

A STUDY OF THE IMPACT OF INDIAN FESTIVALS ON THE STOCK MARKET INDICES OF BRICS COUNTRIES

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ABSTRACT

The present study attempts to examine the impact of Indian festivals on the stock market indices of BRICS countries. Festivals are one the factor that attract the investor and the stock market is affected by the movement of money in and out when they invest money or withdraw money. The outflow/Inflow of money in stock market happens due to many factors. This research will help to understand the movement of stock market with respect to Indian festivals. Due to globalization every country is interlinked so it becomes important to study the impact of an event of a particular country on other countries. The outflow/inflow of money in the stock market happens due to many factors. This research will help to understand the movement of stock market because of Indian festivals.

Keywords: Indian festival, stock market, BRICS

INTRODUCTION

There are many factors which affect the stock market. The major factors affecting the stock market are Inflation, Interest rate, Foreign Exchange Market, Festivals and world events, etc. Inflation, interest rates have an impact on the stock market. World events and disasters in the world also affect the stock market. Among all these factors festivals are also the factors that affect the stock market. Many countries have different festivals which impact the home country as well as other countries. India is known as a country of festivals as in India different religions have different festivals to celebrate. For this study ten festivals have been selected as follows:

- Diwali: It is an ancient Hindu festival which is celebrated in every state of India. This festival is celebrated in the month of October or November every year. This festival signifies victory over darkness. People light their house in this festival. On Diwali many people purchase large quantity of goods and

many companies provide offers to their customers on this day.

- Dusshera: This festival is celebrated not only in India but other countries also like, Nepal, Bangladesh and some part of Pakistan. This festival is celebrated in the memory of Lord Ram's victory over Ravan.
- Holi: Holi is a festival of spring season. It is celebrated in the month of March every year. It is a festival of love and color. This festival is celebrated in every state of the country. As many Indians move to different countries, they celebrate Holi in those countries also.
- Christmas: It is a festival of Christian religion and celebrated all over world. It is celebrated on 25th December every year. This festival is celebrated in all the states of India and other countries. On Christmas many companies provide offers to their customers.
- Makar Sankranti (Pongal): This festival is celebrated in almost all parts of India and Nepal. This festival is celebrated by every religion. This festival is celebrated in the month of 14th January every year.
- Dhanteras: This festival is celebrated two days before Diwali. On this day people of different regions buy gold, silver and

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other ornaments in large quantity. On this day people do worship of goddess Lakshmi.

- **Eid-ul-fitr:** It is an Islamic festival celebrated in different countries. This festival is celebrated after 29 days of Ramadan. It is celebrated in most of the countries like Saudi Arabia, Afganistan, Pakistan, etc.
- **Raksha Bandhan:** It is a Hindu festival which is celebrated to express the love between brothers and sisters. It is celebrated in the month of august every year. This festival is celebrated in different states of our country.
- **Ganesh Chaturthi:** It is a Hindu festival celebrated to preach Lord Ganesha. This festival is celebrated in all the states of the country but in Mumbai it is celebrated by every religion. According to the Hindu calendar, this festival is celebrated in the month of August and September.
- **Vasant Panchami:** It is a Hindu festival which heralds the coming of Spring. It is celebrated by different religions. People fly kites in this festival. It is also known as the festival of kites in Punjab.

During the festival season in India the demand for cash flow increases and due to that stock investors sell their shares and it leads to fluctuations in the stock market. BRICS as the emerging markets provides more opportunities to increase benefit from

international diversification.

It is expected that the equity market of India, South Africa , Indonesia, China, Brazil will expand at a compound annual growth rate (CAGR) of around 15% over the next two decades

(Source: Standard Chartered 'The Super-Cycle Report)

LITERATURE REVIEW

Sharma (2004) Investigated the stock market seasonality in an emerging market by using Nonparametric Kruskall-Wallis test, on a sample size 1802-1926. He stated that the Indian stock markets do observable seasonality in their returns pattern. **Gao and Kling (2005)** investigated the effect on Chinese stock market by considering sample size of 12 years using research tools like descriptive statistics, regression analysis, and event study. The study found that at the end of the year March and April, average return is far higher as compared to other months. **Cao, Harris and Wang (2007)** investigated the Seasonality in the Returns, Volatility and Turnover of the Chinese Stock Markets, the sample size of the study was 12 years, the research tool used in the study was regression analysis. The study found that on Wednesday the return was the highest and on Thursday it was the lowest, **Marrett and Worthington (2007)** conducted research related to the impact of holidays on the Australian stock market. The Sample size of the study was 4 years from 1996-2000, used research tools were regression, descriptive

