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A STUDY ON MONTH-OF-THE-YEAR EFFECT IN NSE INDICES

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Abstract: Anomalies present the opportunity to gain abnormal returns from the market. This study attempts to investigate the presence or absence of month-of-the-year effect in the National Stock Exchange of the Indian stock market. For the purpose of the study, daily closing prices from 2021 to 2025 of ten NSE sectoral indices namely Nifty Auto, Nifty Bank, Nifty Financial Services, Nifty FMCG, Nifty Healthcare, Nifty IT, Nifty Metal, Nifty Oil and Gas, Nifty Pharma and Nifty Realty have been taken into consideration. A preliminary glimpse of the data has been considered using descriptive statistics, and further dummy variable regression and non-parametric Kruskal-Wallis test has been used. Based on the analysis, it can be said that the month-of-the-year effect is present in only two out of the ten indices which indicates the absence of the anomaly in remaining indices under study.

Index Terms - Stock Market, Stock Returns, Calendar Anomalies, Month-of-the-year

I. INTRODUCTION

A calendar anomaly basically tracks a pattern in returns in such a way that it is tied or linked to the calendar. The presence of a calendar anomaly in the stock market is in contradiction with efficient markets. There are ample calendar anomalies such as day-of-the-week effect, month-of-the-year effect, semi-month effect, quarterly effect, holiday effect, etc.

The anomaly of interest in this study is month-of-the-year effect. It is an anomaly which describes the monthly average returns of different months of the year significantly differ and some months exhibit higher/ lower returns compared to other months of the year.

The existence of month-of-the-year effect in a market would give individuals the benefit of gaining above average returns by timing their investments accordingly.

The Indian stock market mainly consists of two stock exchanges National Stock Exchange and Bombay Stock Exchange.

II. LITERATURE REVIEW

(Sahoo, 2014) investigated on the presence of month-of-the-year effect in BSE 100 Index returns during the period from 2003 to 2013. Data analysis tools like ANOVA and regression analysis had been applied to the data. Based on the analysis, it was concluded that there was an absence of month-of-the-year effect in BSE 100 returns from 2003 to 2013.

(Tuyekar, 2018) examined the presence of day-of-the-week effect in NSE sectoral indices. For the purpose of the study, the researcher had collected data of various NSE sectoral indices from 2013 to 2017. It has been concluded that day-of-the-week effect was present in the selected indices between the period under study.

(Tadepalli, Jain, & Metri, 2022) studied the broad market and sectoral indices of NSE and BSE. They only studied one anomaly i.e. turn-of-the-month effect using ARIMAX.

(Elangovan, Irudayasamy, & Parayitam, 2022) conducted a study to check for month-of-the-year effect in NSE and BSE indices. They had collected data from 2011 to 2021. The regression coefficients showed that month-of-the-year was present in the indices under study. It showed significant March effect.

(Arora & Jain, 2024) collected the data from 2015 to 2024 for studying the presence of month-of-the-year effect in NSE financial services index. It was found that there is an absence of the anomaly under study from 2015 to 2024 in the index under study. This shows the disappearance of the anomaly from the market.

(Pramath, Kaliyaperumal, & Rudra, 2024) analyzed the data of Nifty 50 and BSE Sensex from 1996 to 2021 using GARCH family models to test for month-of-the-year effect. The findings describe the presence of month-of-the-year effect in both indices under study during the time period under study.

(Daliwala, 2026) recently conducted a research on month of the year effect on Nifty 50 and Bank Nifty of the Indian stock market. Using the dummy variable regression for analysis, it was reported by the research that the anomaly did not show strong presence in the indices under study.

Research Gap: Based on the review of literature it can be said that an anomaly can appear, reappear or disappear. Hence, it becomes important to check whether the anomaly is present in the recent times. Also, conducting the study on sectoral indices is an out-of-the-box study as recent investment is flowing towards sectoral indices.

III. RESEARCH METHODOLOGY

3.1 Objectives of the study:

- i. To analyze the basic descriptive statistics like mean, standard deviation, kurtosis, and skewness for monthly returns for selected NSE sectoral indices
- ii. To find out the presence of month-of-the-year effect in selected NSE sectoral indices

3.2 Data collection:

The daily closing prices have been collected for the 10 sectoral indices from January 2021 to December 2025. The daily closing prices have been converted into returns.

3.3 Significance of the study:

If the anomaly is present then it can be beneficial to investors as they can take advantages of their investment and get better returns by timing their investments.

