Does The Nifty Sectoral Indices Shake Hands With Nifty? : A Time Series Analysis

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Abstract: Capital market in absolute sense is regarded as the mirror of the economy. Economy is a combination of various sectors. A sectoral index acts as barometer for the performance of that sector. As sectors are interrelated, this calls for studying the vulnerability of the each sector with the market as a whole .With an attempt to contribute to the meager amount of research on the sectoral indices of Indian capital market, this study aims to analyze the dependence of Nifty on its sectoral variants. This research will help in identifying the sector that has been the cause of movement in the market which can be beneficial in understanding and predicting the potential movement in the market by giving an inside of the vicious circle. The study include unit root test, co-integration and Granger causality test. The results of unit root test reveal that all the indices are non-stationary. It was observed that there are no co-integrating equations which was also discovered in the previous papers. The granger casualty test reveal that Auto, Bank, Energy and pharma are the sectors that have causal relation with the Nifty and Financial services, FMCG and IT sectors are the ones that do not have any causal relation with the Nifty.

JEL Classification: G1, P43, E320, C1

Key words: Co-integration, Nifty, Sectoral indices, Causality, vicious circle of poverty.

1. INTRODUCTION

In the midst of the mature and dynamic markets the importance of benchmarking has increased several times. One such benchmark is NIFTY which is an index of India's largest stock exchange National Stock Exchange (NSE). There have been several researches conducted to study the effect of various economic and financial factors on NIFTY. Research on the determinants of NIFTY is of utmost importance as it explains the behavior of the index in the long as well as short run. Various researches like Kedar nath

Mukherjee, R. K. Mishra (2005), Dr. Kapil Sharma, Amit Dixit (2013) have studied the co-movement of Indian stock market with the global markets factors but there is no research that studied the co-movement of Indian Stock Market as a whole along with the various sectors and themes of the market. It is also suggested that how dynamic the markets across the world have evolved. It has become very important to study its co-movement with all the variables. This paper serves as a background for the analyis and policy makers who help to restructure the market based on the cause and effect of various sectoral indices on NIFTY. It will help in figuring out if the sectoral indices shake hand with the market index, if so then which is the index that shakes hand first. Following content is organized as review of literature, data and methodology, discussion on results, conclusion and implications of the study and scope for further research.

2. LITERATURE REVIEW

In research it is indeed of utmost importance to know what is known to the body of knowledge and what can be discovered as it saves resources and enables study to be productive. The gift of knowing helps in identifying the right methodology and the enables in tapping the area untapped. With this very objective the literature review has been performed. The rational behind the review is to study the work done by Indian researchers and then visiting the work of international researhers, both in a cronollogical order.

Choudhary (1996) have studied the relationship between the stock prices and the demand for money in Canada and USA. The study reveals that stock market is the major cause for demand for money in both these countries. These results show that evidence exists of feedback between the real money stock, real income, the interest rate (short- or long-term), and real stock prices in both countries.

Kumari & Mahakund (2012) using the unit root test, Johansen and Juselius co-integration with VECM model and granger casualty test have studied the relationship between demand for money and its determinants. The co-integration results show more than two co-integration vector. The study reveals that there is unidirectional causality from stock market to demand for money, from demand for money to exchange rate and money demand for money to interest rate.

Patel (2012), have studied the co-integration and causality between the macroeconomic determinants on the performance of Indian stock exchange. The results of the study reveal that the interest rates have no co-integration with the performance of stock market. It also revealed that exchange rate, IIP, gold prices, silver prices, oil prices, inflation and money supply are co-integrated with stock market. The causality study revealed that causality runs from exchange rate to stock market to IIP to oil prices.

Mukherjee & Misra (2006) in their work have studied the co-movement between stock markets of India and 22 countries. The study employs Geweke statistics including Co-integration, causality and polled regression. The study reveals that there is significant feedback relationship and also extensive flow of information. The study also reveals that bi-lateral exchange rate is the most significant factor that explains the unidirectional relationship among the markets.

Sharma (2014) have studied the relationship between the sectoral indices and the market index. The study employed augmented dickey-fuller unit root test, Vector Auto regression model, Johansen co-integration and the granger causality test. The results revealed that there is no co-integration in the closing

values of the selected indices, the causality study revealed that there is unidirectional causality between the pairs Bank and Auto, Bank and metal, metal and IT and metal and Nifty.

