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A Study on Spot and Future Rate in Currencies

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I. INTRODUCTION

The foreign exchange market determines the relative of different currencies. The primary purpose of the foreign exchange is to assist international trade and investment, by allowing business to convert one currency to another currency. For example, if permits a US business to impart British goods and pay pound sterling, even though the business's income is in dollars.

It also supports direct speculation in the value of currencies, and the carry trade, speculation on the change in interest rate in two currencies. In a typical foreign exchange transaction, a party purchases a quantity of one currency by paying a quantity of another currency.

The modern foreign exchange market began forming during the 1970s after three decades of government restriction on foreign exchange transaction (the Bretton Woods system of monetary management established the rules for commercial and financial relation among the world's major industrial states after World War II), When countries gradually switched to floating exchange rates from the previous exchange rate regime, Which remained fixed as per the Bretton Woods system.

A. Currency Trading

Currency trading is the act of buying and selling international currencies. Generally banks and financial trading institutions engage in the act of currency trading. Individual investors can also engage in currency trading, attempting to benefit from variations in the exchange rate of the currencies.

B. Currency Markets

The currency trading (FOREX) market is the biggest and the fastest growing market in the world economy. Its daily turnover is more than 2.5 trillion dollars, which is 100 times greater than the NASDAQ daily turnover. Markets are places to trade goods.

Any currency can be traded on the international level. However, on the Multi Commodity Exchange only 4 major currencies are traded against the Indian Rupee.

USD, EURO, GBP, JPY

C. Key Factors That Affect Foreign Exchange Rates

Foreign Exchange rate (Forex rate) is one of the most important means through which a country's relative level of economic health is determined.

A country's foreign exchange rate provides a window to its economic stability, which is why it is constantly watched and analyzed. It deals with the sending or receiving money from overseas on the currency exchange rates.

The exchange rate is defined as "the rate at which one country's currency may be converted into another." It may fluctuate daily with the changing market forces of supply and demand of currencies from one country to another. For these reasons; when sending or receiving money internationally, it is important to understand what determines exchange rates.

Some of the leading factors that influence the variations and fluctuations in exchange rates and explain the reasons behind their volatility are explained below,

1) *Inflation Rates:* Changes in market inflation cause changes in currency exchange rates. A country with a lower inflation rate than another does will see an appreciation in the value of its currency. The prices of goods and services increase at a slower rate where the inflation is low. A country with a consistently lower inflation rate exhibits a rising currency value while a country with higher inflation typically sees depreciation in its currency and is usually accompanied by higher interest rates.
2) *Interest Rates:* Changes in interest rate affect currency value and dollar exchange rate. Forex rates, interest rates, and inflation are all correlated. Increases in interest rates cause a country's currency to appreciate because higher interest rates provide higher rates to lenders, thereby attracting more foreign capital, which causes a rise in exchange rates.

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3) *Country's Current Account / Balance of Payments:* A country's current account reflects balance of trade and earnings on foreign investment. It consists of total number of transactions including its exports, imports, debt, etc. A deficit in current account due to spending more of its currency on importing products than it is earning through sale of exports causes depreciation. Balance of payment fluctuates exchange rate of its domestic currency.
4) *Government Debt:* Government debt is public debt or national debt owned by the central government. A country with government debt is less likely to acquire foreign capital, leading to inflation. Foreign investors will sell their bonds in the open market if the market predicts government debt within a certain country. As a result, a decrease in the value of its exchange rate will follow.
5) *Terms of Trade:* Related to current accounts and balance of payments, the terms of trade is the ratio of export prices to import prices. A country's terms of trade improves if its exports prices rise at a greater rate than its imports prices. This results in higher revenue, which causes a higher demand for the country's currency and an increase in its currency's value. This results in an appreciation of exchange.
6) *Political Stability & Performance:* A country's political state and economic performance can affect its currency strength. A country with less risk for political turmoil is more attractive to foreign investors, as a result, drawing investment away from other countries with more political and economic stability. Increase in foreign capital, in turn, leads to an appreciation in the value of its domestic currency.
7) *Recession:* When a country experiences a recession, its interest rates are likely to fall, decreasing its chances to acquire foreign capital. As a result, its currency weakens in comparison to that of other countries, therefore lowering the exchange rate.
8) *Speculation:* If a country's currency value is expected to rise, investors will demand more of that currency in order to make a profit in the near future. As a result, the value of the currency will rise due to the increase in demand. With this increase in currency value comes a rise in the exchange rate as well.

D. *Why Currency Derivatives?*

1) Offers diversification to the investments
2) Hedging opportunities to importers & exporters, for their future payables and receivables.
3) Gives trading opportunities because of volatility in currency.
4) Provides transparent rates to traders as it is exchange-traded.

E. *Basics of Currency Trading Forward Contract*

1) Agreements to exchange currencies at an agreed rate on a specified future date.
2) Actual settlement date is more than two working days after the deal date.
3) Forward contracts are privately negotiated, traded outside an exchange and suffer from counter party and liquidity risks.

Future Contracts

a) These are agreements to buy or sell an asset for a certain price at a future time.
b) Exchange traded and standardized contracts
c) No counter party risk as settlement is guaranteed by the exchange.

Option contracts

Traders can also buy Currency option contracts.
Here he commits for a future exchange of currency with an agreement that the contract will be valid only if the price is favorable.
Pays a premium for this.
Buy USD-INR Call options if one is bullish on the Dollar.
Sell USD-INR Put options if one is bearish on the Dollar.

F. *Objectives Of The Study*

1) To find out the influence of future rate on spot rate for all the selected currencies.
2) To identify the influence of future rate of JPY/INR, EUR/INR and GBP/INR on the future rate of USD/INR.
3) To identify the influence of spot rate of JPY/INR, EUR/INR and GBP/INR on the spot rate of USD/INR.

G. Scope Of The Study

1) To unite and revise all the laws that related to currency exchange markets.
2) To observe the orderly maintenance and development of the currency exchange market in India.
3) Recognize the basis of the currency in India. . Examine the risk in the currency market.

H. Limitations of the Study

It helps the investor in making the investment decision but not every investment is entirely depending on the analysis done.
The tools used for analysis is subject to inherent limitations.
The study is done by using tools like E-Views.

I. Research Methodology

1) *Source of Data:* The secondary data is collected from NSE website (www.nseindia.com). For the purpose of this study the currency details of USDINR, GBPINR, JPYINR and EURINR from NSE were taken and their currency fluctuating movement are computed and studied.
2) *Tools Used:* ECONOMETRIC VIEWS (E-Views) is a Technical tool used for data analysis. Methods used in E-Views are Ordinary Least Squares, Autoregressive Conditional Heteroskedasticity, Johansen Cointegration Test and Vector Error Correction Estimates.

II. REVIEW OF THE LITERATURE

The literature on the effect of intervention in foreign exchange markets is extensive. This section reviews some of the main contributions – for comprehensive surveys, refer to Edison (1993), ALMEKINDERS (1995) lmekinders (1995), Schwartz (2000) and Sarno and Taylor (2001).

In the 1980s and early 1990s, attention focused on the effect of sterilised intervention on the level of the exchange rate and on the channels through which it works. The results on the effectiveness of intervention are mixed and depend on which exchange rate is analysed, what sample period is studied and the intervention strategy that was used. In an influential paper, Dominguez and Frankel (1993) use daily and weekly official and press report data on intervention directed at the yen/dollar and mark/dollar exchange rates between 1984 and 1990. The authors find that intervention had a significant impact on the exchange rate, especially when it was publicly announced and coordinated.

Later studies have not provided a unanimous confirmation of Dominguez and Frankel's finding that intervention has an impact on exchange rate levels. Using a case study approach for the yen/dollar and mark/dollar exchange rates during the period 1985–91, Catte et al. (1994) confirm that intervention influences exchange rates particularly for coordinated interventions. Fatum (2000) and Fatum and Hutchinson (2002, 2003) argue in favour of an event study approach to examine the effect of intervention on exchange rate changes, as methods relying on time series data do not capture the sporadic occurrence of intervention. Fatum (2000) uses a non-parametric estimation technique to show that during the months following the Plaza agreement, intervention by the Federal Reserve and the Bundesbank was effective, especially when it was coordinated. Using similar techniques, Fatum and Hutchison (2002, 2003) find evidence supporting the effectiveness of intervention in the mark/dollar and yen/dollar markets. Ito (2003) presents evidence based on Japanese Ministry of Finance data that intervention in the yen/dollar market in the second half of the 1990s was effective. Dominguez (2003a) concludes that recent G3 intervention was often successful with regard to both short and longer-term exchange rate movements. However, other papers do not support the conclusion that intervention is effective. Humpage (1988), for example, concludes that intervention was unable to influence the dollars' level.

Baillie and Osterberg (1997) find that over the period August 1985 to March 1990, Federal Reserve intervention did not influence the mark/dollar or yen/dollar exchange rates.

In terms of transmission channels, there is now general consensus in the literature that intervention does not affect exchange rates through the portfolio channel, i.e. by changing the relative outstanding supply of domestic and foreign assets and thereby of the expected relative returns on these assets.

There is some, but not conclusive, evidence that intervention mainly works through the signaling channel, i.e. by the central bank conveying a signal to market participants about information on future fundamentals. Recent work on the microstructure of foreign exchange markets has highlighted the role of imperfect information as a channel through which intervention might influence exchange rates Eur and Resnick (1988) tried to develop ex ante portfolio selection strategies to realize potential gains from international diversification under flexible exchange rates. For the empirical analysis the Morgan Stanley Capital international

Perspective daily stock index values for the United States and the other six countries were adopted. The stock indices of United States, Canada, France, Germany, Japan, Switzerland, and the U.K. were value weighted and it was a representative of a domestic stock index fund. The data series were provided in both the United States and the local currencies for the period from December 3 1, 1979, through December 10, 1985. Methods such as correlation, variance and covariance have also been employed to know the changes in stock market across the countries. The analysis reveals that exchange rate uncertainty is a largely non diversifiable factor adversely affecting the performance of international portfolios. The authors have suggested two methods such as multi-currency diversification and hedging via forward exchange contracts for reducing the exchange rate risks.

Ma and Kao (1990) eExamined the stock price reactions to the exchange rate changes. The authors have studied the case of six developed countries namely United Kingdom, Canada, France, West Germany, Italy and Japan. Monthly stock indices and monthly exchange rates arc gathered from the Exchange Rates and Interest Rates Tape Provided by the Federal Reserve.

