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Original Research Paper

Management

IMPACT OF THE SELECTED MACRO-ECONOMIC FACTORS ON USDINR TRADE IN NSE FUTURES

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ABSTRACT Currency derivative is a contract between the buyer and seller whose value is derived from the underlying asset. The currency exchange rate is the underlying asset of the futures contract. The exchange rates of the currencies are affected by the changes in the various economic factors and political reasons. Therefore the changes in these values has been analysed like that how it can be reflected in the value of futures trade. Hence the most influenciable macro-economic factors of India are identified and analysed the influence level on the currency futures of National Stock Exchange of India Limited (NSE). Time series data analyses such as Augmented Dickey Fuller (ADF) Test and Phillip Perron (PP) Test are used and found that the data series have stationarity. Johansen Juselius (JJ) Cointegration test is applied then VECM has been framed to find out the error correction estimation level. It has been found that there is long run equilibrium and causes have been identified. There is no short run causality between the USDINR futures and the selected macro-economic variables.

KEYWORDS : USDINR, Futures, Macro-economic variables, Causality, Currency market, Time series

INTRODUCTION

A derivative is a contract whose values are derived from some of the underlying assets. The most common underlying assets are stocks, commodities, bonds, interest rates and currencies which are generally used as an instrument to hedge risk and speculative purpose in the market. The price of derivative contracts is based on the value of the underlying asset. The contracts are traded in the four segments such as forwards, futures, options and swaps. Indian currency markets have allowed for trading currencies in the segments of forwards, futures and options only. The currency trading is having a crucial role in the Indian financial market. Buying and selling price of the currency pairs are quoted at the time of contract or exchange. The fixing of currency price is based on its real time value. One country's currency is demanded against another country's currency in the contract. Currency futures contract is a standardised contract and it is an agreement between buyer and seller to purchase and sell a specified quantity of underlying currency pairs on a specified date at a specified price and at a specified time and place. Futures contracts are normally traded in organised exchanges which sets the certain standardised norms. The currencies are traded or speculated for many purposes such as short term investments, business transactions, and International settlements and so on. Trade values are made in the Indian currencies only. The currency trade is performed based on the demands of the investors. Currency trade has been integrated with the global market and the value of the currency is based on the country's economy. Therefore, the macroeconomic factors and market related informations influence on the currency trade of the market. The market participants like investors, traders, speculators and arbitragers concentrate on the economic situations while they trade or invest in the currency market. Macroeconomic factors are the determinants of exchange volumes and it makes the high participation of the investors in the market. There are eight macroeconomic factors identified for the study such as Inflation (INF), Trade balance (TB), Foreign Direct Investment (FDI), Foreign Currency Assets (FCA), Gold Reserve (GR), Government Fiscal Expenditure (GFE), Interest rate (IR) and Gross Domestic Product (GDP). They have been analysed to find out the impact on the currency futures trade of NSE.

STATEMENT OF THE PROBLEMS

Currency futures contracts are trading in the organised exchange of India and the market has high volume and good liquidity. The futures market provides the transparent trading system to trade the currency pairs. The value of a domestic country currency is based on the stands of economic stability and political condition. Like that, the so many factors are influencing the value of currencies at any

point of time. Some of the factors may do influence from the same country and other from outside of the boundary and so on. The economic and political conditions are affecting the forex market directly and the main influenciable factors such are Interest Rates, Inflation, Gross Domestic Product (GDP), Unemployment, Trade deficit, Fiscal deficit, Manufacturing indices, and Consumer Prices Index and so on. These major economic factors are influencing on the value of currencies. Based on the movement of currencies, the market participants are getting the gain and loss. The changes in the value of macroeconomic variables and some related market informations are the main causes of change in the value of currency and trade. However the size and volume of the currency market would make a behavioural change among the investors, traders, hedger and other market participants and so on. Hence the researcher has focused to analyse the impact of the macroeconomic factors on the currency futures market.

OBJECTIVES

- 1. To understand the currency market practice, mechanism and trading process
- 2. To assess the stationarity in the data series of independent and dependent variables
- 3. To study the relationship between the selected macroe conomic factors and currency futures trade in NSE
- 4. To analyse the cause and effect of the selected macroeconomic factors on USDINR trade in NSE

REVIEW OF LITERATURE:

Devajit Mahanta (2012)¹ analysed that the Indian currency derivative trade has increased the explosive growth in volumes and the value from the year of 2008. Over the years, across all the four currencies contracts are in operations such as USDINR, GBPINR, EURINR and JPYINR. The introduction of exchange traded currency futures trade in India leads to avoid the legal tangle. India is providing the best platform for foreign exchanges like as developed countries. It has been concluded that, the currency futures market get success in future, contributing to the Indian economy and the investors gets benefit by their positions in these segments.