Table: 1.1 **Ten largest economies by decade:**

2010	USD (trn)	2020	USD trn	2030	USD trn
US	14.6	China	24.6	China	73.5
China	5.9	US	23.3	US	38.2
Japan	5.6	India	9.6	India	30.3
Germany	3.3	Japan	6.0	Brazil	12.2
France	2.6	Brazil	5.1	Indonesia	9.3
Uk	2.3	Germany	5.0	Japan	8.4
Italy	2.0	France	3.9	Germany	8.2
Brazil	2.0	Russia	3.5	Mexico	6.6
Canada	1.6	UK	3.4	France	6.4
Russia	1.5	Indonesia	3.2	UK	5.6

(Source: Standard Chartered) 'The Super-Cycle Report

analysis. The study found that pre-holiday effect is five times higher in all countries market index and the stock market is inflating due to high sale of products before festivals. **Camilleri (2009)** Studied the month-related seasonality of price volatility: Evidence from the Malta Stock Exchange, the research tool used for conducting this research were a Jarque-Bera test, Kruskal-Wallis test, and Chi-squared. The sample size was from October 2000 to September 2005, according to their findings Malta stock exchange's volatility is a reason for monthly seasonality. The MSE lowest volatility months are April to October and in December the risk seasonality and companies closing off their financial year. **MacGowan and Jakob (2010)** investigated the impact of Eid-ul-fitr on Malaysia Stock exchange. Study used a sample size of 3 years (2000-2003), the data was collected from Kuala Lumpur Stock Exchange¹ (KLSE), Composite Index (KLCI), Syariah Index (SI), using research tools like descriptive statistics, coefficient regression, and event study. Research found that the presence of Bumiputeras (Chinese community) in the stock market is small as compared to other days. In Eid-ul-fitr celebration the practice of giving cash bonuses are not the same as the Chinese New Year. **Dodd & Gakhovich (2011)** investigated holiday effect in Central and Eastern European by using T- test on 14 Central and Eastern European countries with 19 years data of National stock indices and the study found that there is a significant post-holiday effect on three countries (Hungary, Poland and Russia) and this is a first indication that there is a holiday effect in the CEE region. The analysis shows that the holiday effect in CEE markets is driven by abnormal returns around common holidays: Christmas, New Year. **Datta (2014)** investigated the holiday impact on stock market returns, by using Granger Causality Test, Co-integration, Sterling ratio, & Augmented Dickey-Fuller test on Indian stock market. The sample size was taken from 1994 to 2014 (NSE) & it has been found that there is a relationship between the nifty returns, trading days and market capitalization & both the Nifty volatility have

been caused by each other. **Khambo & Chougule (2014)** investigated seasonality in Stock Market: With Special Reference to Diwali Effect by using Auto correlation test & Ljung-Box statistics on India with 3 month data of BSE indices and it has been found that BSE is smart enough to absorbing the changes of effects of Diwali. **Maheta (2014)** studied the festival effect in the Indian market. The research tool used was paired T-Test and the sample size considered for this study was January 2003 to December 2012 (Sensex & Nifty) and the findings were that the market is not informally efficient, and the customer can avail the maximum opportunity in order to obtain greater returns during the festivals. **Chowdhary and Mostari (2015)** investigated the impact of Eid-ul-Azha on the stock market of Dhaka by considering the sample size from 2005 to 2013. The author has used research tools like linear regression, t-test, and event study. The study found that in 6-10 days people sell their shares instead of buying. Due to selling pressure index goes down, and immediately after Eid-ul-Azha holiday investors' participation in stock market is less.

NEED AND SCOPE OF THE STUDY

The stock market is affected by the movement of money in and out when they invest money or withdraw money. The outflow/inflow of money in stock market happens due to many factors. This research will help to understand the movement of stock market because of Indian festivals. Earlier many authors did research in the same area but the scope was limited to only one country. But now a day due to globalization every country is interlinked so it becomes important to study the impact of an event of a particular country on the other countries. So this study will be an attempt to find out whether there is any impact of Indian festivals on indices of BRICS countries. There are many factors affecting stock market indices like GDP, inflation, deflation, interest rate, etc. but the study will be focused on the festival effect on stock indices with respect to 10 years only. The study will be helpful to investors who are thinking to invest money during festival

season. They will also get some useful information from the study. This study shows the impact of Indian festivals on stock indices of BRICS countries.