The sample period was from January 1973 to December 1983, and a two factor model was adopted for the empirical analysis. The paper demonstrates two possible impacts of changes in a country's currency value on stock price movements. Firstly, the financial effects of exchange rate changes on the transaction exposure. Secondly, the economic effect from exchange rate changes suggests that, for an export-dominant country, the currency appreciation reduces the competitiveness of export markets and has a negative effect on the domestic stock market. On the other hand for an import dominated country, the currency appreciation will lower import costs and generate a positive impact on the stock market.

Jorion (1991) examined the pricing of exchange rate risk in the United States (US) stock market, by using two-factor and multi-factor arbitrage pricing models. For the purpose of empirical analysis, monthly data are collected for a period ranging from January 1971 to December 1987. The data on the trade-weighted exchange rate is derived from the weights in the Multilateral Exchange Rata Model (MERM) computed by the International Monetary Fund (IMF). Monthly data on the Stock market return are collected from the University of Chicago's Centre for Research in Security Prices (CRSP) database.

An ordinary least squares (OLS) regression method was employed for examining the objective. Bartov and Bodnar (1994) re-examined the anticipated changes in the dollar and equity value. The period of study ranges from the fiscal year 1978 and runs through the fiscal year 1989. The authors have used the COMPUSTAT Merged-Expanded Annual Industrial File and Full Coverage File for firms that reported significant foreign currency gains or losses on their annual financial statements. The data on stock prices were collected either the Centre for Research in Security Prices (CRSP)

New York Stock Exchange (NYSE) American Stock Exchange (AMEX) Daily Return File or the

National Association of Security Dealers Automated Quotation (NASDAQ) Daily or Master Files. The results of the study show that contemporaneous changes in the dollar have little power in explaining abnormal stock return. This finding is consistent with the failure of prior research to document a contemporaneous relation between dollar fluctuations and firm value and suggests that problems with sample selection technique are not a complete explanation for their failure.

Choi and Prasad (1995) estimated a model of firm valuation to examine the exchange risk sensitivity of firm value. For the empirical analysis monthly time-series of stock returns were obtained from the University of Chicago Centre for Research in Security Prices (CRSP) tapes and COMPUSTAT database. The period of study was from January 1978 to December 1989. The nominal exchange rate variable was the United States (US) dollar value of one unit of foreign currency, where foreign currency was the multilateral trade weighted basket of ten major currencies as published in the Federal Reserve Bulletin. The least squares (OLS) and the generalized least squares (GLS) methods were employed for examining the objective of the study.

Chamberlain eta1 (1997) examined the foreign exchange exposure of a sample of United States (US) and Japanese banking firms. In constructing the United States (US) sample, both daily and monthly stock returns of thirty bank holding companies that were traded over the entire sample period from 1986 to 1992 on the New York Stock Exchange (NYSE) or the American Stock Exchange (AMEX) were selected from the Centre for Research in Security Prices (CRSP). For Japanese bank samples, monthly observations of the largest 110 Japanese bank returns were collected from World scope data, and daily bank retunes were considered from excel Research data. The authors estimated the sensitivity of returns to the exchange rate in the context of an augmented market model.

Friberg and Nydahl (1999) examined the exchange rate exposure of national stock markets. The authors have investigated the relationship between the valuation of the stock market and a trade weighted exchange rate index for 11 industrialized countries. For the analysis, monthly data for the period 1973-1996 were considered. The Morgan-Stanley stock market indexes and world market index were from Morgan-Stanley. Data on nominal exchange rates and local stock market data were collected from the Ecowin database. The analysis is carried out using an ordinary least squares (OLS) regression.

Amain and Hook (2000) investigated the relationship between the exchange rate of Malaysian ringgit in tens of United States dollar and stock prices in Kuala Lumpur Stock Exchange (KLES) using the single-index and multi-index models. The authors have used

256 weekly closing stock price indices and the Malaysian Ringgitr United States Dollar (RM/US$) exchange rate spanning from September 1993 to July 1998. The data were collected from the Daily Diary published by Kuala Lumpur Stock
Exchange (KLSE). The study period was divided as a cycle of a strong ringgit (September, 93- January, 97) and a cycle covering a weak ringgit (July, 97- July, 98). Besides an ordinary least square (OLS) method was employed to identify the relationship between stock prices and exchange rate.

Koch and Saporoschenko (2001) examined the sensitivity of individual and portfolio stock returns for Japanese horizontal Keiretsu financial firms to unanticipated changes in market returns, bond returns, exchange rate changes and nominal interest rate spread changes. For the empirical analysis, weekly stock returns from January 14, 1986 through December 29, 1992 were collected. Weekly traded weighted yen exchange rate return innovation was estimated using data from the JP Morgan economic department for the same period. Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model has been employed to examine the stock return sensitivity of Japanese horizontal Keiretsu financial firms to exchange rates. The results indicate that Kirsten financial firms have insignificant exposure to exchange rate changes.

Bailey eta1 (2003) tested the impact of switching over among silver, gold and paper money standards on stock returns from seven small open economics. The sample was collected for a period from December 1872 to November 1941. End of month stock prices were collected from principal national, colonial or metropolitan news papers. The authors have translated all stock prices into pounds using end-of-month exchange rate, and then its log differences were also computed. To perform three diagnostic tests Engle and Ng Generalized Autoregressive Conditional Heteroskedasticity (GARCH) specification was used.

Shamsuddin and Kim (2007) attempted to study the extent of stock market integration between Australia and its two leading trading partners, the United States and Japan. In addition, this study determines whether the extent and nature of stock market integration in the period of the post Asian crisis differs from that of the pre-Asian crisis. The data used in this study are the end of week closing stock price indexes for Australia, Japan and the United States, and the Australian dollar value of the Japanese yen and United States dollar. The national stock indexes used were the Standard and Poors
500 composite index for the United States, the Tokyo Stock Price Index (TOPIX) for Japan and the All Ordinaries Index (AOI) for Australia. The pre- Asian crisis period covers two sub-periods i.e. from January 1991 to December 1993 and from January 1994 to July 1997. The post-Asian crisis period covers from January 1998 to May 2001. All data were collected from Data stream.

Augmented Dickey Fuller (ADF) test for unit root was adopted to test the stationary property of each variable. Co-integration technique was employed to examine long-run co-movement of stock prices for Australia, Japan and the US, and the Australian dollar value of the Japanese yen and US dollar. To understand the dynamic linkages among national stock prices as well as the interaction between stock prices and exchange rates, a Vector Error Correction Model (VECM) was employed for two sub periods, and Vector Autoregressive (VAR) model in first difference was employed for the post- Asian crisis period.

Cheneta1 (2009)investigated the firm value sensitivity to exchange rate fluctuation by focusing mainly on individual firms and also looked at the differing rate of sensitivity between currencies. For the empirical analysis a sample of 161 New Zealand Stock Exchange (NZSE) listed firms were considered. Monthly share return indexes were obtained from the Global Data stream database for the period from January 1993 to December 2000. The New Zealand (NZ) dollar, trade - weighted Index (TWI), the exchange rates for US dollar and Australian dollar were obtained from the web page of Reserve Bank of New Zealand. The trade - weighted Index (TWI) is calculated using the rates of the five currencies of New Zealand's five main trading partners (Australian Dollar - 38 per cent, Japanese Yen - 24 per cent, United States Dollar - 22 per cent, Great Britain Pound Sterling per cent and Euro - 6 per cent). Test was conducted using a residual regression model. The cross sectional analysis was done by employing the multivariate regression model.

Dash and Madhava (2010) a study conducted by analyzed the impact of appreciation of Indian rupee that took place in 2007 on Indian IT sector. The study was restricted just to know the impact of rupee appreciation and that too only on IT sector. Whereas the present study relates to overall management of currency exposure of different categories of business enterprises.

Jain, Yadav, and Rastogi (2012)examine and compare the policies of foreign exchange risk and interest rate risk management followed by public Sector, private sector business houses and foreign controlled firms in India. The study was limited to know the awareness of Indian firms about the foreign exchange risk and interest rate risk but study fails to discuss in detail the management of these risks. But the present study is comprehensive survey relating to almost all aspects of currency exposure management.

Prof. Pareshkumar J. Patel and Dr.Ashok R. Patel (2014): Graph of Currency trading has increased dramatically in last few years in India, so the need for more effective ways for better analysis of movements in currency has been arise. Currency is highly uncertain and unpredictable instrument. There are ample of of factors affecting movement of currency. People have started using

Currency futures as an investment option and they can trade various currencies as per the current economical condition of the country. Before investment it is important to identify effect of various factors on index value of currency. The purpose of this paper is to indicate main factors which are influencing currency rates, focusing on economical formulas based on the economics theory to check health of the currency and useful prediction models for currency exchange rate.

III. INDUSTRY AND COMPANY PROFILE 3.1 INDUSTRY PROFILE

A. *Foreign Exchange Market*

Compared to other financial markets, FX markets have unique features. It has wide structure, composition; effects of change in technology and in regulations then draw out implications for their functioning.

Foreign exchange market is described as an OTC (Over the counter) market as there is no physical place where the participants meet to execute their deals. It is more an informal arrangement among the banks and brokers operating in a financing centre purchasing and selling currencies, connected to each other by tele-communications like telex, telephone and a satellite communication network, SWIFT. The term foreign exchange market is used to refer to the wholesale a segment of the market, where the dealings take place among the banks. The retail segment refers to the dealings take place between banks and their customers. The retail segment refers to the dealings take place between banks and their customers. The retail segment is situated at a large number of places. They can be considered not as foreign exchange markets, but as the counters of such markets.

The leading foreign exchange market in India is Mumbai, Calcutta, Chennai and Delhi is other centers accounting for bulk of the exchange dealings in India. The policy of Reserve Bank has been to decentralize exchanges operations and develop broader based exchange markets. As a result of the efforts of Reserve Bank Cochin, Bangalore, Ahmadabad and Goa have emerged as new centre of foreign exchange market.

B. *Aspects of the Indian Foreign Exchange Market*

The percentage of intervention to interbank turnover fell from 13.4 in 2001-02 to 0.9 in 2006-07, but it was still large compared to mature economies. The Bank of Japan intervened successfully in 2011 even with a percentage of 0.2. This is the annual intervention percentage. The CB share can be much higher for daily intervention, which tends to be concentrated on a few days. Since the inter-bank market remains a large size of the total, the inter-bank share is not much higher than the percentage of CB intervention to total turnover. CB intervention, however, affects only domestic markets. Even so, the derivative segment of the FX market also evolved. Cross- currency derivatives with the rupee as one leg were introduced, with some restrictions, in April 10 1997. Rupee-foreign exchange options were allowed in July 2003. Exchange traded currency futures were started in 2008. The most widely used derivative instruments were the forwards and foreign exchange swaps (rupee-dollar), but there was user demand for liquid and transparent exchange traded hedging products, which are easier to regulate.

