AN ASSESSMENT OF SEASONALITY EFFECT IN SECTORAL INDICES

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ABSTRACT

Any new information about the economy is transmitted fast and it may influence the financial markets, positively or negatively. The present study used Descriptive Statistics and Regression Model, to investigate the April month effect on Indian financial sector indices, namely, Nifty Bank Index, Nifty Financial Services Index, Nifty PSU Index and Nifty Private Bank Index of NSE India Ltd. The results of Descriptive Statistics and Regression Model found that April month of every financial year, affected the daily prices of Indian financial sector indices, namely, Nifty bank Index, Nifty Financial Services, Nifty PSU and Private Bank Sector indices, during the study period. Finally, the study concluded that April month of every financial year may be affecting the Indian stock markets. Investors may concentrate more for their investments Hence April of every financial year.

Key words: NSE, April month Effect, Stock Market

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1. INTRODUCTION

Seasonality refers to regular and repetitive fluctuation, in a time series, which occurs periodically over a span of less than a year. The main cause of seasonal variations, in time series data, is the change in climate. For example, sales of woollen clothes generally increase

in winter season. Besides, customs and tradition also affect economic variables, for instance, sales of gold increase during marriage seasons. Similarly, stock returns exhibit systematic patterns at certain times of the day, week or month. The most common of these are Monthly Patterns. Certain months provide better returns as compared to others i.e. the Month of the Year Effect. The existence of seasonality in stock returns, however, violates an important hypothesis in finance called the Efficient Market Hypothesis (EMH). The Efficient Market Hypothesis is a central paradigm in finance.

Commonly referred to as the “April Effect”, “Turn-Of-The- Financial Year” effect is the tendency of the stock market to rise between the last day of the last financial month and the end of the first week of the first month of the next financial year. In many developed countries, financial year starts in April and ends in March, which is the reason behind the common nomenclature of this anomaly as the April Effect. Returns are high in small firm stocks, which might have experienced negativity in the immediate past and these small stocks tend to outperform large stocks during the course of the first month of the year (Rashmita Sahoo (2018), Eric Girardin and Fatemeh Salimi Namin (2019), Fahad Ali and Numan Ulku (2020)).¹ This is the reason why this effect is predominantly noticeable in stock indices having higher proportion of small firm listings.. A ‘positive April returns’ means that the market is on the road for a gainful year, and a ‘negative April returns’ indicate weakness in the market through the following March (Cooper et.al.,2006).

In order to recognize study limitations and understand methodologies used in the areas of calendar anomalies, a short overview is given here. The effect of December months in the Indian stock market was investigated using Generalized Auto Regressive Conditional Heteroscedasticity (2009) and Gupta (2007). Garima (2017). The findings verified the effects on the Indian stock market of December month. The Day of the Week ended the presence of Rashmita Sahoo in the Indian stock exchange in 2018. The effect of the month day was evaluated at Indian stock market with Harshita, Shveta Singh (2019), Surendra S. Yadav, the results of the analysis indicate that the seasonal effect on the stock exchange in the form of April/May. The study of the impact of the Week Day on the Indian stock exchange by Tripathy Amit, Leepsa N.M (2018) shows that no day of monthly effect, i.e., the effect on Monday and Friday effect on Indian stock market, was observed. The January month effect in Brazilian equity market was tested by Grossi, J. C., & Malaquias, R. F. (2019). Using panel data regression model, the study confirmed that January month effect was present in the Brazilian equity market. Using EGARCH Model, Kayacetin, V., & Lekpek, S. (2016) confirmed that existence of turn of the month effect in Turkish Equity market. Tarika Singh Sikarwar, Karuna Shrivastava and Pratibha Jadon (2020) tested the Friday effect in Indian stock market and the findings of the study showed that there was Friday effect present in Indian stock market. Using OLS regression, Singh, S., & Das, C. (2020) studied the calendar anomalies in Indian services sector indices. The findings of this analysis revealed that the effects on stock indexes was January monthly and annual. Sadia Anjum (2020) examined the effects on Pakistan's stock market day, weekend effect and January effect. The research used multiple regressions, and it was determined that in Pakistan the above calendar effects occurred. The calendar effects in the stocks in Vietnam were evaluated in Pham Dan Khanh and Pham Thanh Dat (2020) and it was shown the Monetary Impact in the stock market in Vietnam. The impact in Chinese stock market on Monday, Fahad Ali and Numan Ulku (2020) discovered. The impact on the foreign exchange market of January months was examined by Eric Girardin and Fatemeh Salimi Namin (2019) and verified that the exchange rate was effective on January's month. The fact that the days of the month and month of the year occur in the crude petroleum returns in Brent and WTI is seen by Sobia Quayyoun, Mushtaq Hussain Khan, Syed Zulfiqar Ali Shah, Biagio Simonetti, and Michela Matarazzo (2019).

