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Do Bulls and Bears Understand Exchange Rate Dynamics? Evidence from Global Scenario

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Abstract:
The motivation of the present study to investigate and understand the correlation of adjusted closing prices of forex and index (EUR/INR, GDP/INR, Nifty50, CNXIT) which is traded at National Stock Exchange, India. The empirical analysis of three years of data with the help of E-views software. After investigation, it can conclude there is a steady correlation ship among the group. CNXIT having a more robust relationship with Forex as compare to Nifty50. It shows a short-run equilibrium relationship variable but, long-run equilibrium among variables, but shows a very strong co-relation among all the research variable (EUR/INR, GDP/INR, Nifty50, CNXIT. Due to above support it determine the unidirectional price detection dynamics. The co-integration test allows high degree of relationships among variables.

Keywords: Forex, Nifty50, Correlation, Equilibrium, Price

1. INTRODUCTION:

Since after liberalization, the foreign exchange market in India has experienced marvellous growth. It comprises buyer, seller, market mediator, & the monetary authority of India. The forex, comes a long way in India by looking at market participants, & different financial instruments; beyond that RBI strive hard to adjust many focus areas & frame novel policies to Indian forex market more happening & efficient. The USD is considered a major currency pair because it represents all currency pair & the pairs which do not include USD are called cross currency pair or cross currency.

As we know that all the markets move towards more integrating in a dynamic way in the present global economy, & forex plays a very strategic role for any country, because it represent faith of outside investor & write a growth story for a country.

Understanding correlation is important of stock market with forex because stock market provide direct significances of globalisation & important not only for investor but also for country as a whole.

As & When we become more integrated financial markets, the chance of systematic risk may increase gradually because dependence of one economy upon other economy gets increase day by day.

Current economic situations demonstration a vigorous aspect of the forex rate and share exchange always been fascinating most of the financial enthusiasts. What to expect from stock exchange and forex? The rising stock exchange is the reason to attract forex or vice-versa? Is it the reason to increase the demand of domestic currency or more flexible forex rate regimes? After the improvement based on capital market, the recreation of foreign exchange capital control has increased the curiosity among specialists & theorists to solve the puzzle of the Forex & Bulls & Bear market.

The current study focus on the following questions:

1. Do we have co-relationship between Nifty50 Index, concerning EUR/INR, GDP/INR.
2. Do we have co-relationship between CNXIT concerning EUR/INR, GDP/INR.

Is there any lead-lag relationship among them? This information can be useful not only for regulators but also for market participants as a trader or business professional.

2. LITERATURE REVIEW:

[1] express the relationship between forex & stock market by the first two theorists. No correlation shows after applying correlation regression analysis. Whereas, [2] investigates an optimistic relationship amongst the forex rate & stock prices.

Other studies investigate like [3] shows that industrial economics plays a vital role in short run & long run variables. [4] focuses on the relationship amongst countries with developed capital & more forex than in other countries.

[5]. Suggest that there is no relationship between forex and stock market after selecting and examine data for the period of 1992-2002.

[6] study that the relationship between equity return and currency exposure of the US,UK, and Japanese bank and insurance firms during 2003-2011. Their result suggests negative relationship between the foreign currency & equity returns.

[7] reports that a short-run relationship & no long-run relationship amongst stock prices & foreign exchange. [8] explore that trading strategies can be very well characterised by their patterns response. With the help of clustering analysis overall picture of trading strategies can be shown as ecological matrix.

[9] takes the monthly data from 1977-1989, and propose that result shows, no relationship between stock returns & foreign exchange. When repeating this exercise more than a six-month duration, they found a strong relationship with dollar & stock returns.

[5] explored volatility & its transmission but only limited to industrialization & same results discovered by [10]. [11] analysed the stock market based on i) interest rate ii) exchange rate iii) inflation rate, and there is no relationship which significant, establised. [9] showed a bi-

directional causality in the short term after using research sample i) S&P 500 index ii) US dollar.

[4] provided indicator of convertibility correlation with the banking industry in the US.