C. *Company Profile IIFL LTD.,*

IIFL is a financial services conglomerate which was started by a group of passionate entrepreneurs in 1995. The genesis of IIFL lies in the power of dreaming big and believing in your dreams.

IIFL was the pioneer in the retail broking industry with its launch of 5paisa trading platform which offered the lowest brokerage in the industry and the freedom from traditional ways of transacting. Our strength has been to continuously innovate and reinvent ourselves. IIFL's evolution from an entrepreneurial start-up in 1995 to a full range diversified financial services group is a story of steady growth by adapting to the dynamic business environment, without losing focus on our core domain of financial services.

Today, IIFL Holdings Limited (Bloomberg Code: IIFL IN, NSE: IIFL, BSE: 532636) is India's leading integrated financial services group with diverse operating businesses, mainly, Non Banking and Housing Finance, Wealth and Asset Management, Financial Advisory and Broking, Mutual Funds and Financial

Product Distribution, Investment Banking, Institutional Equities, Realty Broking and Advisory Services.

IIFL serves more than 4 million satisfied customers across various business segments and is continuously building on its strengths to deliver excellent service to its expanding customer base.

1) *Vision:* Our vision is to be the most respected company in the financial services space.
2) *Mission:* "To become a full-fledged financial services company known for its quality of advice, personalized services and cutting edge technology"

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D. Origin

India Infoline Ltd., was founded in 1995 by a group of professional with impeccable educational qualifications and professional credentials. Its institutional investors include Intel Capital leading Technology Company, CDC (promoted by UK government), ICICI, TDA and Reeshanar. India Infoline group offers the entire gamut of investment products including stock broking, Commodities broking, Mutual Funds, Fixed Deposits, GOI Relief bonds, Post office savings and life Insurance. India Infoline is the leading corporate agent of ICICI Prudential Life Insurance Co. Ltd., which is India' No. 1 Private sector life insurance company.

Www.indiainfoline.com has been the only India Website to have been listed by none other than

Forbes in it's "Best of the Web" survey of global website, not just once but three times in a row and counting... "A must read for investors in south Asia" is how they choose to describe India Infoline. It has been rated as No.l the category of Business News in Asia by Alexia rating.

Stock and Commodities broking is offered under the trade name 5paisa. India Infoline Commodities pvt Ltd., a wholly owned subsidiary of India Infoline Ltd., holds membership of MCX and NCDEX.

E. Main Objects of the Company

Main objects as contained in its Memorandum or Association are:

1) To engage or undertake software and internet based services, data processing IT enabled services, software development services, selling advertisement space on the site, web consulting and related services including web designing and web maintenance, software product development and marketing, software supply services, computer consultancy services, E-Commerce of all types including electronic financial intermediation business and E-broking, market research, business and management consultancy.

2) To undertake, conduct, study, carry on, help, promote any kind of research, probe, investigation, survey, developmental work on economy, industries, corporate business houses, agricultural and mineral, financial institutions, foreign financial institutions, capital market on matters related to investment decisions primary equity market, secondary equity market, debentures, bond, ventures, capital funding proposals, competitive analysis, preparations of corporate/industry profile etc. and trade/invest in researched securities.

Products: the India Infoline ltd offers the following products A.

a) E-broking.

- Distribution
- Insurance
- PMS
- Mortgages

b) E-Broking

It refers to Electronic Broking of Equities, Derivatives and Commodities under the brand name of

5paisa

- Equities
- Derivatives
- Commodities

c) Distribution

- Mutual funds
- Govt. of India bonds.
- Fixed deposits

d) Insurance

- Life insurance policies
- General Insurance
- Health Insurance Policies.

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F. The Corporate Structure

The India Infoline group comprises the holding company, India Infoline Ltd, which has 5 wholly- owned subsidiaries, engaged in distinct yet complementary businesses which together offer a whole bouquet of products and services to make your money grow.
The corporate structure has evolved to comply with oddities of the regulatory framework but still beautifully help attain synergy and allow flexibility to adapt to dynamics of different businesses. The parent company, India Infoline Ltd owns and manages the web properties www.Indiainfoline.com and www.5paisa.com. It also undertakes research Customized and off-the-shelf.
Indian Infoline Securities Pvt. Ltd. is a member of BSE, NSE and DP with NSDL. Its business encompasses securities broking Portfolio Management services. India Infoline.com Distribution Co. Ltd., Mobilizes Mutual Funds and other personal investment products such as bonds, fixed deposits, etc. India Infoline Insurance Services Ltd. is the corporate agent of ICICI Prudential Life Insurance, engaged in selling Life Insurance, General Insurance and Health Insurance products.
India Infoline Commodities Pvt. Ltd. is a registered commodities broker MCX and offers futures trading in commodities.
India Infoline Investment Services Pvt. Ltd., is proving margin funding and NBFC services to the customers of India Infoline Ltd.,

G. Mission 2020

From an entrepreneurial start-up in 1995, we have steadily grown to emerge as one of India's leading financial services group. Ever since our inception, our strategy has been to align our capabilities and market insights to the country's rapidly changing business environment. Our growth trajectory has only served to reinforce our focus on our domain of financial services.

H. Doubling

Revenue - 2X /Net Profit - 2.5X Over FY16 - FY20
FY16 to FY20 - Doubling of revenue and 2.5x profit and target to raise ROE from 17.3% to 24% Adequately capitalized to sustain volume growth Margin improvement to be driven by rating upgrade to help lower cost of funds

I. Durability

Reducing volatility and cyclicality of earnings in all businesses
NBFC - Retail Lending, Digital Delivery
Wealth - Focus on advisory mandate for customer stickiness
Broking - Online retail. Research driven Institutional

J. De-Risking

Diversifying revenue sources with focus on financial services
Diversified asset mix, geographically well spread
Broadening service offerings
Best-in-class risk management framework
Scale & digitization to bring costs down

K. Corporate Structure

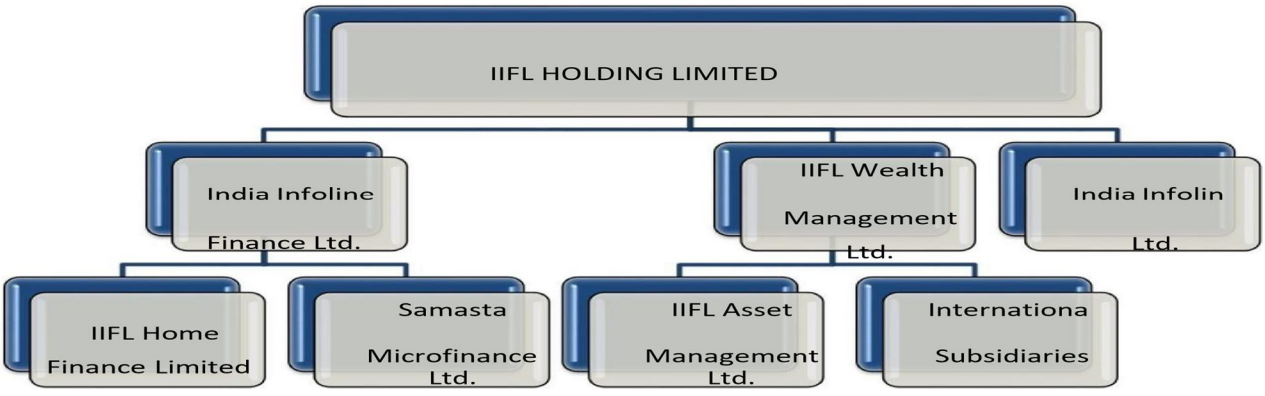


Chart depicts only key businesses and subsidiaries of IIFL Holdings Limited and not all the businesses and subsidiaries.

L. Management

Name	Designation
A K Purwar	Independent Director
Anand Mathur	President – HR
Aniruddha Dange	Chief Strategy Officer
Apoorva Tiwari	Chief Operating Officer
Arun Malkani	Chief Marketing Officer
Ashok Mittal	Group Head
Chandran Ratnaswami	Non Executive Director
Gajendra Thakur	Co. Secretary & Compl. Officer
Gajendra Thakur	Secretary
Geeta Mathur	Independent Director
H Nemkumar	President
Kranti Sinha	Independent Director
Narendra Jain	President
Nilesh Vikamsey	Independent Director
Nipun Goel	President
Nirmal Jain	Chairman
Prabodh Agrawal	Chief Financial Officer
R Mohan	Chief Compliance Officer
R Venkataraman	CEO
R Venkataraman	Managing Director
S Narayan	Independent Director
S Venu	Chief Administrative Officer
Shubhalakshmi Panse	Independent Director
Subhash Kelkar	Chief Technology Officer
Vasudev Jagannath	President

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IV. DATA ANALYSIS

A. *E-Views*

E-Views stands for econometric views. E-Views can be used for general statistical analysis and econometric analyses, such as cross-section and panel data analysis and time series estimation and forecasting. E-Views combines spreadsheet and relational database technology with the traditional tasks found in statistical software, and uses a Windows GUI. This is combined with a programming language which displays limited object orientation.

E-Views organizes data, graphs, output, and so forth, as objects. Each of these objects can be copied, saved, cut-and-pasted into other Windows programs, or used for further analysis. A collection of objects can be saved together in a work file. Since E-Views creates new objects with everything you do, it makes sense to delete unimportant intermediate results to avoid a messy work file.

1) *Unit Root Test*

Unit root test defines whether the data is stationary or not. In case if its not stationary then we have to make the data stationary using difference at level. We can find whether the data is stationary using P value. If P value is less than 0.05 then it is said to be at stationary. If P value is greater than 0.05 then it is said to be non stationary.

2) *Ordinary Least Squares*

Ordinary Least Squares defines whether the independent variable influence the dependent variable or not. If P value is less than 0.05 then it is said to be independent variable influence the dependent variable. If P value is greater than 0.05 then it is said to be independent variable does not influence the dependent variable.

In case if it influence the dependent variable then we have to check residuals. Whether there is heteroskedasticity or not. If there is no heteroskedasticity then we can conclude that there is no arch(autoregressive conditional heteroskedasticity) effect. If there is heteroskedasticity than there is an arch effect. We can able to find whether there is heteroskedasticity or not using null hypothesis guideline. If the P value is less than 0.05 than reject null hypothesis and accept alternate hypothesis. If the P value is greater than 0.05 than accept null hypothesis and reject alternate hypothesis.