Shaista Wasuzzamán (2017) found that the pilgrimage of Hajj had an effect on the stock market in Saudi Arabian using the ARMA(p,q)-GARCH(1,1) model.

2. AIM AND OBJECTIVES OF THE STUDY

The goal of this analysis was to investigate whether Indian stock markets had an annual impact on the month. The following objectives were formulated for the research.

- To test the normality of daily prices of sample Indian financial sector indices, during the study period.
- To examine the April month effect on daily prices of sample Indian financial sector indices, during the study period.

3. HYPOTHESES

The study tested the following hypotheses, for the purpose of testing the objectives.

NH₀₁: The monthly prices of sample Indian Financial Sector indices are not normally distributed during the study period.

NH₀₂: There is no April month effect on sample Indian Financial Sector indices during the study period.

4. METHODOLOGY OF THE STUDY

1. Sample Selection

For the purpose of this study, NIFTY BANK, FINANCIAL SERVICES, PRIVATE BANK and PSU BANK NSE Sectoral Indices considered to study the Stock Market in India.

2. Sources of Data

The study used daily closing prices of sample Indian Financial Sector Indices, collected from official website of National Stock Exchanges of India. The other required data were collected from various books, journals and research data bases.

3. Period of the Study

This research has spanned 10 years, from 1.4.2009 to 31.03. 2019.

4. Tools Used for the Analysis

The present study used the following statistical tools, for analyzing the impact of economic events, on Indian stock market.

1. Descriptive Statistics
2. Regression Model

5. RESULTS AND DISCUSSION

5.1. Nifty Bank Index

Table 1 presents Monthly wise regular returns for the Nifty Bank Index descriptive statistical data. Table 1 indicates that in April the highest average return was obtained (0.008145). It should be noted that mean returns are reported in all months. Therefore, during these months, buyers usually sell the scripts.

Table 1 Results of Descriptive Statistics for NSE Nifty Bank Index

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
APRIL	0.008145	0.049956	5.684223	47.12534	15918.2
MAY	0.006499	0.040037	3.603287	21.79504	3612.929
JUNE	0.005136	0.039105	2.702763	23.2954	3914.965
JULY	0.005232	0.036509	5.476368	44.48992	16725.83
AUGUST	0.005078	0.043195	5.930614	47.2993	18227.02
SEPTEMBER	0.004717	0.049097	1.603191	34.39175	8380.667
OCTOBER	0.004136	0.045379	0.747631	37.26582	9754.169
NOVEMBER	0.004593	0.046795	4.192652	33.05051	8111.22
DECEMBER	0.003499	0.052533	3.178852	35.87588	9810.882
JANUARY	0.003514	0.052551	2.911177	40.24498	12612.16
FEBRUARY	0.003977	0.05357	3.853832	39.17221	11227.66
MARCH	0.004967	0.042293	2.614012	38.77516	11165.62

Source: www.nseindia.com

During the months of January and July, respectively, the highest standard default (0.052551) and lowest standard default (0.036509) were registered. This indicates that in January the market was very volatile and in July low volatility was found. Until buying, investors should be aware of the volatility. For all months, the regular return was positive. All months of the year leptokurtic was discovered, and in August the greatest value (47.2993) was discovered. Jarque-Bera values reflect the distribution of the data normally.