OBJECTIVES OF THE STUDY

- To find out the co-integration between the BRICS countries indices.
- To find out the pre and post Indian festivals effect on the stock market index of India i.e. Nifty.
- To find out the impact of Indian festivals on the indices of BRICS countries.

DATA ANALYSIS

Optimal Lag Selection

Lag means a period of time between one event and another. The Akaike Information Criterion (AIC) is a measure of the relative quality of statistical models for a given set of data. Given a collection of models for the data, AIC estimates the quality of each model, relative to each of the other model. Hence, AIC provide a means of model selection.

Table 1.2: LAG Period (India, China, Brazil, Russia & South Africa)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	14809.70	NA	5.30e-16	-23.82253	-23.80603	-23.81632
1	14916.64	213.0192	4.58e-16*	-23.96885*	-23.88638*	-23.93784*
2	14927.38	21.32377	4.62e-16	-23.96038	-23.81195	-23.90457
3	14933.07	11.26544	4.69e-16	-23.94380	-23.72939	-23.86317
4	14940.32	14.30269	4.76e-16	-23.92972	-23.64934	-23.82429
5	14948.68	16.43088	4.82e-16	-23.91742	-23.57106	-23.78718
6	14956.73	15.78834	4.88e-16	-23.90464	-23.49231	-23.74959
7	14978.56	42.63617	4.83e-16	-23.91402	-23.43571	-23.73416
8	14992.33	26.81400*	4.85e-16	-23.91043	-23.36616	-23.70577

Indicates lag order selected by the criterion

LR: sequential modified LR test statistic(each test at 5%)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

RESEARCH METHODOLOGY

The sample period considered for this study was 1st January 2009 to 31st December 2015. From the literature review it has been observed that to study the impact of festivals on stock market indices, no primary data is required so this study will be based on secondary data only. That data has been collected from www.wallstreetjournal.com and <http://www.investing.com/indices> for indices of BRICS countries and www.nse.com for Indian index i.e. Nifty. In this study the research tools as paired t-test, granger causality test and ARCH/GARCH model has been used.

Selection of lag length:

As per Akaike Information Criteria(AIC) , Final prediction error (FPE), Schwarz information criterion (SC) , and Hannan-Quinn information criterion (HQ) optimum lag length is 1.

Unit Root Test (Augmented Dickey Fuller Test)

This test is used for time series data. The Augmented Dickey Fuller test is widely used to test stationary, negative number. The more negative it is, the stronger the rejection of null hypothesis. It is used to check whether a variable included in the model is stationary or non- stationary.

Decision Rule:

If $T \text{ value} < \text{critical value}$ (Accept the Null Hypothesis and Reject Alternative Hypothesis)

If $T \text{ value} > \text{Critical value}$ (Reject Null Hypothesis and Accept Alternative Hypothesis) and

When, probability $> 5\%$, we do not accept the null hypothesis rather we reject the null hypothesis.

When, probability $< 5\%$, we accept the null hypothesis and reject the alternate hypothesis.

market index of India and after festivals effect on stock market index of India. The study contains ten festivals which are celebrated in India so 5 days window has been considered to apply the t-test.

Decision rules:

The hypothesis of this test is:

- H_0 : There is no effect of festivals on Indian stock index.
- H_1 : There is an effect of festivals on Indian stock index.

The level of significance is 5%.

Ganesh Chaturthi:

Table 1.3 Augmented Dickey-Fuller unit root tests values at 5 percent level

	Intercept			Intercept & Trend			None		
	Critical	Absolute	P Value	Critical	Absolute	P Value	Critical	Absolute	P Value
India	-2.86	33.83	0.00	-3.41	33.82	0.00	-1.94	33.81	0.00
Brazil	-2.86	36.65	0.00	-3.41	36.67	0.00	-1.94	36.65	0.00
China	-3.41	36.59	0.00	-3.41	36.59	0.00	-1.94	36.56	0.00
Russia	-2.86	36.65	0.00	-2.86	36.65	0.00	-1.94	36.65	0.00
South Africa	-2.86	37.63	0.00	-3.41	37.63	0.00	-1.94	37.64	0.00

From the above table it is clear that the data used in this research is stationary.

