursday was on 0.9755, lowest was on 0.2188.
- ✓ BSE Sensex 2005 – 2022 mean is 0.051554, median is 0.090051, maximum is 15.98998, minimum is negative value - 14.10174, standard deviation 1.402616, skew ness is negative value -0.238553, kurtosis is 14.47227, probability value is 0.000000,
- ✓ Coefficient value in the week is Tuesday is 0.010272 highest was on Thursday is 0.057579, std error highest value is on Thursday 0.060801, lowest was on Monday 0.053517, z-statistic highest was on Wednesday is 0.942270, lowest was on 0.168948, probability is 0.8658 was highest, lowest was 0.3461.

Suggestions:

- ✓ The concerned Government has to take appropriate decision
- ✓ Due to pandemic the steel index prices are fluctuating daily.
- ✓ Global stock market is changing day to day because of Covid – 19.
- ✓ Index returns are increasing constantly and all are positive returns.

Conclusion:

The purpose of this study was to establish which Indian stock market, and specifically the Indian steel industry, is the least effective during a crisis. Market efficiency is regarded as a sign of whether investors may expect investment returns. In certain instances, investments have increased dramatically during a crisis. Therefore, investors might be interested in our findings. Based on this justification, we use an econometric model to examine the sectoral market's effectiveness during the Great Recession and the COVID-19 pandemic. According to the empirical findings, the global pandemic's impact on returns was less severe than the global financial crisis, which was immediately noticeable.

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