The Classical theory advocates the relationship between stock market & exchange rate. Most of the studies have a focus on the established relationship between the stock market & the US index. [12] shows a robust negative correlation between foreign exchange & US stock index. [2] investigate the constructive establishment between US stock index & trade-weighted dollar value.

The link between the stock market & forex on a theoretical basis, have two primary forms.

1. Model based on Flow oriented
2. Model based on Stock oriented

The model based on flow oriented of the foreign exchange rate, [3] suggest that currency movement affects international competitiveness, which leads to a trade balance position & real productivity of a country. If the real output increase, which positively affects the present & future cash flows of a company & consequently stock prices.

[13] build an equilibrium model with the determinants exchange rates, stock prices & capital flow.

The model based on stock oriented, Stock market impact in innovation leads to the aggregate demand through wealth & liquidity, & it positively impacts on exchange rate & money flow [3]

[14] proposed the short run & long run understanding concerning stock prices & forex on a sample Pacific basin countries; their studies show a positive relationship after using multivariate granger causality test.

If we talk about the limitations, this study can be useful for currencies of different geographical locations for seeking price discovery in the stock market & convertibility and vice versa. Various experimental techniques can be useful to check validity of results in different time horizons.

Section 2 is more focused on the literature review of the topic. Section 3 is all about data & methodology, which is relevant to the study.4. The experimental research is reported in section. Section 5 represent conclusion of research work. This research paper explains future scope in section 6.

Hypothesis:

H0: Nifty50 Index, & foreign exchange EUR/INR, GDP/INR have no significant relationship.

H1: Nifty50 Index, & foreign exchange EUR/INR, GDP/INR have a significant relationship.

H0: CNXIT, & foreign exchange EUR/INR, GDP/INR have no significant relationship.

H1: CNXIT, & foreign exchange EUR/INR, GBP/INR have significant relationship.

3. DATA & METHODOLOGY:

For this research paper, we use daily time series data for EUR/INR, GDP/INR, Nifty 50 & CNXIT from 1 Jan 2017 to 1 Jan 2020.(NSE) & (RBI) has been a great source for retrieving data. For pursue this research we choose weekly data because the fundamental information &

noises of the financial market may exist few days to a week & closing prices of forex & stock market may discount all the relevant information i.e. price always represent a true picture of buy-sell, greed, fear, hope. All the fundamental & psychological information discounted in closing prices. Before preceding the research work, I need to make sure about all the dates & prices of different indices & stock exchange must be lined up in defined manner. We shall discuss the following variables as follows

a) **Test of Stationarity**:

ADF test was applying to check the stationarity of research variables. It is a statistical application based test to identify that the series is stationary or not. There must be equilibrium cohesiveness among research data. There is no co-integration show by null hypothesis If there is a presence of co-integration is evidence of the long-run equilibrium in research variables. ADF test result is sensitive to no. of legs chosen. It also tells us about stationary data & nonstationary data, if there is a linear combination.

Table:1 Augmented Dickey-Fuller Test

Instrument	**t-statistics**	**p-value**	**t-statistics at first difference**	**p-value**
Nifty50	-2.33705	0.1619	-14.1959	0.0000
CNXIT	-0.878961	0.7925	-11.54662	0.0000
EUR/INR	-1.618857	0.4703	-12.44114	0.0000
GDP/INR	-1.617328	0.4711	-11.31511	0.0000

Source: Computed
Indicates statistical significance at 5% significance level

Here, t- statistics is greater than ADF critical value, Mean data is non-stationary, or P value is more than .05, accept null hypothesis
If t- statistics is less than ADF critical value, Mean data is stationary, or P value is less than .05, reject null hypothesis
Here,
Ho “Process has unit root” (data is non stationary).
H1 “Process has no unit root” (data is stationary)
Since the t test statistic at first difference value is respectively Nifty50, CNXIT, EUR/INR, GBP/INR is -14.1959, -11.54662, -12.44114, -11.31511, & p value is respectively 0.0000 in all the cases.
Here, P value is lower than .05.
1.Nifty50 data is stationary.
2.CNXIT data is stationary.
3.GBP/INR data is stationary.
4. EUR/INR data is stationary.

b) **Causality Analysis:**

This test is for the possibility of causality relationship among research variables. It is based on a statistical concept which is focus on prediction of one variable on the basis of previous value "cause" or "information" can help to predict other variable "cause" i.e. effect of one variable on other & vice versa.