PAIRED T-TEST

Paired t-test is used to determine whether the mean of one dependent variable is same or different than other independent variable. This test helps to compare the before and after effect. The study applied paired t-test to check the before festivals effect on stock

The paired sample t-test shows that the mean for before Ganesh Chaturthi effect on stock market is .0037 and mean for after Ganesh Chaturthi effect on stock market is .0022. The level of significance value is .698 which is more than 0.05 as the level of significance is 5%. So the null hypothesis is accepted and alternative hypothesis is rejected which means that there is no before and after effect of Ganesh Chaturthi on stock market index

Table 1.4 paired t-test applied

S. No.	Festivals name	Before festival mean	After festival mean	correlations	Sig. (2-tailed)
1.	Ganesh chaturthi	0.0037	0.0022	-0.308	0.698
2.	Makar sankranti	0.00	-0.0019	-0.930	0.963
3.	Vasant punchami	0.00	-0.0007	0.455	0.457
4.	Holi	0.00	0.0038	-0.639	0.211
5.	Raksha bandhan	0.00	0.0000	-0.213	0.857
6.	Dussherra	0.00	0.0026	0.382	0.170
7.	Diwali	0.00	0.0020	-0.501	0.661
8.	Ramzan	0.00	0.0002	-0.105	0.435
9.	Dhanteras	0.00	-0.0012	-0.158	0.384
10.	Christmas	0.00	0.0019	0.415	0.661

of India.

Makar Sankranti

The paired sample t-test shows that the mean for before Makar Sankranti effect on stock market is .00 and mean for after Makar Sankranti effect on stock market is -0.0019. The significance value is .963 which is more than 0.05 as it takes 5% level of significance. So the null hypothesis is accepted and alternative hypothesis is rejected which means that there is a before and after effect of Makar Sankranti on stock market index of India.

Vasant Panchami

The paired sample t-test shows that the mean for before Vasant Panchami effect on stock market is .00 and mean for after Vasant Panchami effect on stock market is -0.0007. The significance value is 0.457 which is more than 0.05 as 5% is a level of significance. So the null hypothesis is accepted and alternative hypothesis is rejected which means that there is no before and after effect of Vasant Panchami on stock market index of India.

Holi:

The paired sample t-test shows that the mean for before Holi effect on stock market is .00 and mean for after Holi effect on stock market is .0038. The significance value is .211 which is more than 0.05 as the level of significance is 5%. The null hypothesis is accepted and alternative hypothesis is rejected which means that there is no before and after effect of Holi on stock market index of India.

Raksha Bandhan:

The paired sample t-test shows that the mean for before Raksha Bandhan effect on stock market is .00 and mean for after Raksha Bandhan effect on stock market is .0000. The significance value is .857 which is more than 0.05 as level of significance is 5%. It means the null hypothesis is accepted and alternative hypothesis is rejected which means that there is no before and after effect of Raksha Bandhan on stock market index of India.

Dussherra:

The paired sample t-test shows that the mean for before Dussherra effect on stock market is .00 and mean for after Dussherra effect on stock market is .0026. The significance value is .170 which is more than 0.05 as 5% is a level of significance. It means the null hypothesis is accepted and alternative hypothesis is rejected which means that there is no before and after effect of Dussherra on stock market index of India.

Diwali:

The paired sample t-test shows that the mean for before Diwali effect on stock market is .00 and mean for after Diwali effect on stock market is -.0020. The significance value is .661 which is more than 0.05 as level of significance is 5%. It means the null hypothesis is accepted and alternative hypothesis is rejected which means that there is no before and after effect of Diwali on the stock market index of India.

Ramzan:

The paired sample t-test shows that the mean for before Ramzan effect on stock market is .00 and mean for after Ramzan effect on stock market is .0002. The significance value is .435 which is more than 0.05 as the level of significance is 5%. It means the null hypothesis is accepted and alternative hypothesis is rejected which means that there is no before and after effect of Ramzan on stock market index of India.

Dhanteras:

The paired sample t-test shows that the mean for before Dhanteras effect on stock market is .00 and mean for after Dhanteras effect on stock market is -.0012. The significance value is .384 which is more than 0.05 as the level of significance is 5%. It means the null hypothesis is accepted and alternative hypothesis is rejected which means that there is no before and after effect of Dhanteras on the stock market index of India.