- *Null Hypothesis:* There is no Heteroskedasticity
- *Alternate Hypothesis:* There is no Heteroskedasticity

3) *Autoregressive Conditional Heterodasticity*

If there is heteroskedasticity than there is an arch effect. If the P value is greater than 0.05 than accept null hypothesis and reject alternate hypothesis.

Here we have many models which is said to be as arch family. Now we are going to see what are all the models involved in arch family:

- *GARCH:* Garch describes about the Arch (1) and Garch (1) model were the P value of Garch describes whether it as effect or not.
- *TARCH/ GJR GARCH:* Tarch describes about the Arch (1) Garch (1) and Threshold order (1) model were the P value of describes whether it as effect or not.
- *EGARCH:* EGarch describes about the Arch (1) Garch (1) and model were the P value of describes whether it as effect or not.

From all the three model to fit the best model we should follow the guideline which AIC and SIC is stating the lowest is said to be the best model. and then find the residuals of that model.

4) *Cointegration Test*

Cointegration test is defined using the stationary test. Only when the data describes stationary level at first difference I(1)and resid describes stationary at I(0) then only we can conclude that we can use cointegration test.

If there are three or more variables then we can use Johansen Cointegration Test. Only when there is cointegration then we have to use VECM (Vector Error Correction Estimates).

5) *Vector Error Correction Estimates*

Vector Error Correction Estimates defines the factors which are all influencing the dependent variables.

And also it states long run variables using P value.

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B. Future and Spot Rate of USD/INR

For the study four currencies are taken for analysis. The first currency is USD/INR. Before doing any analysis it is mandatory to check for stationary. The stationarity can be tested with unit root test. For unit root test ADF test is used.

Table 4.1: Unit Root Test for Future Rate of USD/INR

Null Hypothesis: LUFUT has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			1.052041	0.9238
Test critical values:	1% level		-2.567792	
	5% level		-1.941211	
	10% level		-1.616439	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LUFUT)				
Method: Least Squares				

Variable	Coefficient	Std. Error	t-Stati stic	Prob.
LUFUT(-1)	2.73E-05	2.59E-05	1.0520 41	0.2931
R-squared	-0.000032	Mean dependent var		0.000115
Adjusted R-squared	-0.000032	S.D. dependent var		0.003100
S.E. of regression	0.003101	Akaike info criterion		-8.713282
Sum squared resid	0.007854	Schwarz criterion		-8.707528
Log likelihood	3564.733	Hannan-Quinn criter .		-8.711074
Durbin-Watson stat	2.042371			

From the above output, we have derived unit root test for the Future Rate of USDINR. The P-Value of unit root test is 0.9238 which is greater than 0.05. Hence, the above output derives the result Non Stationary at level I(0).

Since it results in Non Stationary, the next step is to make the variable stationary. In order to make it stationary we have to generate difference for future rate of USDINR. Equation generated to test difference at first level is dlufut=d(lufut)

Table 4.2: Unit Root Test for Future Rate of USD/INR at difference

Null Hypothesis: D(LUFUT) has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-29.14973	0.0000
Test critical values:	1% level		-2.567796	
	5% level		-1.941211	
	10% level		-1.616439	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LUFUT,2)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LUFUT(-1))	-1.021527	0.035044	-29.14973	0.0000
R-squared	0.510116	Mean dependent var		8.09E-06
Adjusted R-squared	0.510116	S.D. dependent var		0.004434
S.E. of regression	0.003103	Akaike info criterion		-8.711563
Sum squared resid	0.007858	Schwarz criterion		-8.705803
Log likelihood	3559.673	Hannan-Quinn .		-8.709352
Durbin-Watson stat	2.000690			

From the above test it is clear that the difference for future rate of USDINR is stationary as P-Value for this unit root test is 0.0000 which is less than 0.05. Hence the unit root test has became stationary at first difference I(1).

Table 4.3: Unit Root Test for Spot Rate of USD/INR

Null Hypothesis: LUSPOT has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			0.298706	0.7720
Test critical values:	1% level		-2.567792	
	5% level		-1.941211	
	10% leve		-1.616439	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LUSPOT)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LUSPOT(-1)	7.43E-06	2.49E-05	0.298706	0.7652
R-squared	-0.000010	Mean dependent var		3.25E-05
Adjusted R-squared	-0.000010	S.D. dependent var		0.002977
S.E. of regression	0.002977	Akaike info criterion		-8.794327
Sum squared resid	0.007243	Schwarz criterion		-8.788573
Log likelihood	3597.880	Hannan-Quinn criter.		-8.792119
Durbin-Watson stat	1.998725			

From the above output, we have derived unit root test for the Spot Rate of USDINR. The P- Value of unit root test is 0.7720 which is greater than 0.05. Hence, the above output derives the result Non Stationary at level I (0).
Since it results in Non Stationary, the next step is to make the variable stationary. In order to make it stationary we have to generate difference for spot rate of USDINR. Equation generated to test difference at first level is dluspot=d(luspot)

Table 4.4: Unit Root Test for Spot Rate of USD/INR at difference

Null Hypothesis: D(LUSPOT) has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-28.63769	0.0000
Test critical values:	1% level		-2.567796	
	5% level		-1.941211	
	10% level		-1.616439	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LUSPOT,2)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LUSPOT(-1))	-1.001018	0.034955	-28.63769	0.0000
R-squared	0.501257	Mean dependent var		7.69E-06
Adjusted R- squared	0.501257	S.D. dependent var		0.004212
S.E. of regression	0.002974	Akaike info criterion		-8.796265
Sum squared resid	0.007220	Schwarz criterion		-8.790506
Log likelihood	3594.274	Hannan-Quinn r.		-8.794055
Durbin-Watson	2.002045			

From the above test it is clear that the difference for spot rate of USDINR is stationary as P-Value for this unit root test is 0.0000 which is less than 0.05. Hence the unit root test has became stationary at first difference I(1).

1) *Ordinary Least Squares:* After making variables stationary then ordinary least square analysis is performed by taking DSPOT of USDINR as dependent variable and DFUT of USDINR as independent variable. Normally the spot price depending previous future which is the reason for taking spot as depended variable.

Table 4.5: Ordinary Least Squares of USD/INR

Dependent Variable: DLUSPOT				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.28E-05	0.000104	0.219773	0.8261
DLUFUT	0.083726	0.033489	2.500106	0.0126
R-squared	0.007602	Mean dependent var		3.25E-05
Adjusted R- squared	0.006386	S.D. dependent var		0.002977
S.E. of regression	0.002968	Akaike info criterion		-8.799523
Sum squared resid	0.007187	Schwarz criterion		-8.788014
Log likelihood	3601.005	Hannan-Quinn criter.		-8.795106
F-statistic	6.250528	Durbin-Watson stat		2.000604
Prob(F-statistic)	0.012611			

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The output stated above defines P-Value of DLUFUT as 0.0000 which is less than 0.05. Hence, OLS model clearly states that future rate of USDINR influence spot rate of USDINR.
DLUSPOT= 0.083726(DLUFUT)+2.28E-05

2) *Residual Checking for Ordinary Least Squares Model:* Next step is to check Heteroskedasticity for the residuals to ascertain the whether there is uniform variance in the error by using Breusch Pagan Godfry test.

Table 4.6: Residual Checking for Ordinary Least Squares Model of USD/INR

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	0.046748	Prob. F(1,816)		0.8289
Obs*R-squared	0.046860	Prob. Chi-Square(1)		0.8286
Scaled explained SS	0.071045	Prob. Chi-Square(1)		0.7898
Dependent Variable: RESID^2				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.78E-06	5.37E-07	16.34552	0.0000
DLUFUT	3.75E-05	0.000173	0.216212	0.8289
R-squared	0.000057	Mean dependent var		8.79E-06
Adjusted R-squared	-0.001168	S.D. dependent var		1.53E-05
S.E. of regression	1.54E-05	Akaike info criterion		-19.32768
Sum squared resid	1.92E-07	Schwarz criterion		-19.31617
Log likelihood	7907.019	Hannan-Quinn criter.		-19.32326
F-statistic	0.046748	Durbin-Watson stat		1.665081
Prob(F-statistic)	0.828876			

From the derived output, P-Value for residual checking on OLS model is 0.8286 which is greater than 0.05. And so it defines, accept Null Hypothesis and reject Alternate Hypothesis. Here, Null Hypothesis states that there is no Heteroskedasticity. Hence, if there is no Heteroskedasticity then there is no ARCH effect.

C. Future and Spot Rate of EUR/INR

Stationarity test with unit root test using ADF test for EURINR.

Table 4.7: Unit Root Test for Future Rate of EUR/INR

Null Hypothesis: LEFUT has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			0.073073	0.7058
Test critical values:	1% level		-2.567654	
	5% level		-1.941192	
	10% level		-1.616452	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LEFUT)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEFUT(-1)	3.47E-06	4.74E-05	0.073073	0.9418
R-squared	-0.000004	Mean dependent var		1.88E-05
Adjusted R- squared	-0.000004	S.D. dependent var		0.005989
S.E. of regression	0.005989	Akaike info criterion		-7.396730
Sum squared resid	0.030807	Schwarz criterion		-7.391199
Log likelihood	3181.594	Hannan-Quinn criter.		-7.394613
Durbin-Watson stat	1.991186			

From the above output, we have derived unit root test for the Future Rate of EURINR. The P Value of unit root test is 0.7058 which is greater than 0.05. Hence, the above output derives the result Non Stationary at level I(0).

Since it results in Non Stationary, the next step is to make the variable stationary. In order to make it stationary we have to generate difference for future rate of EURINR. Equation generated to test difference at first level is dlefut=d(lefut)

Table 4.8: Unit Root Test for Future Rate of EUR/INR at difference

Null Hypothesis: D(LEFUT) has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Di ckey-Fuller test statistic			-29.18073	0.0000
Test critical values:	1% level		-2.567657	
	5% level		-1.941192	
	10% level		-1.616451	
*MacKinnon (1996) one-sided p-v alues.				
Augmented Dickey - Fuller Test Eq uation				
Dependent Variable: D(LEFUT,2)				
Method: Least Squ ares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LEFUT(-1))	-0.995946	0.034130	-29.18073	0.0000
R-squared	0.498103	Mean dependent var		3.04E-06
Adjusted R- squared	0.498103	S.D. dependent var		0.008455
S.E. of regression	0.005990	Akaike info criterion		-7.396198
Sum squared resid	0.030788	Schwarz criterion		-7.390661
Log likelihood	3177.667	Hannan-Q uinn criter.		-7.394078
Durbin-Watsont	1.999947			

From the above test it is clear that the difference for future rate of EURINR is stationary as P Value for this unit root test is 0.0000 which is less than 0.05. Hence the unit root test has became stationary at first difference I(1).