Dhren Kumar Pandey (2014)² has investigated about the currency risk management on currency derivatives in India. It has been found that the globalization leads to increase exchange rate volatility and the volatility leads to increase in the currency risk. Hence currency derivative is the significant way to manage this currency risk. The firms and financial institutions can expose the currency risk though the appropriate hedging strategy.

Farhana Akhter and Nushrat Faruqui (2015)³ have concluded in their study that the floating exchange rate regime experienced the positive impact on the economic development of Bangladesh. It has been found that there is relationship between the exchange rate and macro-economic factors. The study shows that the macro economic factors such as inflation, foreign reserve, export and import have influence on the exchange rate. The changes in the macro economic factors creates the cause on the exchange rate like high inflation rate, decreasing FDI, trade deficit and changes on interest rate and so on.

METHODOLOGY

The study is mainly based on the secondary data and it is analytical in nature. The related informations are gathered from the articles, Journals, Ph.D thesis, authentic websites and database. Currency trade value has been collected from the NSE historical data and the macroeconomic factors have been collected from the Reserve Bank of India (RBI) data base of Database on Indian Economy (DBIE). The period of study considered for both dependent (USDINR futures) and independent variables (the selected macroeconomic factors) are from the financial year of 1st April 2010 to 31st March 2018. The panel data is used in the analysis and the natural logarithm of first difference of monthly series taken for USDINR futures and the selected macroeconomic variables.

Augmented Dickey Fuller (ADF) Test and Phillip Perron (PP) Test has been used to assess the unit root problems of the data series. The

VOLUME-7, ISSUE-10, OCTOBER-2018 • PRINT ISSN No 2277 - 8160 long run equilibrium relationship has been tested through the

Johansen Juselius (JJ) Cointegration test. Vector error Correction Model (VECM) has been applied and the Least squares Gauss-Newton/Marquardt Steps have been tested to estimate the Error Correction Tem (ECT) and the model equation is framed. The model fit criteria such as serial correlation effect, Heteroskedasticity effect and Normality has been tested. Short run causality among the variables is identified by the Wald test. E-Views software is used to conduct the analysis of the study.

SIGNIFICANCE OF THE STUDY

Currency exchange or trade is taking a substantial role in the international business activities. Those businesses want to be contingent with economic status of each country. Unpredicted trade movement in exchange rates will be revealing the currency risks to the investors or traders. Therefore they want to have the precaution stand against the risk of currency trade. The currency futures segment is a significant platform to the market players like traders, hedgers, speculators, and arbitragers.

Impact of the selected Macroeconomic Factors on USDINR futures in NSE

Stationarity test is more important being a preliminary step of the time series analysis. It helps to avoid spurious regression and it is helps to identify that extent of strong influence on the behaviour of the variables are used in this study.

Table -1 Stationarity Test of the Study Variables

SI. No	Name of the Factors	ADF Test			PP Test			
		Intercept	Trend and Intercept	None	Intercept	Trend and Intercept	None	
1	USDINR(Dependent)	-12.9204	-12.8665	-12.9773	-14.2751	-14.226	-14.3251	
2	INF	-7.7422	-7.7293	-7.7422	-7.5054	-7.4235	-7.4072	
3	ТВ	-10.7812	-10.7179	-10.8207	-18.894	-18.7114	-18.7959	
4	GFE	-4.9584	-5.0374	-2.338	-18.9661	-18.7493	-18.5289	
5	FDI	-14.9214	-14.8585	-14.99	-29.1293	-28.1969	-28.3779	
6	FCA	-9.6894	-9.6368	-8.46	-10.0351	-9.9667	-8.4636	
7	GR	-10.0674	-10.1335	-9.9885	-10.1083	-10.1389	-10.022	
8	IR	-3.8764	-4.4844	-3.8881	-8.3529	-8.9966	-8.3675	
9	GDP	-9.5195	-9.5879	-9.5489	-17.5004	-22.0738	-16.5706	

* USDINR - Intercept = -2.8925; Trend and Intercept = -3.4583; none = -1.9443

**The macroeconomic factors- Intercept = -2.8929; Trend and Intercept = -3.4589; none = -1.9443

Table 1 explains result of ADF and PP test and the stationarity has been verified though these test results of the return series of USDINR futures and the selected macroeconomic variables of the study. It is found that the test statistic results are greater than the test critical value of all observed variables at 5 percent of significant level. It is concluded that the data series of the variables are stationarity.