Granger causality test establishes the unidirectional causality association amongst GBP/INR & EUR/INR with the P value respectively 0.01551904 & 0.01654439. Other research variables have not shown causality relation; all variables p value is more than .05. present in Table 2 respectcively.

TABLE:2 GCT			
Legs:6			
Null Hypothesis: at 5 % Sig level	**Obs**	**F-statistic**	**Prob.**
GBP/INR does not Granger Cause EUR/INR	138	2.74024996	0.01551904
EUR/INR does not Granger Cause GBP/INR		2.70963874	0.01654439
CNXIT does not Granger Cause EUR/INR	138	1.334069868	0.24692012
EUR/INR does not Ganger Cause CNXIT		1.51489924	0.17853326
NIFTY does not Granger Cause EUR/INR	138	1.136344028	0.345191
EUR/INR does Granger Cause NIFTY		1.472259834	0.19297615
CNXIT does not Granger Cause GBP/INR	138	1.010051236	0.42186984
GBP/INR does not Granger Cause CNXIT		0.921069793	0.48224308
NIFTY does not Granger Cause GBP/INR	138	0.641249877	0.69701647
GBP/INR does not Granger Cause NIFTY		1.291591198	0.26585121
NIFTY does not Granger Cause CNXIT	138	1.672818748	0.13301995
CNXIT does not Granger Cause NIFTY		0.72186773	0.63272705

c)Table: 3 Johansen Co-Integration Test (Trace Statistic & Max- Eigen Statistics)

Observation :149					
Trend Assumption: No deterministic trend					
Series: CNXIT, NIFTY ,GDP/INR,EUR/INR					
Lag interval :1 to 4					

Unrestricted Co-integration Rank Test (Trace)					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None*	0.143887103	44.64943552	40.17493178	0.016591	
At most 1	0.101341415	23.05536547	24.27595861	0.070682	
At most 2	0.042803841	8.202925082	12.32089895	0.221368	
At most 3	0.015150965	2.122100964	4.129906229	0.171204	

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max Eigen	0.05	
No. of (CE)	Eigenvalue	Statistic	Critical Value	Prob.
None	0.143887103	21.59407005	24.15920873	0.107171
At most 1	0.101341415	14.85244039	17.797295	0.131443
At most 2	0.042803841	6.080824118	11.2247993	0.34059
At most 3	0.015150965	2.122100964	4.129906229	0.171204
Max Eigen value indicates no co-integration at level .05				

Source:Computed

The test for the presence of long term relationship among research variables. The result of Johansen Co-Integration Test summarised in above table, which shows research variable like Eigen value & trace test

The there is no co-integration relationship among variables (Null hypothesis). The above results revels that trace statistics reject the null hypothesis, but Eigen statistics accept the null hypothesis. There is no long run association among variables.