Table 4.9: Unit Root Test for Spot Rate of EUR/INR

Null Hypothesis: LESPOT has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=21)				
			t-Statistic	Prob.*
Augmented Dic key-Fuller test st atistic			0.138805	0.7260
Test critical values:	1% level		-2.567263	
	5% level		-1.941138	
	10% level		-1.616488	
*MacKinnon (1996) one -sided p-valu es.				
Augmented Dickey-Fuller Test Equati on				
Dependent Variable: D(LESPOT)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LESPOT(-1)	6.04E-06	4.35E-05	0.138805	0.8896
R-squared	-0.000006	Mean dependent var		2.97E-05
Adjusted R-squared	-0.000006	S.D. dependent var		0.005936
S.E. of regression	0.005936	Akaike info criterion		-7.414525
Sum squared resid	0.035414	Schwarz criterion		-7.409641
Log likelihood	3730.506	Hannan-Q uinn criter.		-7.412669
Durbin-Watson stat	2.096015			

From the above output, we have derived unit root test for the Spot Rate of EURINR. The P Value of unit root test is 0.7260 which is greater than 0.05. Hence, the above output derives the result Non Stationary at level I (0).
Since it results in Non Stationary, the next step is to make the variable stationary. In order to make it stationary we have to construct difference for spot rate of EURINR. Equation generated to test difference at first level is dlespot=d(lespot)

Table 4.10: Unit Root Test for Spot Rate of EUR/INR at difference

Null Hypothesis: D(LESPOT) has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=21)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-33.33385	0.0000
Test critical values:	1% level		-2.567265	
	5% level		-1.941139	
	10% level		-1.616487	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LESPOT,2)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LESPOT(-1))	-1.050493	0.031514	-33.33385	0.0000
R-squared	0.525326	Mean dependent var		1.83E-05
Adjusted R- squared	0.525326	S.D. dependent var		0.008598
S.E. of regression	0.005924	Akaike info criterion		-7.418628
Sum squared resid	0.035234	Schwarz criterion		-7.413740
Log likelihood	3728.861	Hannan-Quinn criter.		-7.416771
Durbin-Watson stat	1.997566			

From the above test it is clear that the difference for spot rate of EURINR is stationary as P Value for this unit root test is 0.0000 which is less than 0.05. Hence the unit root test has become stationary at first difference I (1).

1) *Ordinary Least Squares:* Ordinary least square analysis is performed taking DSPOT of EURINR as dependent variable and DFUT of EURINR as independent variable.

Table 4.11: Ordinary Least Squares of EUR/INR

Dependent Variable: DLESPOT				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.07E-06	0.000209	-0.029061	0.9768
DLEFUT	-0.011320	0.034919	-0.324182	0.7459
R-squared	0.000122	Mean dependent var		-6.29E-06
Adjusted R- squared	-0.001043	S.D. dependent var		0.006126
S.E. of regression	0.006129	Akaike info criterion		-7.349251
Sum squared resid	0.032230	Schwarz criterion		-7.338188
Log likelihood	3162.178	Hannan-Quinn criter.		-7.345016
F-statistic	0.105094	Durbin-Watson stat		2.073262
Prob(F-statistic)	0.745879			

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The output stated above defines P-Value of DLEFUT as 0.7459 which is greater than 0.05. Hence, OLS model clearly states that future rate of EURINR does not influence spot rate of EURINR

D. Future And Spot Rate of GBP/INR

Stationarity test with unit root test using ADF test for GBPINR.

Table 4.12: Unit Root Test for Future Rate of GBP/INR

Null Hypothesis: LGFUT has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-0.250973	0.5957
Test critical values:	1% level		-2.567789	
	5% level		-1.941210	
	10% level		-1.616439	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LGFUT)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGFUT(-1)	-1.27E-05	5.06E-05	-0.250973	0.8019
R-squared	0.000013	Mean dependent var		-5.24E-05
Adjusted R- squared	0.000013	S.D. dependent var		0.006531
S.E. of regression	0.006531	Akaike info criterion		-7.223234
Sum squared resid	0.034893	Schwarz criterion		-7.217485
Log likelihood	2958.914	Hannan-Quinn criter.		-7.221028
Durbin-Watson stat	1.904900			

From the above output, we have derived unit root test for the Future Rate of GBPINR. The P Value of unit root test is 0.5957 which is greater than 0.05. Hence, the above output derives the result Non Stationary at level I (0).

Since it results in Non Stationary, the next step is to make the variable stationary. In order to make it stationary we have to generate difference for future rate of GBPINR. Equation generated to test difference at first level is dlgfut=d(lgfut)

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Table 4.13: Unit Root Test for Future Rate of GBP/INR at difference

Null Hypothesis: D(LGFUT) has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Di ckey-Fuller test s tatistic			-27.25656	0.0000
Test critical values:	1% level		-2.567792	
	5% level		-1.941211	
	10% level		-1.616439	
*MacKinnon (1996) one -sided p-valu es.				
Augmented Dickey-Fuller Test on Equati				
Dependent Variable: D(LGFUT,2)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGFUT(-1))	-0.952531	0.034947	-27.25656	0.0000
R-squared	0.476255	Mean dep endent var		-3.79E-07
Adjusted R-squared	0.476255	S.D. dependent var		0.009020
S.E. of regression	0.006528	Akaike info criterion		-7.224318
Sum squared resid	0.034813	Schwarz criterion		-7.218564
Log likelihood	2955.746	Hannan-Q uinn criter.		-7.222110
Durbin-Watson stat	1.996928			

From the above test it is clear that the difference for future rate of GBPINR is stationary as P-Value for this unit root test is 0.0000 which is less than 0.05. Hence the unit root test has became stationary at first difference I(1).

Table 4.14: Unit Root Test for Spot Rate of GBPINR

Null Hypothesis: LGSPOT has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test		statistic	-0.213085	0.6095
Test critical values:	1% level		-2.567481	
	5% level		-1.941168	
	10% level		-1.616467	
*MacKinnon (1996	) one-sided p-v	alues.		
Augmented Dickey	- Fuller Test Eq	uation		
Dependent Variable:	D(LGSPOT)			
Method: Least Squ	ares			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGSPOT(-1)	-9.79E-06	4.59E-05	-0.213085	0.8313
R-squared	0.000010	Mean dependent var		-3.96E-05
Adjusted R- squared	0.000010	S.D. dep endent var		0.006277
S.E. of regression	0.006277	Akaike info criterion		-7.302869
Sum squared resid	0.036166	Schwarz criterion		-7.297621
Log likelihood	3356.668	Hannan-Quinn criter.		-7.300866
Durbin-Watson stat	2.090274			

From the above output, we have derived unit root test for the Spot Rate of GBPINR. The P-Value of unit root test is 0.6095 which is greater than 0.05. Hence, the above output derives the result Non Stationary at level I(0).
Since it results in Non Stationary, the next step is to make the variable stationary. In order to make it stationary we have to generate difference for spot rate of GBPINR. Equation generated to test difference at first level is dlgspot=d(lgspot)

Table 4.15: Unit Root Test for Spot Rate of GBPINR at difference

Null Hypothesis: D(LGSPOT) has a unit root				
Exogenous: None				
Lag Length: 1 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-19.81579	0.0000
Test critical values:	1% level		-2.567486	
	5% level		-1.941169	
	10% level		-1.616467	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LGSPOT,2)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGSPOT(-1))	-0.942241	0.047550	-19.81579	0.0000
D(LGSPOT(-1),2)	-0.097980	0.032866	-2.981170	0.0029
R-squared	0.527175	Mean dependent var		-1.01E-05
Adjusted R- squared	0.526658	S.D. dependent var		0.009074
S.E. of regression	0.006243	Akaike info criterion		-7.312510
Sum squared resid	0.035663	Schwarz criterion		-7.301995
Log likelihood	3354.786	Hannan-Quinn criter.		-7.308497
Durbin-Watson stat	1.992737			

From the above test it is clear that the difference for spot rate of GBPINR is stationary as P Value for this unit root test is 0.0000 which is less than 0.05. Hence the unit root test has become stationary at first difference I (1).

1) Ordinary Least Square: Ordinary least square analysis is performed taking DSPOT of GBPINR as dependent variable

Table 4.16: Ordinary Least Squares of GBP/INR

Dependent Variable: DLGSPOT				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.99E-05	0.000226	-0.176552	0.8599
DLGFUT	-0.029160	0.034584	-0.843155	0.3994
R-squared	0.000869	Mean dependent var		-3.83E-05
Adjusted R- squared	-0.000354	S.D. dependent var		0.006459
S.E. of regression	0.006460	Akaike info criterion		-7.243874
Sum squared resid	0.034097	Schwarz criterion		-7.232377
Log likelihood	2968.366	Hannan-Quinn criter.		-7.239462
F-statistic	0.710910	Durbin-Watson stat		2.084250
Prob(F-statistic)	0.399388			

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The output stated above defines P-Value of DLGFUT as 0.3994 which is greater than 0.05. Hence, OLS model clearly states that future rate of GBPINR does not influence spot rate of GBPINR.

E. Future and Spot Rate of JPY/INR

Stationarity test with unit root test by using ADF test for JPYINR.

Table 4.17: Unit Root Test for Future Rate of JPY/INR

Null Hypothesis: LJFUT has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-1.040458	0.2690
Test critical values:	1% level		-2.567578	
	5% level		-1.941181	
	10% level		-1.616459	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LJFUT)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LJFUT(-1)	-0.000429	0.000413	-1.040458	0.2984
R-squared	0.000432	Mean dependent var		0.000190
Adjusted R- squared	0.000432	S.D. dependent var		0.006748
S.E. of regression	0.006747	Akaike info criterion		-7.158373
Sum squared resid	0.040239	Schwarz criterion		-7.152965
Log likelihood	3168.580	Hannan-Quinn criter.		-7.156305
Durbin-Watson stat	2.038042			

From the above output, we have derived unit root test for the Future Rate of JPYINR. The P-Value of unit root test is 0.2690 which is greater than 0.05. Hence, the above output derives the result Non Stationary at level I(0).