3.4 Scope of the study:

The scope is limited to NSE indices only and the top ten sectoral indices in terms of market capitalization have been selected for the study. The indices represent the key sectors that significantly influence the Indian stock market. The ten indices under study are:

- i. Nifty Auto
- ii. Nifty Bank
- iii. Nifty Financial Services
- iv. Nifty FMCG
- v. Nifty Healthcare
- vi. Nifty IT
- vii. Nifty Metal
- viii. Nifty Oil and Gas
- ix. Nifty Pharma
- x. Nifty Realty

3.5 Data Analysis:

To study the distribution pattern of the returns, descriptive statistics has been calculated. Further, dummy variable regression has been used and the non-parametric kruskal-wallis test has been applied for further testing.

3.6 Hypothesis:

Ho: The mean returns of the index every month of the year are equal

3.7 Limitations of the study:

- The study is only limited to 10 NSE sectoral indices.
- The general limitations of the tests used remain persistent.

IV. RESULTS AND DISCUSSION

Table 4.1: Monthwise mean returns for all indices under study

	Nifty Auto	Nifty Bank	Nifty Financial Services	Nifty FMCG	Nifty Healthcare	Nifty IT	Nifty Metal	Nifty Oil and Gas	Nifty Pharma	Nifty Realty
Jan	0.002	-0.001	-0.001	-0.000	-0.002	-0.003	-0.001	0.000	-0.002	-0.001
Feb	-0.001	0.001	0.000	-0.002	-0.001	-0.001	0.001	-0.000	-0.001	-0.000
Mar	0.000	0.001	0.001	0.002	0.002	0.000	0.003	0.002	0.001	0.001
Apr	0.002	0.002	0.001	0.001	0.002	-0.003	0.003	0.002	0.002	0.001
May	0.003	0.001	0.001	0.001	-0.000	0.001	0.001	0.000	-0.000	0.002
Jun	0.002	0.000	0.000	0.000	0.002	0.002	-0.000	0.001	0.001	0.002
Jul	0.001	0.001	0.001	0.002	0.002	0.001	0.003	0.001	0.003	0.003
Aug	0.001	0.000	0.000	0.001	0.000	0.002	0.000	0.000	0.000	-0.000
Sep	0.001	0.000	0.000	0.001	0.000	-0.001	0.002	0.000	0.000	0.003
Oct	-0.000	0.001	0.001	-0.001	-0.000	0.000	-0.000	-0.000	-0.000	0.000
Nov	0.001	0.000	0.001	0.000	0.001	0.003	0.001	0.001	0.000	0.002
Dec	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.000	0.000	0.000

Interpretation: From table 4.1 it is evident that for eight out ten indices under study, January has exhibited negative mean returns. March, July, November and December are showing positive mean returns for all the indices under study.