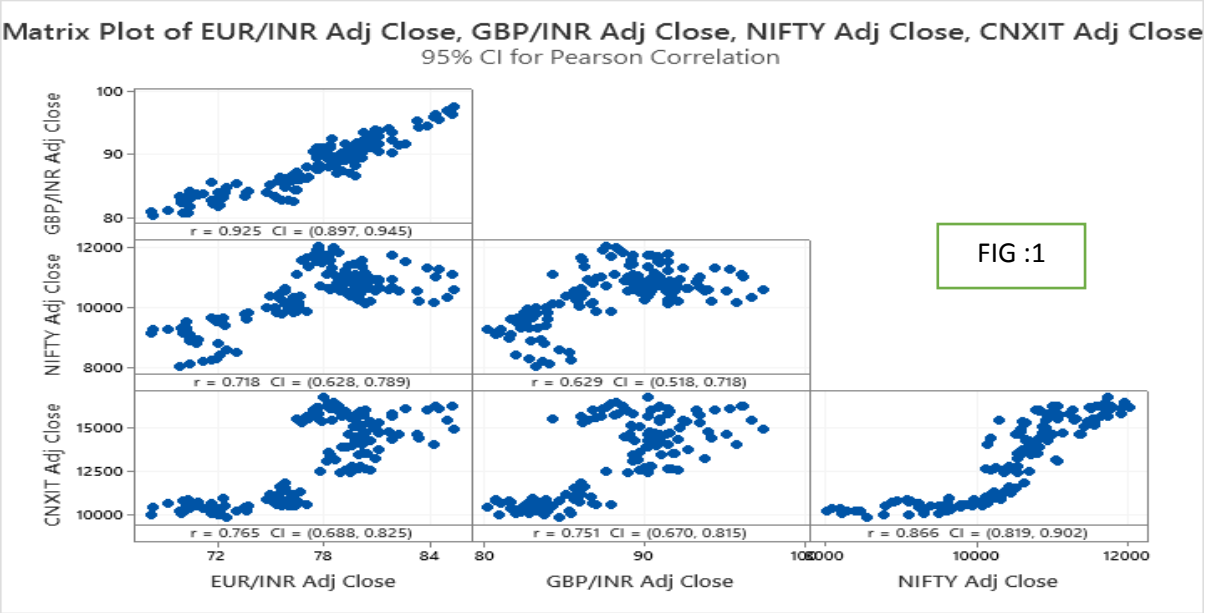

FIG :1

Method

Correlation type	Pearson
Number of rows used	144

Source: Computed

Co-relation Table: 4

	EUR/INR	**GBP/INR**	**CNXIT**	**NIFTY50**
EUR/INR	1	0.924817055	0.765081605	0.718227967
GBP/INR	0.924817055	1	0.751081872	0.628629893
CNXIT	0.765081605	0.751081872	1	0.866199052
NIFTY50	0.718227967	0.628629893	0.866199052	1

Source: Computed

Co-relation table show a very strong relation between all the research variables CNXIT have a co-relation with EUR/INR, GBP/INR & Nifty 50 respectively .76, .75, .86, whereas Nifty having .71,.62, .86 respectively. By moving index, other forex variables show a high degree of changes with respect to Nift50 & CNXIT.

4. CONCLUSION:

To understand the market, it is important to understand the Intermarket analysis for price discovery. We investigate the causality & momentum of forex & stock indices through **GCT.** The relationship concerning EUR/INR, GDP/INR, Nifty50, CNXIT is analysed. As per our analysis with Augmented Dickey Fuller test(ADF) unit root test P-value is lower than .05 (Null hypothesis 1) Nifty50 data is stationary.2. CNXIT data is stationary.3.GBP/INR data is stationary.4. EUR/INR data is stationary. Whereas Granger Causality Tests show unidirectional causality relationship between GBP/INR & EUR/INR with the P-value respectively 0.01551904 & 0.01654439.

Further, the JCT (Trace statistics & Max- Eigen Statistics) shows that trace statistics reject the null hypothesis, there is a long-run association among variables, but Eigen statistics accept the null hypothesis. In this type of confusing situation, the trace test is to be favoured for getting the idea by supporting references Bruke & Hunter (2005), non-stationary economic time series & Palgrave & Enders (2014) Applied Econometric Time series,4 editions, Willy. The Co-integration test allows all the research variable high degrees of correlation. CNXIT & NIFTY50 demonstrate very good correlation with EUR/INR & EUR/INR

Future Scope:

The results of this paper would be informative for regulators, market participants like portfolio managers, Research analyst, Fund managers & traders. to understand price discovery & policy building scenario. We can continue this study by integrating other economic variables with forex analysis to understand more about price discovery.

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