Since it results in Non Stationary, the next step is to make the variable stationary. In order to make it stationary we have to generate difference for future rate of JPYINR. Equation generated to test difference at first level is dljfut=d(ljfut)

Table 4.18: Unit Root Test for Future Rate of JPY/INR at difference

Null Hypothesis: D(LJFUT) has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=20)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-30.26156	0.0000
Test critical values:	1% level		-2.567581	
	5% level		-1.941182	
	10% level		-1.616458	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LJFUT,2)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LJFUT(-1))	-1.018260	0.033649	-30.26156	0.0000
R-squared	0.509107	Mean dependent var		-2.19E-06
Adjusted R- squared	0.509107	S.D. dependent var		0.009639
S.E. of regression	0.006754	Akaike info criterion		-7.156349
Sum squared resid	0.040275	Schwarz criterion		-7.150937
Log likelihood	3164.106	Hannan-Quinn criter.		-7.154280
Durbin-Watson stat	2.000132			

From the above test it is clear that the difference for future rate of JPYINR is stationary as P-Value for this unit root test is 0.0000 which is less than 0.05. Hence the unit root test has became stationary at first difference I(1).

Table 4.19: Unit Root Test for Spot Rate of JPY/INR

Null Hypothesis: LJSPOT has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=21)				
			t-Statistic	Prob.*
Augmented Di ckey-Fuller test statistic			-0.943312	0.3081
Test critical values:	1% level		-2.567324	
	5% level		-1.941147	
	10% level		-1.616482	
*MacKinnon (1996) one-sided p-val ues.				
Augmented Dickey- Fuller Test Equation				
Dependent Variable:	D(LJSPOT)			
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LJSPOT(-1)	-0.000353	0.000374	-0.943312	0.3458
R-squared	0.000359	Mean dep	endent var	0.000150
Adjusted R- squared	0.000359	S.D. dependent var		0.006392
S.E. of regression	0.006391	Akaike info criterion		-7.266850
Sum squared resid	0.039986	Schwarz criterion		-7.261862
Log likelihood	3561.756	Hannan-Q	uinn criter.	-7.264952
Durbin-Watson stat	2.044412			

From the above output, we have derived unit root test for the Spot Rate of JPYINR. The P-Value of unit root test is 0.3081 which is greater than 0.05. Hence, the above output derives the result Non Stationary at level I(0).
Since it results in Non Stationary, the next step is to make the variable stationary. In order to make it stationary we have to generate difference for spot rate of JPYINR. Equation generated to test difference at first level is dljspot=d(ljspot)

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Table 4.20: Unit Root Test for Spot Rate of JPY/INR at difference

Null Hypothesis: D(LJSPOT) has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=21)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-31.99025	0.0000
Test critical values:	1% level		-2.567326	
	5% level		-1.941147	
	10% level		-1.616482	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LJSPOT,2)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LJSPOT(-1))	-1.024596	0.032028	-31.99025	0.0000
R-squared	0.511336	Mean dependent var		-7.89E-06
Adjusted R- squared	0.511336	S.D. dependent var		0.009144
S.E. of regression	0.006392	Akaike info criterion		-7.266445
Sum squared resid	0.039962	Schwarz criterion		-7.261453
Log likelihood	3557.925	Hannan-Quinn criter.		-7.264546
Durbin-Watson stat	1.997560			

From the above test it is clear that the difference for spot rate of JPYINR is stationary as P-Value for this unit root test is 0.0000 which is less than 0.05. Hence the unit root test has become stationary at first difference I (1).

1) *Ordinary Least Squares:* Ordinary least square analysis is performed by taking DSPOT of JPYINR as dependent variable and DFUT of JPYINR as independent variable.

Table 4.21: Ordinary Least Squares of JPY/INR

Dependent Variable: DLJSPOT				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000118	0.000220	0.537078	0.5913
DLJFUT	0.054795	0.032535	1.684209	0.0925
R-squared	0.003202	Mean dependent var		0.000128
Adjusted R- squared	0.002073	S.D. dependent var		0.006535
S.E. of regression	0.006528	Akaike info criterion		-7.223256
Sum squared resid	0.037626	Schwarz criterion		-7.212441
Log likelihood	3198.291	Hannan-Quinn criter.		-7.219121
F-statistic	2.836561	Durbin-Watson stat		2.038600
Prob(F-statistic)	0.092495			

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The output stated above defines P-Value of DLJFUT as 0.0925 which is greater than 0.05. Hence, OLS model clearly states that future rate of JPYINR does not influence spot rate of JPYINR.

F. Long Term Relationship Among Futures

As the all currency futures are stationary at first difference, there may a chance to have long term relationship among future. The long term relationship is tested with cointegration. As there are multiple variables Johansen cointegration is used.

Table 4.22: Johansen Cointegration Model of Future Rate for all four Currencies

Trend assumption: Linear deterministic trend				
Series: DLUFUT DLJFUT DLGFUT DLEFUT				
Lags interval (in first differences): 1 to 4				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.203575	623.1100	47.85613	0.0001
At most 1 *	0.195521	438.0530	29.79707	0.0001
At most 2 *	0.155538	261.1760	15.49471	0.0001
At most 3 *	0.141179	123.7343	3.841466	0.0000

The above output results Johansen Cointegration Test which says about the number of cointegration equation in Unrestricted Cointegration Rank Test (Trace), there are four equations are possible since probability of At most 3 * is 0.000 which is less than 0.05. Since there are four equations are there, it means variables are cointegrated. For estimating the relationship we have to perform VECM.

Table 4.23: Vector Error Correction Estimates of Future Rate for all four Currencies

Vector Error Correction Estimates				
Date: 08/23/18 Time: 00:32				
Sample (adjusted): 5 819				
Included observations: 815 after adjustments				
Standard errors in ( ) & t-statistics in [ ]				
Cointegrating Eq:	CointEq1			
DLUFUT(-1)	1.000000			
DLJFUT(-1)	-0.198177			
	(0.03843)			
	[-5.15677]			
DLGFUT(-1)	-0.526566			
	(0.03479)			
	[-15.1345]			
DLEFUT(-1)	0.093722			
	(0.04187)			

	[2.23835]			
C	-0.000101			
Error Correction:	D(DLUFUT	D(DLJFUT	D(DLGFUT	D(DLEFUT
CointEq1	-0.487755	0.301523	1.302059	0.022716
	(0.04707)	(0.10884)	(0.09370)	(0.08446)
	[-10.3624]	[2.77046]	[13.8966]	[0.26894]
D(DLUFUT(-1))	-0.318710	-0.274025	-0.521960	0.048482
	(0.04513)	(0.10434)	(0.08983)	(0.08098)
	[-7.06257]	[-2.62622]	[-5.81065]	[0.59871]
D(DLUFUT(-2))	-0.199250	-0.119080	-0.322731	0.080166
	(0.03543)	(0.08191)	(0.07052)	(0.06357)
	[-5.62448]	[-1.45378]	[-4.57661]	[1.26108]
D(DLJFUT(-1))	-0.094413	-0.643382	0.135390	0.406287
	(0.01595)	(0.03689)	(0.03176)	(0.02863)
	[-5.91793]	[-17.4413]	[4.26328]	[14.1919]
D(DLJFUT(-2))	-0.038163	-0.374049	0.070771	0.194502
	(0.01638)	(0.03787)	(0.03260)	(0.02939)
	[-2.33003]	[-9.87682]	[2.17065]	[6.61775]
D(DLGFUT(-1))	-0.191454	0.065820	-0.146102	0.014172
	(0.02195)	(0.05076)	(0.04370)	(0.03940)
	[-8.72063]	[1.29662]	[-3.34320]	[0.35973]
D(DLGFUT(-2))	-0.127120	0.014896	-0.069159	0.007605
	(0.01657)	(0.03832)	(0.03299)	(0.02974)
	[-7.67107]	[0.38876]	[-2.09658]	[0.25574]
D(DLEFUT(-1))	-0.008266	-0.043381	-0.124321	-0.625320
	(0.01865)	(0.04313)	(0.03713)	(0.03347)
	[-0.44310]	[-1.00573]	[-3.34792]	[-18.6803]
D(DLEFUT(-2))	-0.017421	-0.108191	-0.065785	-0.241931
	(0.01655)	(0.03826)	(0.03294)	(0.02969)
	[-1.05275]	[-2.82763]	[-1.99713]	[-8.14740]
C	9.93E-06	1.85E-05	2.61E-06	8.71E-06
	(0.00012)	(0.00027)	(0.00024)	(0.00021)
	[0.08356]	[0.06726]	[0.01104]	[0.04086]
R-squared	0.422366	0.363412	0.447570	0.495999
Adj. R-squared	0.415908	0.356295	0.441394	0.490365
Sum sq. resids	0.009260	0.049509	0.036694	0.029819
S.E. equation	0.003392	0.007842	0.006751	0.006086
F-statistic	65.40173	51.06161	72.46644	88.02451
Log likelihood	3483.031	2799.897	2921.964	3006.504
Mean dependent	4.95E-06	8.10E-06	-3.37E-06	6.67E-07
S.D. dependent	0.004438	0.009775	0.009033	0.008525
Determinant resid covariance (dof adj.)		1.15E-18		
Determinant resid covariance		1.10E-18		
Log likelihood		12225.97		

Above outputs defines the coefficient, standard error and t-statistics so in order to get P-value we have to estimate variables.

Table 4.24: Estimation of Variables of all the four currency futures

Estimation Method: Least Squares				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.487755	0.047070	-10.36236	0.0000
C(2)	-0.318710	0.045127	-7.062568	0.0000
C(3)	-0.199250	0.035426	-5.624484	0.0000
C(4)	-0.094413	0.015954	-5.917926	0.0000
C(5)	-0.038163	0.016379	-2.330026	0.0199
C(6)	-0.191454	0.021954	-8.720633	0.0000
C(7)	-0.127120	0.016571	-7.671072	0.0000
C(8)	-0.008266	0.018655	-0.443098	0.6577
C(9)	-0.017421	0.016548	-1.052749	0.2925
C(10)	9.93E-06	0.000119	0.083561	0.9334
C(11)	0.301523	0.108835	2.770460	0.0056
C(12)	-0.274025	0.104342	-2.626222	0.0087
C(13)	-0.119080	0.081911	-1.453776	0.1461
C(14)	-0.643382	0.036888	-17.44134	0.0000
C(15)	-0.374049	0.037871	-9.876820	0.0000
C(16)	0.065820	0.050762	1.296625	0.1949
C(17)	0.014896	0.038316	0.388756	0.6975
C(18)	-0.043381	0.043134	-1.005725	0.3146
C(19)	-0.108191	0.038262	-2.827633	0.0047
C(20)	1.85E-05	0.000275	0.067259	0.9464
C(21)	1.302059	0.093696	13.89659	0.0000
C(22)	-0.521960	0.089828	-5.810652	0.0000
C(23)	-0.322731	0.070517	-4.576611	0.0000
C(24)	0.135390	0.031757	4.263279	0.0000
C(25)	0.070771	0.032604	2.170647	0.0300
C(26)	-0.146102	0.043701	-3.343196	0.0008
C(27)	-0.069159	0.032987	-2.096584	0.0361
C(28)	-0.124321	0.037134	-3.347917	0.0008
C(29)	-0.065785	0.032940	-1.997131	0.0459
C(30)	2.61E-06	0.000236	0.011038	0.9912
C(31)	0.022716	0.084464	0.268936	0.7880
C(32)	0.048482	0.080977	0.598708	0.5494
C(33)	0.080166	0.063569	1.261077	0.2074
C(34)	0.406287	0.028628	14.19188	0.0000
C(35)	0.194502	0.029391	6.617751	0.0000
C(36)	0.014172	0.039395	0.359727	0.7191