Table -2 Long run relationship of USDINR and Macroeconomic Factors –JJ Co integration Test

S. No	No of Co Integration		Trace Test			Maximum Eigen	um Eigen Test	
	Equations	Eigen value	Trace Statistics	0.05 Critical Value	Eigenvalue	Max-Eigen Statistics	0.05 Critical Value	
1	None *	0.598912	432.1351	197.3709	0.598912	84.0488	58.43354	
2	At most 1*	0.562575	348.0863	159.5297	0.562575	76.07018	52.36261	
3	At most 2*	0.483757	272.0161	125.6154	0.483757	60.82839	46.23142	
4	At most 3*	0.453268	211.1877	95.75366	0.453268	55.54926	40.07757	
5	At most 4*	0.414928	155.6384	69.81889	0.414928	49.3138	33.87687	
6	At most 5*	0.363219	106.3246	47.85613	0.363219	41.52238	27.58434	
7	At most 6*	0.279945	64.80225	29.79707	0.279945	30.21536	21.13162	
8	At most 7*	0.247033	34.58689	15.49471	0.247033	26.10357	14.2646	
9	At most 8*	0.088086	8.483319	3.841466	0.088086	8.483319	3.841466	

(Trace test and max Eigen test indicates 9 cointegrating eqn (s) at the 0.05 level, * denotes the number of variables used in the test, MacKinnon-Haug-Michelis (1999) p-values are significant at 5 percent level)

Table 2 portrays the long run equilibrium of the USDINR futures and the selected macro-economic factors at 5 percent significance level. The calculated value of both Trace statistics and Max-Eigen statistics values are greater than the critical value. Hence the null hypothesis that there is no long run equilibrium relationship between the USDINR futures and the selected macro-economic factors is rejected.

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Table -3 Estimation of Error Correction Term and Long run Causality – Least squares Gauss-Newton/Marquardt Steps in VECM

S. NO	Equations	Co-efficient	Std. Error	t-Statistic	Prob.
1	C(1)	-1.700	0.275	-6.174	*0.000
2	C(2)	0.206	2.169	0.095	0.925
3	C(3)	0.081	0.120	0.676	0.501
4	C(4)	-0.185	0.275	-0.673	0.504
5	C(5)	0.009	0.070	0.133	0.895
6	C(6)	-1.990	1.408	-1.414	0.162
7	C(7)	0.369	0.261	1.413	0.162
8	C(8)	0.001	0.176	0.007	0.995
9	C(9)	0.257	0.201	1.279	0.205
10	C(10)	0.012	0.122	0.100	0.921
11	C(11)	-2.780	1.768	-1.572	0.121
12	C(12)	-1.156	1.330	-0.869	0.388
13	C(13)	-0.149	0.095	-1.569	0.121
14	C(14)	-0.107	0.055	-1.941	0.057
15	C(15)	0.041	0.229	0.179	0.858
16	C(16)	-0.030	0.160	-0.188	0.852
17	C(17)	-0.060	0.055	-1.086	0.281
18	C(18)	-0.067	0.036	-1.882	0.064
19	C(19)	2.274	1.098	2.072	0.042
20	C(20)	0.558	0.830	0.673	0.504
21	C(21)	-0.163	0.201	-0.808	0.422

22	C(22)	-0.005	0.172	-0.031	0.975
23	C(23)	-0.105	0.222 -0.474		0.637
24	C(24)	0.119	0.183	0.652	0.517
25	C(25)	-0.191	0.190	-1.007	0.318
26	C(26)	-0.055	0.112	-0.493	0.624
27	C(27)	0.044	2.223	0.020	0.984
R-squared		0.759	Mean dependent var.		0.013
Adjusted R-squared		0.663	S.D. dependent var.		36.612
S.E. of regression		21.267	Akaike info criterion		9.192
Sum squared residuals		29399.880	Schwarz criterion		9.932
Log likelihood		-395.822	Hannan-Quinn criter.		9.490
F-statistics		7.872	Durbin-Watson stat		1.929
** Prok	o (F-statistic)	0.000			

* Target model value at 5percent level of significance, ** P value of F statistics at 5 percent level of significance.