Table 2 Results of Regression Analysis for NSE Nifty Bank Index

Month	Coefficient	Std. Error	t-Statistic	Prob.
MAY	-0.04153	0.086545	-0.47981	0.632
JUNE	0.018575	0.091246	0.203572	0.8389
JULY	0.323438	0.092626	3.491883	0.0006
AUGUST	-0.05945	0.102701	-0.57889	0.5634
SEPTEMBER	0.035408	0.09181	0.385671	0.7002
OCTOBER	-0.00812	0.118611	-0.0685	0.9455
NOVEMBER	-0.07454	0.090587	-0.82284	0.4117
DECEMBER	-0.06372	0.084127	-0.75743	0.4498
JANUARY	-0.00748	0.066212	-0.1129	0.9102
FEBRUARY	0.014481	0.071926	0.201327	0.8407
MARCH	0.201345	0.100773	1.998012	0.0473
C	0.007452	0.004869	1.530635	0.1277
DUMMY	-0.00251	0.007413	-0.3386	0.7353
R-squared	0.09525	Mean dependent var		0.008145
Adjusted R-squared	0.031759	S.D. dependent var		0.049956
S.E. of regression	0.049156	Akaike info criterion		-3.11961
Sum squared resid	0.413187	Schwarz criterion		-2.89247
Log likelihood	300.0041	Hannan-Quinn criter.		-3.02755
F-statistic	1.500208	Durbin-Watson stat		1.897441
Prob(F-statistic)	0.128071			

Source: www.nseindia.com

The results of the regression analysis for Nifty Bank Index are presented in Table- 2. The analysis shows that negative coefficient value was employed in the months of May, August, October, November, December, and January while the positive value was noted in remaining months. The highest coefficient values was found in July and March at significant of 5% level. it confirmed that there was no difference in sample months return. Hence, the null hypothesis is accepted, because it did not confirm the anomalies in Nifty Bank Index, during the study period.

5.2. Nifty Financial Services Index

Table 3 Results of Descriptive Statistics for NSE Nifty Financial Services Index

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
APRIL	0.008281	0.04998	5.689307	44.81492	14397.7
MAY	0.006551	0.039438	3.662733	21.8933	3661.355
JUNE	0.005352	0.03676	3.105232	22.57476	3742.952
JULY	0.005493	0.03466	5.130527	39.82622	13274.92
AUGUST	0.005265	0.041806	5.609174	43.07017	14861.78
SEPTEMBER	0.00492	0.046263	1.87527	31.94938	7172.122
OCTOBER	0.004432	0.043634	1.48033	37.40986	9890.333
NOVEMBER	0.005013	0.044583	4.512685	32.76438	8061.464
DECEMBER	0.00396	0.049331	3.580535	36.02178	9990.041
JANUARY	0.003987	0.047493	4.07818	39.40256	12351.1
FEBRUARY	0.004467	0.050124	4.300427	39.36666	11463.01
MARCH	0.005197	0.041029	2.775283	39.34814	11548.3

Source: www.nseindia.com

The results of the Month-wise daily Financial Services Index descriptive statistics are presented in Table 3. The study shows that in April there was the highest average return (0.008281).

The highest value (0.050124) and the least value (0.03466) of standard deviation were noticed in February and July. The result showed that the market was highly volatile in January and minimum volatile in July. The month wise return was positively skewed for the all months. The return distribution was leptokurtic and it was the highest (44.81492) in April. Jarque- Bera test indicates that the series were normally distributed.

Table 4 Results of Regression Analysis for NSE Nifty Financial Services Index

Month	Coefficient	Std. Error	t-Statistic	Prob.
MAY	-0.03446	0.088601	-0.38898	0.6978
JUNE	0.032609	0.097767	0.33354	0.7391
JULY	0.331165	0.097874	3.383585	0.0009
AUGUST	0.030831	0.086345	0.357066	0.7215
SEPTEMBER	0.080298	0.098991	0.811162	0.4184
OCTOBER	-0.05449	0.125961	-0.43258	0.6659
NOVEMBER	-0.06789	0.095282	-0.71253	0.4771
DECEMBER	-0.09477	0.080424	-1.1784	0.2403
JANUARY	-0.01233	0.07503	-0.16434	0.8697
FEBRUARY	0.023936	0.078053	0.306667	0.7595
MARCH	0.202161	0.098197	2.058731	0.041
C	0.006805	0.004904	1.387712	0.167
DUMMY	-0.00222	0.007411	-0.29944	0.765
R-squared	0.0957	Mean dependent var		0.008281
Adjusted R-squared	0.032241	S.D. dependent var		0.04998
S.E. of regression	0.049168	Akaike info criterion		-3.11913
Sum squared resid	0.413385	Schwarz criterion		-2.89199
Log likelihood	299.9599	Hannan-Quinn criter.		-3.02707
F-statistic	1.508048	Durbin-Watson stat		1.927077
Prob(F-statistic)	0.125204			