Singh (2014) in the paper have studied the relationship between macroeconomic variables and stock market indices. The study employed correlation, multivariate stepwise regression and granger causality test. The study revealed that there is significant relationship among the variable and the indices. It was concluded that the IIP is the primary cause of increase in the market improvement. The study calls invest in gold the primary reason that erodes the stock market activity.

Deo, (2014) have worked on the relationship of overall market and other indices. The study employs Johansen co-integration and Engle Granger test for the same. The results of the study reveal that there exists co-integration equation between the variables. The causality test reveal that in the long run all the 4 indices move in the equilibrium with mid and small indices being more volatile and dynamic.

Mukherjee & Misra, (2005) have studied the lead-lag relationship between the equity spot market and equity futures and their returns and volatility. For the research the 5 stocks have been considered. The results revealed that the lead co-efficient to be more significant suggesting strong bi-directional relationship among spot and futures market. This also suggests that the spot market plays leading role in disseminating information. The volatility spillover results suggest spillover from spot to future market is stronger.

Tripathi, Parashar, & Jaiswal (2014) have studied the relationship between selected macroeconomic variables and selected sectoral indices of National Stock Exchange. The study included external macro-economic variables and NIFTY based sectoral indices. The study employed multi regression equation model, Karl Pearson co-efficient of correlation. The results revealed that there exists a significant level of dependence among the variable but FII plays the most significant role on all the sectors where as other factors are specific to each sector.

Majid, Aziz, & Harmen (2007) have studied the relationship between for money demand and real stock prices in Indonesia and also to determine the causality between the same. The results revealed that the real stock prices have positive significant role in determining the demand for money. The study also revealed bi-directional causality between real stock prices and real narrow money.

Rua & Nunes (2009) in their study employed Wavelet analysis. The results reveals that the co-movements between markets is stronger at the lower frequencies. The study also reveal degree of co-movement changes over time.

Yamori (2011) has studies the relationship between the Japanese stock market and the commodity market during the 2008 financial crisis. The results of the study reveal that during the period of crisis the correlation between the stock market and commodity market has been high. The study also revealed that the commodity market has lost its charm as an alternative investment option as there is similar movement and hence lacks opportunity for portfolio diversification.

Phylaktis & Xia (2009) in their paper concluded that the European and Latin American markets have high beta with the regional market on the contrary Asian markets are more correlated to US market. The study also show the pattern of correlation change overtime i.e., high correlation during crisis. The study also confirms sector heterogeneity of contagion.

Ahmed (2011) has studied the relationship between the various sectoral indices in the Egyptian market with the market as a while. The study aims to discover if there exists a relationship, is it sensible to diversify domestically. The results of the study reveal that there is only single co-integration vector within all the sectors the casualty study reveal a short sun unidirectional causal relationship between the economic sectors.

Based on the articles reviewed, it is evident that most of the studies focused on the relationship of various macro-economic factors on the market. However, there has been a minimal work that observes the relationship of sectoral index on the market. It was also noticed that the study conducted on the similar lines faced drawbacks. Hence, this study also aims to overcome the gap.

3. DATA AND METHODOLOGY

This paper aims to study the relationship of sectoral indices with the overall market index. In order to facilitate the study 13 indices including the Nifty index have been selected. The sectoral indices include Nifty Financial Services Index, Nifty FMCG Index, Nifty Auto Index, Nifty Metal Index, Nifty Media Index, Nifty Energy Index, Nifty Private Bank Index, Nifty Bank Index, Nifty IT Index, Nifty Pharma Index, Nifty PSU Index, and Nifty Realty Index. Nifty 50 index have been selected to represent the overall market. The selection of the indices is based on making the study more dynamic, robust and complete. Data for 7 years starting from April 2009 to November 2016 has been used for the analysis. The frequency of the data is fixed at daily rather than monthly, yearly, semiannually or quarterly. The daily data for the 13 indices have been collected from NSE's official website *www.nseindia.com*. Year 2008 marked one of the biggest crisis in the world financial history whose repercussions were felt across the world. The event led to correction in the financial markets across the world. The year 2009 was the year from when the recovery of the markets started and a normal flow of operations in the markets was resumed, as mentioned in (Solomon, 2014). Due to this reason primarily data from the financial year 2009 was collected. In order to make the study most relevant and latest the data till 2016 is considered. (SHARMA, 2014) has studied the impact of sectoral indices on the nifty but the study is restricted to 2014. To check the structure of the data descriptive statistics have been performed. To understand the primary relationship of indices correlation analysis has been run. In order to identify the presence of unit root Augmented Dickey Fuller unit root test was performed. To find the detailed relationship of the indices co-integration test was performed. Finally Granger causality test was performed to evaluate the cause and effect of the indices on the overall market. The results for the test were obtained by EVIEWS statistical software package.