Table 3 explains the result of Least squares Gauss-Newton/ Marquardt Steps in VECM. The Speed adjustment towards the target model C(1) is negative (-1.700) which indicates that there is a long run casualty between the USDINR and the selected macroeconomic variables. The highest co efficient value of the equation C(11) is -2.780 which indicates that FCA is influencing more than other factors on USDINR futures. The second highest value of equation C(19) is 2.274 and It is indicates that macro-economic factor of GR.

Table - 4 Model fit Criteria of the VECM

SI. No	Model Fit criteria	Name of the Test	Test Statistics	Value	Test Statistics	Value
1	Serial Correlation	BG Serial Correlation - LM Test	F-statistic	0.289	Prob. F (2,63)	0.75
			Obs*R-squared	0.837	Prob. Chi-Square (2)	*0.658
2	Heteroskedasticity	Breusch Pagan-Godfrey (BPG) Test	F-statistic	0.772	Prob. F(27,64)	0.768
			Obs*R-squared	22.612	Prob. Chi-Square (27)	*0.706
			Scaled explained SS	11.846	Prob. Chi-Square (27)	0.995
3	Normality	Jarque-Bera (JB) Test	Jarque-Bera	1.9897	Prob. Value	0.369

*Calculated chi-square value at 5percent level of significance

The estimated chi-square value is 0.658 which is greater than the significance value of 0.05 hence the null hypothesis is accepted there is no serial correlation effect in the return series of variables used in the model. The chi-Square p value is 0.706 which is greater than significance value of 0.05 hence the null hypothesis is accepted which indicates that there is no heteroskedasticity effect in the data series. The Jarque Bera test value is 1.987 which is greater than the significant value of 0.05 hence the data are normality distributed.

The overall criteria of the model are satisfied hence the model is fit.

Short run causality between the Dependent and Independent variables:

Short run causality is representing the short term cause and effect between the independent and dependent variables of the study. It has been assessed through the Wald Test. The null hypothesis is that there is no short run relationship between the USDINR futures and the selected macroeconomic variables.

Table-5 Short run Causality of USDINR Futures and Macroeconomic Variables – Wald Test

S.NO	Variables	F Statistics Value	DF	P Value	Chi- Square Value	DF	P Value	Null Hypothesis	
1	FCA	0.734	(2, 65)	0.484	1.468	2.000	0.480	C(2)=C(11)=C(12)	Accepted
2	FDI	0.725	(2, 65)	0.488	1.450	2.000	0.484	C(3)=C(13)=C(14)	Accepted
3	GDP	0.126	(2, 65)	0.882	0.251	2.000	0.882	C(4)=C(15)=C(16)	Accepted
4	GFEX	0.677	(2, 65)	0.512	1.355	2.000	0.508	C(5)=C(17)=C(18)	Accepted
5	GR	2.591	(2, 65)	0.083	5.183	2.000	0.075	C(6)=C(19)=C(20)	Accepted
6	INF	0.838	(2, 65)	0.437	1.675	2.000	0.433	C(7)=C(21)=C(22)	Accepted
7	IR	0.991	(2, 65)	0.377	1.982	2.000	0.371	C(8)=C(23)=C(24)	Accepted
8	ТВ	1.461	(1,65)	0.231	1.461	1.000	0.227	C(25)=C(26)	Accepted

Restrictions are linear in co-efficient, calculated at 5percent level of significance

Table 5 explains the result of Wald test between the USDINR futures and the selected macroeconomic factors. The corresponding p value of F statistics is greater than the significant value of 0.05. The null hypothesis is accepted and concluded that there is no short causality between the variables. on its value. Every business faces the risk against foreign exchange hence the currency futures market is the appropriate place to hedge against the currencies. NSE is the leading exchange in India and it is ultimate platform for trading the currency pairs in India. Individual investors are able to gain the money by undertakes trade in the futures market. The market is providing high liquidity. It may cause to change in the economic activity. As well as some economic factors can influence on the value of its currency hence the value of currency futures pairs is changing on its underlying value which means exchange rate. The exchange rate of a country is based on its currency value. Therefore the selected macroeconomic factors are

CONCLUSION

Currency market is a place where currencies are exchanged based

identified and found their impact on the USDINR trade in the NSE futures segment. Monthly return series of the variables are stationary at 5 percent significant level. USDINR futures have the long run relationship with the selected macro-economic variables but there is no short run relationship. The macro economic factors such as FCA and GR are causes on the USDINR trade in NSE futures in long run aspect. The business and traders should be more aware and consider the economic positions of the country before investing in the currency derivatives.

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