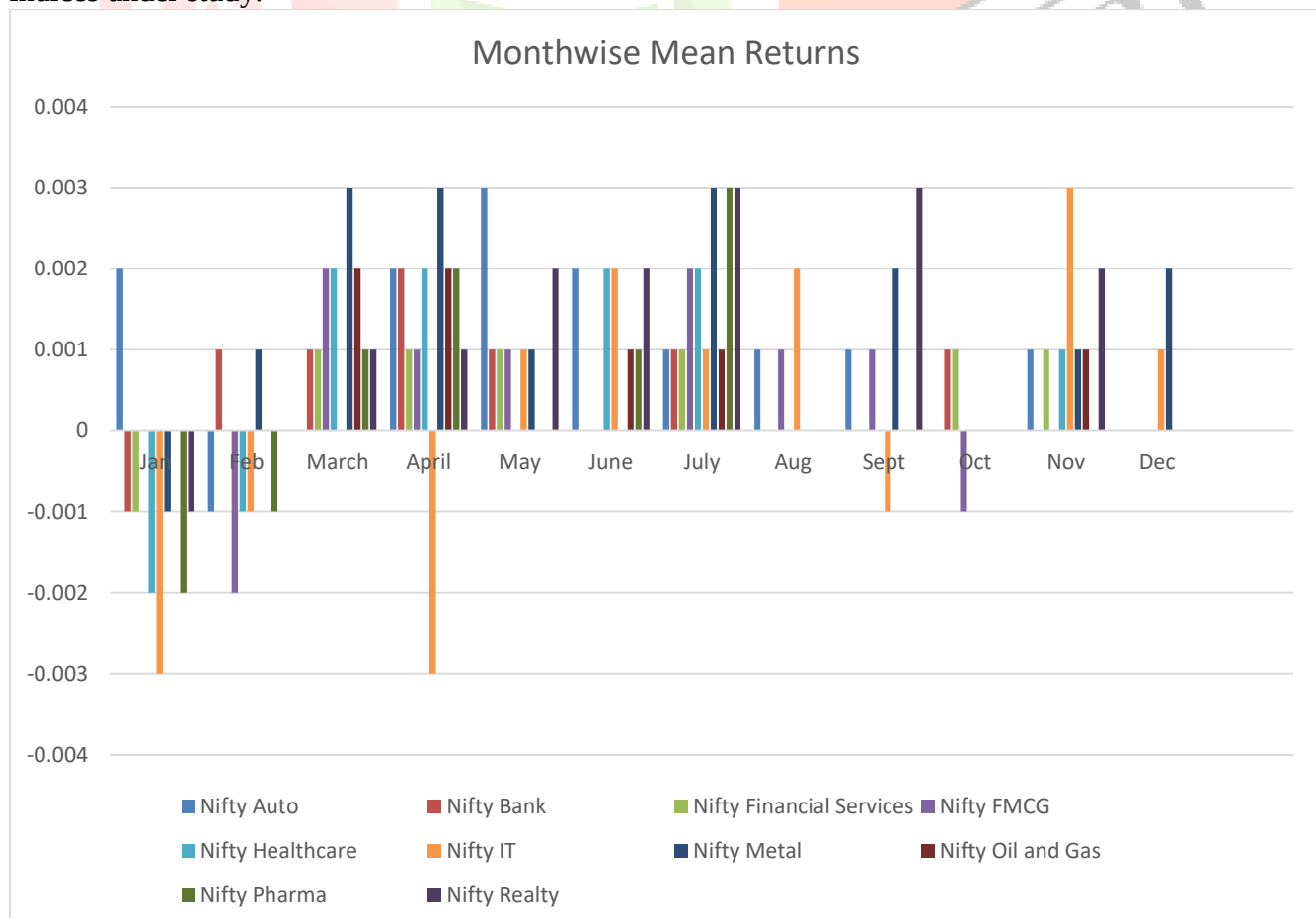


Table 4.2: Monthwise standard deviation of returns for all indices under study

	Nifty Auto	Nifty Bank	Nifty Financial Services	Nifty FMCG	Nifty Healthcare	Nifty IT	Nifty Metal	Nifty Oil and Gas	Nifty Pharma	Nifty Realty
Jan	0.013	0.012	0.011	0.008	0.011	0.016	0.018	0.015	0.011	0.019
Feb	0.015	0.017	0.016	0.010	0.011	0.014	0.021	0.015	0.011	0.020
Mar	0.014	0.013	0.012	0.010	0.009	0.013	0.019	0.013	0.010	0.018
Apr	0.014	0.014	0.014	0.009	0.010	0.015	0.019	0.013	0.012	0.021
May	0.012	0.012	0.011	0.009	0.010	0.014	0.021	0.011	0.011	0.017
Jun	0.011	0.013	0.013	0.008	0.010	0.012	0.019	0.018	0.009	0.019
Jul	0.009	0.008	0.008	0.009	0.009	0.013	0.013	0.010	0.010	0.013
Aug	0.011	0.009	0.009	0.008	0.009	0.012	0.015	0.010	0.009	0.015
Sep	0.011	0.009	0.008	0.007	0.009	0.012	0.015	0.010	0.008	0.019
Oct	0.012	0.010	0.009	0.009	0.009	0.012	0.015	0.010	0.009	0.018
Nov	0.011	0.008	0.008	0.007	0.009	0.012	0.014	0.011	0.009	0.016
Dec	0.010	0.009	0.009	0.008	0.008	0.012	0.014	0.011	0.008	0.015

Interpretation: Table 4.2 shows the standard deviation of the returns for the ten indices under study across different months of the year. July is the month which exhibits the lowest standard deviation whereas other months like February and April are showing higher standard deviation. This indicates more variation in returns during those months.