4. RESULTS AND INFERENCES

Descriptive Statistics

The first step in the journey involves analysis of its characteristics. This study help in understanding and commenting on the results of the major tests (Co-integration, casualty test in this case) in an organized and better fashion. This will help in understanding the normality leading to reliability, credibility and validity of the results of the final tests. The characteristics of the data can be analyzed using descriptive statistics.

The results of the descriptive statistics depicted in Table 1 suggest that the data is normally distributed. The skewness of the data for all the indices is less than 1 in absolute values. All the indices except FMCG are positively skewed. The skewness closer to zero suggests that the data is symmetrical. Since the skewness

Table 1
Descriptive statistics on Indices

	AUTO	BANK	ENERGY	FIN_SER	FMCG	IT	MEDIA	METAL	NIFTY	PHARMA	PSUBK	PVTBK	REALTY
Mean	5399	12708	8494	5198	14406	8042	1804	2920	6356	7261	3230	6254	268
Median	4515	11476	8437	4714	15257	6912	1712	2726	5913	6031	3229	5448	228
Maximum	10459	20555	10603	8386	23186	12856	3128	5017	8996	13831	5376	11501	633
Minimum	1346	4211	6619	1719	5009	2380	761	1496	3060	2176	1574	1503	128
Std. Dev.	2259	3700	786	1516	5231	2525	475	894	1374	3260	673	2486	116
Skewness	0.454	0.401	0.253	0.389	-0.171	0.121	0.440	0.584	0.341	0.390	0.287	0.463	1.226
Kurtosis	1.881	2.059	2.195	2.031	1.540	1.761	2.465	2.284	1.880	1.675	2.972	1.881	3.385
Jarque-Bera	170	125	74	126	184	130	87	154	140	193	27	172	503
Probability	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	1961	1961	1961	1961	1961	1961	1961	1961	1961	1961	1961	1961	1961

Source: Author's Calculations

of the data is less than 0.5 on both the sides in all the indices it is negligible and the data is proved to be normally distributed.

According to the kurtosis coefficient the data is less volatile. Since the coefficient is less than the threshold of 3, the data is Platykurtic. The data will depict flatter peaks than the normal distribution. Compared to a normal distribution, its tails are shorter and thinner, and often its central peak is lower and broader. The Realty index is opposite to the majority. Realty index is above the threshold of 3 with a negligible margin. This suggests that Realty index is leptokurtic having higher peaks and fat tails.

Correlation Analysis

In the world of finance, a statistical gauge of how two securities or indexes moves in relation to each other is correlation. It is used in advanced portfolio management. Correlation is computed into what is known as the correlation coefficient, which ranges between -1 and +1. The perfect positive correlation (a correlation co-efficient of 1) implies that if one index moves, up or down, the other index will move in lockstep, in the same direction. Alternatively, perfect negative correlation means, that if one index moves in one direction the index that has negative correlation will move in the opposite direction. If the correlation is 0, the movements of the indexes are said to have no correlation; they are completely random.

From Table 2 it is evident that except the realty and metal index all the other indices have a positive correlation with the market index (Nifty). This means that all these sectors move in a positive direction with the overall market. In the case of Auto, Bank, Financial services, FMCG, IT, Media, Pharma and Private bank the relation is significantly high. Where as in the case of Public sector undertaking (PSU) banks and energy the relation is moderately positive. It can be noticed that the performance of the realty sector and metal in the past 5 years have been in the negative direction of the market. The significantly high magnitude of relationship with Banks, Financial services and IT sector can be justified by the high level of weightage the sectors have in the Nifty index.