Christmas:

The paired sample t-test shows that the mean for before Christmas effect on stock market is .00 and mean for after Christmas effect on stock market is .0019. The significance value is .661 which is more than 0.05 as the level of significance is 5%. It means the null hypothesis is accepted and alternative hypothesis is rejected which means that there is no before and after effect of Christmas on stock market index of India.

GRANGER CAUSALITY TEST

It is used to forecast the one time series with the help of another by setting the hypothesis. It is basically based upon the predictions. The value of one time series contains the information that helps to know the future values of other time series.

H₀, Null hypothesis: There is no causality among variables

H₁, Alternate hypothesis: There is causality

Table 1.5 Granger Casualty Test

Null hypothesis:	OBS	F-STATISTIC	PROB.
China does not granger cause Brazil	1250	0.24953	0.6175
Brazil does not granger cause China		62.8468	5.E-15
India does not granger cause Brazil	1250	0.06654	0.7965
Brazil does not granger cause India		41.9849	1.E-10
South africa does not granger cause Brazil	1250	0.08485	0.7709
Brazil does not granger cause South Africa		22.1312	3.E-06
India does not granger cause china	1250	53.4050	5.E-13
China does not granger cause india		0.01486	0.9030
South Africa does not granger cause China	1250	102.192	4.E-23
China does not granger cause South Africa		0.97877	0.3227
South Africa does not granger cause India	1250	11.2502	0.0008
India does not granger cause South Africa		0.02396	0.8770

relationship among variables

Decision Rule

- When p value < 5% or 0.05, we reject the null hypothesis rather we accept the alternate hypothesis
- When p value >5% or 0.05, we fail to reject the Null hypothesis rather we accept it

The above table shows that above cause and effect relationship is unidirectional and not bi directional. We found that, Brazil, Russia, India and South Africa have an impact on

China but China does not have any impact on these countries.

FINDINGS

- This study found that the pre-festivals and post-holidays effect does not exist in stock exchange index of India that is Nifty C-C Teng and VW Liu (2013), also found that there was no pre/post effect on stock indices.
- Study has shown that the movement of Nifty is the same as compared to the indices of the Brazil, Russia, China, South Africa and there is no festivals effect on Nifty so we assume that there is no effect of festivals on Brazil, Russia, China, South Africa's stock indices as Tian Yuan and Rakesh Gupta (2014) found that there was no effect of Chinese new year on other countries stock indices.
- The study found that there is an existence of clustering volatility in the stock indices

of Brazil, Russia, China, India and South Africa but this happen because of other factors like inflations, exchange rates, etc. Carl B. McGowan and Izani Ibrihim (2009), found reverse as there was ARCH effect.

- Through Granger causality test, found that Brazil and Russia are highly correlated and the cause and effect relationship between the BRICS countries is unidirectional not Bidirectional. Vadali Sri Ram Datta (2014) applied the same test and found the relationship between

the Nifty return, trading days and market capitalization

SUGGESTIONS

- Investors who want to invest in BRICS countries during the festivals time can analyze through this research that there are no effects of festivals on BRICS countries.
- This study will help the government as well if they change the rules and policies of stock indices of one country then eventually it will affect the other country's stock indices also.
- If the companies of BRICS wants to issue IPO's during festival season and they have a fear of festivals effects then they can analyze from this study that there is no festivals effect on stock indices of BRICS countries.

CONCLUSIONS

This study examined the festival impact on the stock indices of BRICS countries by using daily return of the stock indices of BRICS countries. By applying paired t- test it was found that there is no pre and post effect on stock indices, even showed that the movement of nifty is same as compared to the indices of Brazil, Russia, China, South Africa and there is no festival effect on Nifty. Through Granger causality test it was found that Brazil and Russia are highly correlated and the cause and effect relationship between the BRICS countries is unidirectional not Bidirectional.

Therefore this study concludes that there is no impact of festival on stock indices of BRICS countries

LIMITATIONS OF THE STUDY

- Data of South Africa from year 2006-2008 could not be found so we applied test on indices of Brazil, Russia, India, China from 2006 and then South Africa is included from 2009.

- The study just included the festival factor but there are various other factors which affect the indices of BRICS countries. But if other factors are included then the study would have become very vast.

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