Table 4.3: Monthwise skewness of returns for all indices under study

	Nifty Auto	Nifty Bank	Nifty Financial Services	Nifty FMCG	Nifty Healthcare	Nifty IT	Nifty Metal	Nifty Oil and Gas	Nifty Pharma	Nifty Realty
Jan	-0.025	-0.712	-0.547	-0.211	-0.025	0.388	-0.210	-0.600	0.039	-0.416
Feb	-0.265	0.774	0.595	0.062	-0.155	-0.301	0.115	0.032	-0.042	-0.074
Mar	-0.353	-0.349	-0.236	-0.072	0.016	0.007	-0.316	-0.691	0.005	-0.319
Apr	-0.521	-0.500	-0.249	-0.181	-0.433	-0.646	-0.949	-0.975	-0.453	-0.635
May	0.022	0.533	0.281	0.190	0.302	0.422	-0.168	0.217	0.681	0.100
Jun	0.761	-1.780	-1.926	1.484	0.260	-0.023	-1.732	-2.098	0.363	-0.740
Jul	0.099	0.129	0.211	0.631	-0.063	0.556	0.553	-0.669	-0.437	-0.062
Aug	0.282	0.372	0.296	0.476	-0.095	-0.358	-0.963	0.009	-0.404	0.071
Sep	-0.065	-0.188	-0.249	-0.204	0.514	-0.475	-1.019	-0.477	0.361	1.439
Oct	0.291	-0.187	-0.146	-0.577	-0.211	-0.170	0.073	-0.205	-0.174	0.065
Nov	-1.041	-0.952	-0.761	0.010	0.008	0.774	-0.310	-0.490	0.077	-0.698
Dec	-0.437	0.128	0.081	-0.280	0.089	0.284	-0.415	-0.544	0.237	-0.397

Interpretation: Table 4.3 displays that the skewness in the months of January and April have more negative skewness as compared to other months which indicates longer left tail. Whereas, July displays slightly positive skewness for six out of ten indices indicating slightly longer right tail for those indices.

Table 4.4: Monthwise kurtosis of returns for all indices under study

	Nifty Auto	Nifty Bank	Nifty Financial Services	Nifty FMCG	Nifty Healthcare	Nifty IT	Nifty Metal	Nifty Oil and Gas	Nifty Pharma	Nifty Realty
Jan	3.265	4.252	4.190	2.857	2.577	3.390	3.884	5.293	2.570	5.070
Feb	5.838	9.841	9.463	4.599	4.111	3.944	3.486	3.685	4.029	5.000
Mar	3.467	3.660	3.610	3.942	2.873	2.861	3.458	4.135	2.951	3.451
Apr	5.273	4.761	4.517	3.350	3.411	4.299	6.889	5.119	3.881	4.980
May	3.191	5.178	4.511	3.448	4.943	8.918	5.244	3.488	5.481	3.715
Jun	6.365	18.314	18.238	10.049	4.859	4.194	12.031	20.465	5.152	9.369
Jul	3.820	2.886	3.067	3.984	5.332	5.448	5.083	5.733	8.174	3.925
Aug	5.859	4.821	4.866	3.002	3.541	3.730	5.499	4.832	4.264	3.707
Sep	4.839	3.941	3.583	3.652	4.907	3.723	6.608	3.787	4.439	8.632
Oct	4.780	3.619	3.279	3.973	2.465	2.934	3.143	3.262	2.592	4.111
Nov	5.127	6.842	6.191	3.716	2.738	4.204	4.569	4.227	2.606	5.072
Dec	2.938	5.586	4.907	3.230	3.494	4.621	4.397	4.645	3.122	3.958

Interpretation: Table 4.4 exhibits kurtosis of the returns for all indices under study. June shows the highest kurtosis across the data. This shows the high probability of extreme returns during June.

Table 4.5: Augmented Dickey Fuller Test results

ADF Test	T Stat	Prob
Nifty Auto	-33.45703	0.0000
Nifty Bank	-34.12662	0.0000
Nifty Financial Services	-34.42775	0.0000
Nifty FMCG	-34.20681	0.0000
Nifty Healthcare	-33.42118	0.0000
Nifty IT	-33.12621	0.0000
Nifty Metal	-35.03262	0.0000
Nifty Oil and Gas	-34.05271	0.0000
Nifty Pharma	-34.31943	0.0000
Nifty Realty	-31.87376	0.0000

Interpretation: The value of 0.0000 shows that the data is stationary.