Unit Root Test

In econometrics unit root test is performed to find whether the data is stationary or non-stationary. In order to perform co-integration it's a prerequisite that the data must be non-stationary. In this test the null hypothesis is sated as the data has a unit root test and alternative hypothesis is that the data is stationary. There are two ways to test the data i.e., based on t-statistic and based on probability. In t-statistic method if the t-statistic coefficient is smaller than the critical value in absolute value then the null hypothesis is accepted and the data is considered to be non-stationary and vice versa. In the probability method if the probability coefficient is greater than 0.05 then the null hypothesis is accepted and vice-versa. This test forms as the foundation for the co-integration test. This is because; co-integration can only be performed if all the variables are non-stationary.

The test has been performed at level with constant and depicted in the Table 3. All the results are obtained with a lag of either 1 or 0. The results on the basis of t-statistic suggest that all the indies are non-stationary as the t-statistic coefficient of all the indices are lesser than the critical value of t-statistic at even 1% significance. Moreover the probability method results suggest the same result as in all the cases the probability coefficient is greater than the threshold of 0.05. This gives a clearance for performing the co-integration test and suggests that there exists a unit root.

Table 2
Correlation analysis on Sectoral Indices

	AUTO	BANK	ENERGY	FIN_SER	FMCG	IT	MEDIA	METAL	NIFTY	PHARMA	PSUBK	PVTBK	REALTY
AUTO	1.000	0.971	0.212	0.979	0.926	0.943	0.915	-0.554	0.982	0.969	-0.060	0.990	-0.621
BANK	0.971	1.000	0.313	0.998	0.875	0.905	0.911	-0.432	0.985	0.930	0.140	0.986	-0.520
ENERGY	0.212	0.313	1.000	0.288	-0.026	0.147	0.394	0.561	0.322	0.066	0.575	0.204	0.473
FIN_SER	0.979	0.998	0.288	1.000	0.895	0.915	0.917	-0.468	0.988	0.944	0.096	0.992	-0.543
FMCG	0.926	0.875	-0.026	0.895	1.000	0.901	0.807	-0.732	0.898	0.938	-0.222	0.922	-0.773
IT	0.943	0.905	0.147	0.915	0.901	1.000	0.851	-0.535	0.950	0.961	-0.080	0.924	-0.641
MEDIA	0.915	0.911	0.394	0.917	0.807	0.851	1.000	-0.388	0.918	0.872	-0.011	0.916	-0.376
METAL	-0.554	-0.432	0.561	-0.468	-0.732	-0.535	-0.388	1.000	-0.452	-0.658	0.675	-0.557	0.800
NIFTY	0.982	0.985	0.322	0.988	0.898	0.950	0.918	-0.452	1.000	0.952	0.063	0.981	-0.533
PHARMA	0.969	0.930	0.066	0.944	0.938	0.961	0.872	-0.658	0.952	1.000	-0.165	0.966	-0.683
PSUBK	-0.060	0.140	0.575	0.096	-0.222	-0.080	-0.011	0.675	0.063	-0.165	1.000	-0.024	0.397
PVTBK	0.990	0.986	0.204	0.992	0.922	0.924	0.916	-0.557	0.981	0.966	-0.024	1.000	-0.603
REALTY	-0.621	-0.520	0.473	-0.543	-0.773	-0.641	-0.376	0.800	-0.533	-0.683	0.397	-0.603	1.000

Source: Author's Calculations

Table 3
Unit root analysis on Indices

Index	't' statistic	Probability
Auto	-0.947	0.7734
Bank	-1.755	0.4035
Energy	-3.335	0.0135
Fin Ser	-1.722	0.42
FMCG	-1.346	0.6098
IT	-2.11	0.2407
Media	-1.659	0.4516
Metal	-1.691	0.4358
Nifty	-1.903	0.3309
Pharma	-1.066	0.731
PSBK	-2.933	0.0418
PVTBK	-1.167	0.6908
Realty	-1.542	0.512
Critical Values		
Levels	T statistic	
1%	-3.433	
5%	-2.863	
10%	-2.567	

Source: Author's Calculations

Co-Integration

In statistics co-integration determines the long-term stationary relationship between the variables. Unlike co-relation that tends to show relationship between completely random variable co-integration mitigates the randomness between the variables. The rational for interpreting the results were adopted from the EVIEWS Guide.