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C(37)	0.007605	0.029736	0.255738	0.7982
C(38)	-0.625320	0.033475	-18.68028	0.0000
C(39)	-0.241931	0.029694	-8.147398	0.0000
C(40)	8.71E-06	0.000213	0.040863	0.9674
Determinant residual covariance		1.10E-18		
Equation: D(DLUFUT) = C(1)*(DLUFUT(-1) - 0.198177114215*DLJFUT(-1)				
- 0.526565670821*DLGFUT(-1) + 0.0937217369791*DLEFUT(-1) -				
0.00010109077115) + C(2)*D(DLUFUT(-1)) + C(3)*D(DLUFUT(-2)) +				
C(4)*D(DLJFUT(-1)) + C(5)*D(DLJFUT(-2)) + C(6)*D(DLGFUT(-1)) +				
C(7)*D(DLGFUT(-2)) + C(8)*D(DLEFUT(-1)) + C(9)*D(DLEFUT(-2)) +				
C(10)				
Observations: 815				
R-squared	0.422366	Mean dependent var		4.95E-06
Adjusted R- squared	0.415908	S.D. dependent var		0.004438
S.E. of regression	0.003392	Sum squared resid		0.009260
Durbin-Watson stat	2.160228			
Equation: D(DLJFUT) = C(11)*(DLUFUT(-1) - 0.198177114215*DLJFUT(				
-1) - 0.526565670821*DLGFUT(-1) + 0.0937217369791*DLEFUT(-1) -				
0.00010109077115) + C(12)*D(DLUFUT(-1)) + C(13)*D(DLUFUT(-2))				
+ C(14)*D(DLJFUT(-1)) + C(15)*D(DLJFUT(-2)) + C(16)*D(DLGFUT(				
-1)) + C(17)*D(DLGFUT(-2)) + C(18)*D(DLEFUT(-1)) + C(19)				
*D(DLEFUT(-2)) + C(20)				
Observations: 815				
R-squared	0.363412	Mean dependent var		8.10E-06
Adjusted R- squared	0.356295	S.D. dependent var		0.009775
S.E. of regression	0.007842	Sum squared resid		0.049509
Durbin-Watson stat	2.144383			
Equation: D(DLGFUT) = C(21)*(DLUFUT(-1) - 0.198177114215*DLJFUT(				
-1) - 0.526565670821*DLGFUT(-1) + 0.0937217369791*DLEFUT(-1) -				
0.00010109077115) + C(22)*D(DLUFUT(-1)) + C(23)*D(DLUFUT(-2))				
+ C(24)*D(DLJFUT(-1)) + C(25)*D(DLJFUT(-2)) + C(26)*D(DLGFUT(				
-1)) + C(27)*D(DLGFUT(-2)) + C(28)*D(DLEFUT(-1)) + C(29)				
*D(DLEFUT(-2)) + C(30)				
Observations: 815				
R-squared	0.447570	Mean dependent var		-3.37E-06

Adjusted R- squared	0.441394	S.D. dependent var	0.009033
S.E. of regression	0.006751	Sum squared resid	0.036694
Durbin-Watson stat	2.061050		
Equation: D(DLEFUT) = C(31)*(DLUFUT(-1) - 0.198177114215*DLJFUT(			
-1) - 0.526565670821*DLGFUT(-1) + 0.0937217369791*DLEFUT(-1) -			
0.00010109077115) + C(32)*D(DLUFUT(-1)) + C(33)*D(DLUFUT(-2))			
+ C(34)*D(DLJFUT(-1)) + C(35)*D(DLJFUT(-2)) + C(36)*D(DLGFUT(			
-1)) + C(37)*D(DLGFUT(-2)) + C(38)*D(DLEFUT(-1)) + C(39)			
*D(DLEFUT(-2)) + C(40)			
Observations: 815			
R-squared	0.495999	Mean dependent var	6.67E-07
Adjusted R- squared	0.490365	S.D. dependent var	0.008525
S.E. of regression	0.006086	Sum squared resid	0.029819
Durbin-Watson stat	2.187088		

1) Equation for USD variable

Equation: D(DLUFUT) = C(1)*(DLUFUT(-1) - 0.198177114215*DLJFUT(-1)
- 0.526565670821*DLGFUT(-1) + 0.0937217369791*DLEFUT(-1) -
0.00010109077115) + C(2)*D(DLUFUT(-1)) + C(3)*D(DLUFUT(-2)) +
C(4)*D(DLJFUT(-1)) + C(5)*D(DLJFUT(-2)) + C(6)*D(DLGFUT(-1)) +
C(7)*D(DLGFUT(-2)) + C(8)*D(DLEFUT(-1)) + C(9)*D(DLEFUT(-2)) +
C(10)

Here, only C1, C2, C3, C4, C5, C7 are showing the P-Value which is less than 0.05, thus they only influence USDINR.

2) Equation for JPY variable

Equation: D(DLJFUT) = C(11)*(DLUFUT(-1) - 0.198177114215*DLJFUT(
-1) - 0.526565670821*DLGFUT(-1) + 0.0937217369791*DLEFUT(-1) -
0.00010109077115) + C(12)*D(DLUFUT(-1)) + C(13)*D(DLUFUT(-2))
+ C(14)*D(DLJFUT(-1)) + C(15)*D(DLJFUT(-2)) + C(16)*D(DLGFUT(
-1)) + C(17)*D(DLGFUT(-2)) + C(18)*D(DLEFUT(-1)) + C(19)
*D(DLEFUT(-2) C(20)

Here, only C11, C12, C14, C15 and C19 are showing the P-value which is less than 0.05 thus they influence JPYINR.

3) Equation for GBP variable

Equation: D(DLGFUT) = C(21)*(DLUFUT(-1) - 0.198177114215*DLJFUT(
-1) - 0.526565670821*DLGFUT(-1) + 0.0937217369791*DLEFUT(-1) -
0.00010109077115) + C(22)*D(DLUFUT(-1)) + C(23)*D(DLUFUT(-2))
+ C(24)*D(DLJFUT(-1)) + C(25)*D(DLJFUT(-2)) + C(26)*D(DLGFUT(
-1)) + C(27)*D(DLGFUT(-2)) + C(28)*D(DLEFUT(-1)) + C(29)
*D(DLEFUT(-2)) + C(30)

Here, only C21, C22, C23, C24, C25, C26, C27, C28 and C29 are showing P-value which is less than 0.05 thus they influence GBPINR.

4) Equation for EUR variable

Equation: D(DLEFUT) = C(31)*(DLUFUT(-1) - 0.198177114215*DLJFUT(
-1) - 0.526565670821*DLGFUT(-1) + 0.0937217369791*DLEFUT(-1) -
0.00010109077115) + C(32)*D(DLUFUT(-1)) + C(33)*D(DLUFUT(-2))
+ C(34)*D(DLJFUT(-1)) + C(35)*D(DLJFUT(-2)) + C(36)*D(DLGFUT(
-1)) + C(37)*D(DLGFUT(-2)) + C(38)*D(DLEFUT(-1)) + C(39)
*D(DLEFUT(-2)) + C(40)

Here, only C34, C35, C38 and C39 are showing P-value which is less than 0.05 thus they influence EURINR.

G. Long Term Relationship Among Spots

As the all currency spots are stationary at first difference, there may a chance to have long term relationship among spots. The long term relationship is tested with cointegration. As there are multiple variables Johansen cointegration is used.

Table 4.25: Johansen Cointegration Model of Spot Rate for all four Currencies

Trend assumption: Linear deterministic trend				
Series: DLUSPOT DLJSPOT DLGSPOT DLESPOT				
Lags interval (in first differences): 1 to 4				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesize		Trace	0.05	
No. of CE(s	Eigenvalu	Statistic	Critical Valu	Prob.**
None *	0.200198	633.1563	47.85613	0.0001
At most 1 *	0.181024	451.5395	29.79707	0.0001
At most 2 *	0.174964	289.1831	15.49471	0.0001
At most 3 *	0.150724	132.8204	3.841466	0.0000

The above output results Johansen Cointegration Test which says about the number of cointegration equation in Unrestricted Cointegration Rank Test (Trace), there are four equations are possible since probability of At most 3 * is 0.000 which is less than 0.05. Since there are four equations are there, it means variables are cointegrated. For estimating the relationship we have to perform VECM.

Table 4.26: Vector Error Correction Estimates of Spot Rate for all four Currencies

Vector Error Correction Estimates				
Standard errors in ( ) & t-statistics in [ ]				
Cointegrating Eq:	CointEq1			
DLUSPOT(-1)	1.000000			
DLJSPOT(-1)	-0.001112			
	(0.02857)			
	[-0.03890]			
DLGSPOT(-1)	-0.181136			
	(0.02883)			
	[-6.28287]			
DLESPOT(-1)	0.278807			
	(0.03087)			
	[9.03130]			
C	-5.23E-05			
Error Correction:	D(DLUSPO)	D(DLJSPOT	D(DLGSPO)	D(DLESPO)
CointEq1	-0.810580	-0.488048	0.356048	-1.015304
	(0.05547)	(0.13827)	(0.13080)	(0.12396)
	[-14.6121]	[-3.52977]	[2.72213]	[-8.19066]
D(DLUSPOT(-1))	-0.088306	0.440742	-0.255791	0.763760
	(0.04762)	(0.11869)	(0.11228)	(0.10641)
	[-1.85448]	[3.71351]	[-2.27825]	[7.17785]
D(DLUSPOT(-2))	-0.079780	0.158683	-0.125136	0.497998
	(0.03649)	(0.09095)	(0.08604)	(0.08154)
	[-2.18640]	[1.74476]	[-1.45447]	[6.10761]
D(DLJSPOT(-1))	-0.011818	-0.671714	0.030026	-0.007966
	(0.01437)	(0.03581)	(0.03388)	(0.03211)
	[-0.82250]	[-18.7557]	[0.88626]	[-0.24811]
D(DLJSPOT(-2))	-0.012863	-0.337028	-0.056535	-0.000304
	(0.01441)	(0.03591)	(0.03397)	(0.03219)
	[-0.89289]	[-9.38598]	[-1.66437]	[-0.00944]
D(DLGSPOT(-1))	-0.095122	-0.032317	-0.668854	-0.141260
	(0.01619)	(0.04035)	(0.03817)	(0.03617)
	[-5.87591]	[-0.80093]	[-17.5231]	[-3.90500]
D(DLGSPOT(-2))	-0.030367	-0.006068	-0.242557	-0.087390
	(0.01483)	(0.03697)	(0.03497)	(0.03314)
	[-2.04732]	[-0.16413]	[-6.93555]	[-2.63664]
D(DLESPOT(-1))	0.130801	0.044031	-0.072150	-0.482526