Table 4.6: Dummy Variable Regression for Month-of-the-Year effect

	Nifty Auto		Nifty Bank		Nifty Financial Services		Nifty FMCG		Nifty Healthcare	
	T value	Prob	T value	Prob	T value	Prob	T value	Prob	T value	Prob
Jan	1.797	0.0725	-0.655	0.513	-0.992	0.322	-1.075	0.282	-1.754	0.080
Feb	-2.001	0.0456	0.858	0.391	0.948	0.344	-0.603	0.547	0.508	0.611
March	-1.250	0.2114	0.855	0.393	1.432	0.152	2.232	0.026	2.550	0.011
April	0.039	0.9692	1.522	0.128	1.426	0.154	1.756	0.079	2.499	0.013
May	0.417	0.6768	1.039	0.299	1.260	0.208	1.623	0.105	1.033	0.308
June	-0.191	0.8485	0.677	0.498	1.103	0.270	1.267	0.205	2.673	0.008
July	-0.692	0.4891	1.025	0.305	1.434	0.152	2.662	0.008	3.158	0.002
Aug	-0.745	0.4562	0.620	0.535	1.160	0.246	1.725	0.084	1.519	0.129
Sept	-0.437	0.6624	0.894	0.371	0.948	0.343	1.256	0.210	1.493	0.136
Oct	-1.393	0.1639	1.106	0.269	1.174	0.241	-0.370	0.711	0.881	0.379
Nov	-0.909	0.3636	0.708	0.479	1.039	0.299	0.828	0.408	2.195	0.029
Dec	-1.061	0.2890	0.761	0.447	0.773	0.440	0.989	0.323	1.539	0.124
	P-val	0.495	P-val	0.993	P-val	0.983	P-val	0.023	P-val	0.042

	Nifty IT		Nifty Metal		Nifty Oil and Gas		Nifty Pharma		Nifty Realty	
	T value	Prob	T value	Prob	T value	Prob	T value	Prob	T value	Prob
Jan	-0.228	0.820	-0.675	0.499	0.280	0.780	-1.775	0.076	-0.634	0.527
Feb	-0.600	0.548	0.804	0.422	-0.417	0.677	0.483	0.629	0.162	0.871
March	0.258	0.796	1.843	0.066	0.990	0.322	2.479	0.013	0.726	0.468
April	-1.270	0.204	1.788	0.074	1.035	0.301	2.498	0.013	1.101	0.271
May	0.556	0.578	0.712	0.477	0.072	0.943	1.000	0.317	1.275	0.203
June	1.097	0.273	0.452	0.652	0.183	0.854	2.270	0.024	1.143	0.253
July	0.858	0.391	1.699	0.090	0.405	0.686	3.185	0.001	1.652	0.098
Aug	1.178	0.239	0.612	0.540	0.269	0.788	1.394	0.163	0.082	0.934
Sept	-0.230	0.818	1.139	0.256	-0.026	0.979	1.547	0.122	1.555	0.120
Oct	0.351	0.725	0.196	0.845	-0.556	0.578	0.823	0.410	0.684	0.494
Nov	1.562	0.118	0.773	0.440	0.477	0.633	1.954	0.050	1.082	0.280
Dec	0.936	0.349	1.513	0.130	0.219	0.827	1.789	0.073	0.679	0.497
	P-val	0.223	P-val	0.653	P-val	0.936	P-val	0.063	P-val	0.821

Interpretation: The dummy variable regression test carried out to test for the presence of month-of-the-year effect shows that the month-of-the-year effect is only present in two indices i.e. Nifty FMCG and Nifty Healthcare.

Table 4.7: Kruskal Wallis test for Month-of-the-Year effect

Kruskal Wallis	Chi-Squared	P-Value
Nifty Auto	11.398	0.4105
Nifty Bank	3.6587	0.9789
Nifty Financial Services	3.9121	0.9724
Nifty FMCG	20.529	0.0386
Nifty Healthcare	19.773	0.0485
Nifty IT	10.475	0.4882
Nifty Metal	10.584	0.4787
Nifty Oil and Gas	10.5	0.4861
Nifty Pharma	17.385	0.0970
Nifty Realty	7.0972	0.7912

Interpretation: The results of the Kruskal wallis test which are shown in table 4.7 show the presence of month-of-the-year effect in only two indices out of ten. The two indices exhibiting month-of-the-year effect are Nifty FMCG and Nifty Healthcare.

V. CONCLUSION

The descriptive statistics exhibit that there are different returns across various months such as January showing negative mean returns for majority of the indices. While months like March, July, November and December are showing positive returns for majority of the indices. Further, the dummy variable regression test shows that there is a presence of the month-of-the-year effect in only two indices under study. Also, the non-parametric Kruskal wallis test also confirms that month-of-the-year effect is only present in two indices out of the ten under study. Hence, it is concluded that month-of-the-year effect is only present in Nifty FMCG and Nifty Healthcare from 2021 to 2025.

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