Johansen and Juselius (1990) provides two indicators namely trace test and maximum eigenvalue test to determine the number of co-integrating vectors in the model. For the test all the 13 indices have been considered. The test assumes no trend and tests VAR. The lag for the test is 1 to 1 and there are no exogenous variables.

The results in the table 4 reveal that there are no co-integrating equation between the indices as the p-value in all the cases is greater that 0.05. This also suggest that there lacks a stationary relationship between the indices.

In work of SHARMA, (2014) also it was observed that the sectoral indices and Nifty lacks existance of co-integrating equation. This paper too suggest a similar picture suggesting that the markets and the sectors have failed for form a co-movement over the course of time.

Table 4
Co-integration analysis of Indices

Sample (adjusted): 3 1961
Included observations: 1959 after adjustments
Trend assumption: Linear deterministic trend
Series: AUTO BANK ENERGY FIN_SER FMCG IT MEDIA METAL NIFTY PHARMA PSUBK PVTBK REALTY
Lags interval (in first differences): 1 to 1
Unrestricted Co integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.044913	423.1763	NA	NA
At most 1	0.033841	333.1548	334.9837	0.0586
At most 2	0.029231	265.7116	285.1425	0.2351
At most 3	0.023149	207.5946	239.2354	0.5155
At most 4	0.020831	161.7135	197.3709	0.6841
At most 5	0.018424	120.4753	159.5297	0.8432
At most 6	0.013357	84.04540	125.6154	0.9516
At most 7	0.009448	57.70247	95.75366	0.9721
At most 8	0.007650	39.10517	69.81889	0.9598
At most 9	0.006547	24.06109	47.85613	0.9412
At most 10	0.003069	11.19370	29.79707	0.9564
At most 11	0.002185	5.172925	15.49471	0.7902
At most 12	0.000453	0.887647	3.841466	0.3461

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.044913	90.02148	NA	NA
At most 1	0.033841	67.44324	76.57843	0.2578
At most 2	0.029231	58.11693	70.53513	0.4202
At most 3	0.023149	45.88118	64.50472	0.7821
At most 4	0.020831	41.23820	58.43354	0.7461
At most 5	0.018424	36.42987	52.36261	0.7160
At most 6	0.013357	26.34293	46.23142	0.9362
At most 7	0.009448	18.59730	40.07757	0.9879
At most 8	0.007650	15.04408	33.87687	0.9751
At most 9	0.006547	12.86739	27.58434	0.8921
At most 10	0.003069	6.020777	21.13162	0.9825
At most 11	0.002185	4.285278	14.26460	0.8281
At most 12	0.000453	0.887647	3.841466	0.3461

**MacKinnon-Haug-Michelis (1999) p-values; Source: Author's Calculations

Granger Causality Test

The data for 13 indices including the nifty were analyzed using pair wise granger causality test. The test gave 78 pairs of results. Since the test is based on Nifty, the pairs which suggested relations with nifty were considered for analysis, 12 such pairs were identified. Table 4 reveals those pairs. The pairs give 3 types of results i.e, unidirectional relationship, bidirectional relationship or no relationship.

The rationale behind the interpreting is adopted from the user guide of the EVIEWS which stated that if probability is greater than 0.05 then the null hypothesis cannot be rejected and if the probability is lesser than 0.05 then the null hypothesis can be rejected.