Source: www.nseindia.com

The findings of the financial services index regression study are seen in Table 4. In May, October, November, December, January, the effects were found to be negative and for the remaining months a positive coefficient was obtained. The July and March coefficients were

high and statistically relevant at a risk level of 5 per cent. In the analysis, all of the coefficients were trivial. R squared was 0.0957. Durbin-Watson statistic was smaller than 2, and the residuals revealed a serial correlation. It showed plainly that the monthly returns had little difference. This means that the zero explanation is acknowledged because the Financial Services Index does not validate the monthly anomalies.

5.3. Nifty Private Bank Index

Table 5 Results of Descriptive Statistics for NSE Nifty Private Bank Index

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
APRIL	0.010329	0.05362	6.340965	51.90948	19572.76
MAY	0.008182	0.043016	4.528695	28.43969	6502.159
JUNE	0.006885	0.041734	4.119961	23.86956	4467.983
JULY	0.006727	0.040292	5.272525	37.76714	11989.57
AUGUST	0.00664	0.046208	5.448743	40.68936	13340.11
SEPTEMBER	0.006354	0.047393	3.692703	33.73954	8412.153
OCTOBER	0.005994	0.043395	3.821362	37.24943	10210.65
NOVEMBER	0.006453	0.047139	5.624182	38.14223	11345.85
DECEMBER	0.005206	0.051237	5.341447	40.74587	13465.15
JANUARY	0.005356	0.049657	5.290046	45.67555	17156.63
FEBRUARY	0.005715	0.053327	4.880182	42.35578	13495.67
MARCH	0.006507	0.042317	4.578087	47.12216	17344.71

Source: www.nseindia.com

Table 5 shows the findings for the Private Bank Index with simple statistics. The highest average return (0.010329) was specifically shown in Table-5 in the month of April. It must be verified that positive mean returns have been reported every month.

A standard deviation was reported in February and July with the highest values (0,05362) and the lowest (0,040292). This found that during the month of January the market was most volatile and during the analysis period less volatile during the month of July. Until buying, investors should keep this in mind. Jarque-Bera Test revealed that the sequence was naturally distributed and was thus refused at 1% of the value.

Table 6 Results of Regression Analysis for NSE Nifty Private Bank Index

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MAY	-0.01953	0.088375	-0.22104	0.8253
JUNE	0.00891	0.091909	0.096939	0.9229
JULY	0.314734	0.090606	3.473672	0.0007
AUGUST	-0.05562	0.106693	-0.52126	0.6029
SEPTEMBER	0.048983	0.101424	0.482955	0.6297
OCTOBER	-0.04641	0.129939	-0.35717	0.7214
NOVEMBER	-0.06196	0.092249	-0.67165	0.5027
DECEMBER	-0.06012	0.092839	-0.64759	0.5181
JANUARY	-0.00691	0.076007	-0.0909	0.9277
FEBRUARY	0.01123	0.080305	0.139837	0.889
MARCH	0.191816	0.106776	1.796443	0.0742
C	0.009466	0.005369	1.76319	0.0797
DUMMY	-0.00333	0.007977	-0.41675	0.6774
R-squared	0.092053	Mean dependent var		0.010329
Adjusted R-squared	0.028337	S.D. dependent var		0.05362
S.E. of regression	0.052855	Akaike info criterion		-2.97451
Sum squared resid	0.477707	Schwarz criterion		-2.74737
Log likelihood	286.6552	Hannan-Quinn criter.		-2.88245
F-statistic	1.444747	Durbin-Watson stat		1.942657
Prob(F-statistic)	0.150008			

Source: www.nseindia.com

The findings of the Private Bank Index Regression Study are seen in Table 6. The study indicates the negative coefficient value for the remaining months in May, August, October, November, December and January. The coefficients in July and March were high and statistically significant. R^2 of 0.092053 is positive, and Durbin- Watson statistic value is less than two indicated serial correlation. It showed that differences are exist in the returns of different months. Hence, the null hypothesis is accepted.