Table 5
Results of Granger Causality test

Null Hypothesis	Observations	F-Statistic	Probability
NIFTY does not Granger Cause AUTO	1959	0.62380	0.536
AUTO does not Granger Cause NIFTY		3.52339	0.0297
NIFTY does not Granger Cause BANK	1959	3.10843	0.0449
BANK does not Granger Cause NIFTY		3.90504	0.0203
NIFTY does not Granger Cause ENERGY	1959	3.25459	0.0388
ENERGY does not Granger Cause NIFTY		4.63873	0.0098
NIFTY does not Granger Cause FINSER	1959	1.10904	0.3301
FINSER does not Granger Cause NIFTY		2.40360	0.0907
NIFTY does not Granger Cause FMCG	1959	0.62918	0.5331
FMCG does not Granger Cause NIFTY		1.20902	0.2987
NIFTY does not Granger Cause IT	1959	1.11927	0.3267
IT does not Granger Cause NIFTY		1.58655	0.2049
NIFTY does not Granger Cause MEDIA	1959	13.6775	1.00E-06
MEDIA does not Granger Cause NIFTY		1.70850	0.1814
NIFTY does not Granger Cause METAL	1959	10.7042	2.00E-05
METAL does not Granger Cause NIFTY		6.56918	0.0014
PHARMA does not Granger Cause NIFTY	1959	6.85420	0.0011
NIFTY does not Granger Cause PHARMA		5.57743	0.0038
PSBK does not Granger Cause NIFTY	1959	3.71300	0.0246
NIFTY does not Granger Cause PSBK		1.14936	0.3171
PVTBK does not Granger Cause NIFTY	1959	6.74418	0.0012
NIFTY does not Granger Cause PVTBK		1.42132	0.2416
REALTY does not Granger Cause NIFTY	1959	2.80804	0.0606
NIFTY does not Granger Cause REALTY		9.68303	7.00E-05

Source: Author's Calculations

The results of the test suggest that there is unidirectional between nifty, auto, media, PSU Bank, Private Bank and Realty indices. Where in some cases Nifty is causing the sector to move and in some cases sectors are causing Nifty to move. The results also suggest a bidirectional relationship between Nifty and

Bank, Energy, Metal and Pharma respectively. Finally the results conclude no relationship between Nifty and Financial services, FMCG and IT.

5. CONCLUSION AND IMPLICATIONS OF THE STUDY

The primary objective of this paper was to study the relationship of various sectoral indices on the Nifty and the other way round. All the tests conducted gave a connecting picture which when interpreted as a whole gives a larger picture. The descriptive statistics prescribed the data to be normal and fit for study. The unit rood test gave the clearance to perform the co-integration test. The casualty test breaks the myth that all the sectoral indices directly causes movement in the overall market condition. It clearly lays down the sectors that causes movement in the market and the indices movement is caused by market conditions.

It can also be concluded from the findings that there is no co-integrating equating suggesting a lack of long term co-movement between the indices, but the strong coefficient of co-relation suggests the existence of a relation between the indices, the co-integrating results rules out the existence of stationary relations. It can be concluded that the markets have failed to develop a long term stationary relation with the other sectors.

The results reveal that auto, PSU banks and private banks are the sectors that have a uni-directional relationship with Nifty, suggesting that the markets are highly dependent on the performance of these sectors. On the other hand there exists a unilateral relationship between Nifty and Media, i.e., Nifty causing movement in media, this is a result of increased spending in media and entertainment when the overall markets are outperforming. Realty sector is one more sector where Nifty causes movement.

Nifty and Bank index, Nifty and energy Index, Nifty and metal index and Nifty and pharma index, are bidirectional. Where either of the variable can trigger changes. Finally financial services, FMCG and IT are the sectors that are in isolation and do not share any kind of causal relationship with the market.

The findings of the study suggests that policy makers in order to break the vicious circle of poverty must primarily focus on developing both private and PSU banking sector as they are the unidirectional variables, the movement in these sectors will move the market which in turn will cause movement in the bidirectional sectors. More over energy and pharma sectors are sectors where on the both sides the probability coefficient is small which suggests that energy and pharma sector holds a higher degree of relationship on both sides so must be given priority during investments. The study suggests minimum investments in the media sector stating that the movement in the nifty will lead to movement in the media.

6. SCOPE FOR FUTURE RESEARCH

The study though aimed to cover majority of the aspects still missed upon certain aspects which can be later adopted in or for the future research. The paper only studies the causal relation between sectors and Nifty and other way round, a study that observes the effect of sectors on each other and market can also be conducted, this will give a larger and clearer picture about the market. The study is conducted only on the sectoral indices but there exists other variables like the thematic indices, macro-economic variables etc. More over the VEC model can also be employed to obtain more precise results. Based upon the findings of this research an artificial intelligence bases model can be crafted for predicting the effects variables on market.

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