5.4. Nifty PSU Bank Index

Table 7 Results of Descriptive Statistics for NSE Nifty PSU Bank Index

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
APRIL	0.001009	0.06492	0.015282	27.38953	4560.517
MAY	0.00044	0.054838	-1.96624	36.32128	10038.13
JUNE	-0.00105	0.048744	-0.86785	29.17777	5793.091
JULY	-0.00046	0.048484	0.80081	36.6111	10284.8
AUGUST	-0.00054	0.048849	4.813009	45.53093	16480.01
SEPTEMBER	-0.00217	0.072762	-4.52628	53.32986	22009.95
OCTOBER	-0.00284	0.072468	-3.57054	36.97125	9991.796
NOVEMBER	-0.00244	0.066772	-2.00672	27.77313	5248.464
DECEMBER	-0.00283	0.06942	-1.87497	30.58592	6781.643
JANUARY	-0.00334	0.075435	-2.04017	36.60678	10171.33
FEBRUARY	-0.00397	0.083025	-3.07902	45.83264	15370.57
MARCH	-0.00174	0.068136	-4.53167	47.69	17761.03

Source: www.nseindia.com

Table 7 explains the summary of descriptive statistics, for PSU Bank Index. The results noticed that the highest mean value (0.001009) in April. It confirmed that all the months registered negative mean returns.

Standard deviation was reported at the maximum value (0.083025) in February. This has demonstrated high volatility during February and low volatility during the sample cycle in the month of July.

Table 8 Results of Regression Analysis for NSE Nifty PSU Bank Index

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MAY	0.061085	0.089277	0.684222	0.4948
JUNE	-0.04067	0.098185	-0.41417	0.6793
JULY	0.136087	0.107431	1.266736	0.207
AUGUST	0.01549	0.112032	0.138265	0.8902
SEPTEMBER	-0.03038	0.073792	-0.41175	0.681
OCTOBER	0.010537	0.085394	0.123393	0.9019
NOVEMBER	-0.00369	0.090463	-0.04083	0.9675
DECEMBER	-0.04363	0.088043	-0.49556	0.6208
JANUARY	0.008083	0.063778	0.12673	0.8993
FEBRUARY	-0.01267	0.061137	-0.20728	0.836
MARCH	0.071219	0.080279	0.887142	0.3762
C	0.003956	0.006408	0.617425	0.5378
DUMMY	-0.00744	0.010006	-0.74311	0.4584
R-squared	0.021565	Mean dependent var		0.001009
Adjusted R-squared	-0.0471	S.D. dependent var		0.06492
S.E. of regression	0.066431	Akaike info criterion		-2.51727
Sum squared resid	0.754637	Schwarz criterion		-2.29013
Log likelihood	244.5891	Hannan-Quinn criter.		-2.42521
F-statistic	0.314068	Durbin-Watson stat		1.902257
Prob(F-statistic)	0.986218			

Source: www.nseindia.com

Table 8 shows the findings of the Regression Analysis for the PSU Bank Index. The study reveals that in June, September, November, December and February the adverse coefficient was observed, while the remaining months the adverse coefficient value was observed. At a risk level of 5 percent in July the coefficient was high and statistically important. The analysis considered all of the coefficients to be minor. R squared was negative of -0.0471 and the statistical significance of Durbin- Watson was less than two serial correspondences. It revealed that the returns for various months were distinct. The null hypothesis is thus accepted.

6. CONCLUSION

The research analyzed the impact in April of the indices of the Indian financial sector including, for example, the NIFTY BANK, NIFTY FINANCIAL SERVICES, the NIFTY PRIVATE BANK and the NIFTY PSU BANK NSE. It was observed that the April Month Impact influenced the daily prices of the entire Indian sample financial market. Simultaneously, each fiscal year's April month reported an adverse impact on most months of the same year. Thus, during investing in the stock market the investors should take into account the April month impact.

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