	(0.01807)	(0.04504)	(0.04261)	(0.04038)
	[7.23879]	[0.97765]	[-1.69345]	[-11.9504]
D(DLESPOT(-2))	0.064950	-0.006555	-0.063069	-0.212528
	(0.01538)	(0.03833)	(0.03626)	(0.03436)
	[4.22352]	[-0.17102]	[-1.73940]	[-6.18472]
C	-2.96E-06	-7.55E-06	1.14E-05	2.87E-06
	(0.00011)	(0.00027)	(0.00026)	(0.00024)
	[-0.02706]	[-0.02774]	[0.04410]	[0.01174]
R-squared	0.457246	0.339052	0.382729	0.394899
Adj. R-squared	0.451178	0.331663	0.375827	0.388134
Sum sq. resids	0.007833	0.048661	0.043546	0.039112
S.E. equation	0.003119	0.007775	0.007355	0.006970
F-statistic	75.35296	45.88314	55.45851	58.37305
Log likelihood	3551.257	2806.935	2852.192	2895.958
Akaike AIC	-8.690200	-6.863645	-6.974705	-7.082105
Schwarz SC	-8.632492	-6.805937	-6.916997	-7.024398
Mean dependent	-3.16E-06	-9.65E-06	8.37E-06	5.81E-06
S.D. dependent	0.004211	0.009510	0.009309	0.008911
Determinant resid covariance (dof adj.)		1.29E-18		
Determinant resid covariance		1.22E-18		
Log likelihood		12181.32		

Above output defines the coefficient, standard error and t-statistics and so in order to get P-value we have to estimate variables.

Table 4.27: Estimation of Variables of all the currency spots

Estimation Method: Least Squares				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.810580	0.055473	-14.61206	0.0000
C(2)	-0.088306	0.047618	-1.854483	0.0638
C(3)	-0.079780	0.036489	-2.186396	0.0289
C(4)	-0.011818	0.014369	-0.822501	0.4109
C(5)	-0.012863	0.014406	-0.892889	0.3720
C(6)	-0.095122	0.016188	-5.875906	0.0000
C(7)	-0.030367	0.014833	-2.047322	0.0407
C(8)	0.130801	0.018069	7.238790	0.0000
C(9)	0.064950	0.015378	4.223517	0.0000
C(10)	-2.96E-06	0.000109	-0.027065	0.9784
C(11)	-0.487890	0.138189	-3.530592	0.0004

C(12)	0.440385	0.118616	3.712689	0.0002
C(13)	0.158181	0.090886	1.740431	0.0819
C(14)	-0.671447	0.035785	-18.76311	0.0000
C(15)	-0.336359	0.035833	-9.386792	0.0000
C(16)	-0.032779	0.040304	-0.813288	0.4161
C(17)	-0.006147	0.036949	-0.166372	0.8679
C(18)	0.043999	0.045013	0.977465	0.3284
C(19)	-0.006557	0.038308	-0.171162	0.8641
C(20)	-1.08E-05	0.000272	-0.039612	0.9684
C(21)	0.356887	0.131008	2.724168	0.0065
C(22)	-0.257689	0.112452	-2.291554	0.0220
C(23)	-0.127804	0.086163	-1.483287	0.1381
C(24)	0.031446	0.033926	0.926894	0.3541
C(25)	-0.052979	0.033971	-1.559540	0.1190
C(26)	-0.671309	0.038210	-17.56916	0.0000
C(27)	-0.242980	0.035029	-6.936587	0.0000
C(28)	-0.072322	0.042674	-1.694769	0.0902
C(29)	-0.063078	0.036318	-1.736855	0.0825
C(30)	-5.76E-06	0.000258	-0.022334	0.9822
C(31)	-1.014889	0.123957	-8.187436	0.0000
C(32)	0.762820	0.106400	7.169376	0.0000
C(33)	0.496676	0.081526	6.092278	0.0000
C(34)	-0.007263	0.032100	-0.226273	0.8210
C(35)	0.001458	0.032143	0.045347	0.9638
C(36)	-0.142476	0.036153	-3.940908	0.0001
C(37)	-0.087599	0.033144	-2.643029	0.0083
C(38)	-0.482611	0.040377	-11.95263	0.0000
C(39)	-0.212532	0.034363	-6.184921	0.0000
C(40)	-5.61E-06	0.000244	-0.022998	0.9817
Determinant residual covariance		1.23E-18		
Equation: D(DLUSPOT) = C(1)*(DLUSPOT(-1) - 0.00111152295798				
*DLJSPOT(-1) - 0.181135923358*DLGSPOT(-1) + 0.278807137474				

*DLESPOT(-1) - 5.23468209954E-05) + C(2)*D(DLUSPOT(- 1)) + C(3)
*D(DLUSPOT(-2)) + C(4)*D(DLJSPOT(-1)) + C(5)*D(DLJSPOT(-2)) +

C(6)*D(DLGSPOT(-1)) + C(7)*D(DLGSPOT(-2)) + C(8)*D(DLESPOT(				
-1)) + C(9)*D(DLESPOT(-2)) + C(10)				
Observations: 815				
R-squared	0.457246	Mean dependent var		-3.16E-06
Adjusted R- squared	0.451178	S.D. dependent var		0.004211
S.E. of regression	0.003119	Sum squared resid		0.007833
Durbin-Watson stat	2.074218			
Equation: D(DLJSPOT) = C(11)*(DLUSPOT(-1) - 0.00111152295798				
*DLJSPOT(-1) - 0.181135923358*DLGSPOT(-1) + 0.278807137474				
*DLESPOT(-1) - 5.23468209954E-05) + C(12)*D(DLUSPOT(-1)) +				
C(13)*D(DLUSPOT(-2)) + C(14)*D(DLJSPOT(-1)) + C(15)*D(DLJSPOT(				
-2)) + C(16)*D(DLGSPOT(-1)) + C(17)*D(DLGSPOT(-2)) + C(18)				
*D(DLESPOT(-1)) + C(19)*D(DLESPOT(-2)) + C(20)				
Observations: 816				
R-squared	0.338960	Mean dependent var		-9.22E-06
Adjusted R- squared	0.331578	S.D. dependent var		0.009505
S.E. of regression	0.007771	Sum squared resid		0.048668
Durbin-Watson stat	2.159165			
Equation: D(DLGSPOT) = C(21)*(DLUSPOT(-1) - 0.00111152295798				
*DLJSPOT(-1) - 0.181135923358*DLGSPOT(-1) + 0.278807137474				
*DLESPOT(-1) - 5.23468209954E-05) + C(22)*D(DLUSPOT(-1)) +				
C(23)*D(DLUSPOT(-2)) + C(24)*D(DLJSPOT(-1)) + C(25)*D(DLJSPOT(				

-2)) + C(26)*D(DLGSPOT(-1)) + C(27)*D(DLGSPOT(-2)) + C(28)			
*D(DLESPOT(-1)) + C(29)*D(DLESPOT(-2)) + C(30)			
Observations: 816			
R-squared	0.383314	Mean dependent var	-1.56E-05
Adjusted R- squared	0.376428	S.D. dependent var	0.009329
S.E. of regression	0.007367	Sum squared resid	0.043741
Durbin-Watson stat	2.123636		
Equation: D(DLESPOT) = C(31)*(DLUSPOT(-1) - 0.00111152295798			
*DLJSPOT(-1) - 0.181135923358*DLGSPOT(-1) + 0.278807137474			
*DLESPOT(-1) - 5.23468209954E-05) + C(32)*D(DLUSPOT(-1)) +			
C(33)*D(DLUSPOT(-2)) + C(34)*D(DLJSPOT(-1)) + C(35)*D(DLJSPOT(			
-2)) + C(36)*D(DLGSPOT(-1)) + C(37)*D(DLGSPOT(-2)) + C(38)			
*D(DLESPOT(-1)) + C(39)*D(DLESPOT(-2)) + C(40)			
Observations: 816			
R-squared	0.394594	Mean dependent var	-2.53E-06
Adjusted R- squared	0.387834	S.D. dependent var	0.008909
S.E. of regression	0.006970	Sum squared resid	0.039159

1) Equation for USD variable

Equation: D(DLUSPOT) = C(1)*(DLUSPOT(-1) - 0.00111152295798
*DLJSPOT(-1) - 0.181135923358*DLGSPOT(-1) + 0.278807137474
*DLESPOT(-1) - 5.23468209954E-05) + C(2)*D(DLUSPOT(-1)) + C(3)
*D(DLUSPOT(-2)) + C(4)*D(DLJSPOT(-1)) + C(5)*D(DLJSPOT(-2)) +
C(6)*D(DLGSPOT(-1)) + C(7)*D(DLGSPOT(-2)) + C(8)*D(DLESPOT(
-1)) + C(9)*D(DLESPOT(-2)) + C(10)

Here, only C1, C3, C6, C7, C8, and C9 are showing the P-value which is less than 0.05 thus th influence USDINR.

2) Equation for JPY variable

Equation: D(DLJSPOT) = C(11)*(DLUSPOT(-1) - 0.00111152295798
*DLJSPOT(-1) - 0.181135923358*DLGSPOT(-1) + 0.278807137474
*DLESPOT(-1) - 5.23468209954E-05) + C(12)*D(DLUSPOT(-1)) +
C(13)*D(DLUSPOT(-2)) + C(14)*D(DLJSPOT(-1)) + C(15)*D(DLJSPOT(
-2)) + C(16)*D(DLGSPOT(-1)) + C(17)*D(DLGSPOT(-2)) + C(18)
*D(DLESPOT(-1)) + C(19)*D(DLESPOT(-2)) + C(20)

Here, only C11, C12, C14 and C15 are showing P-value which is less than 0.05 thus they influence JPYINR.

3) Equation for GBP variable

Equation: D(DLGSPOT) = C(21)*(DLUSPOT(-1) - 0.00111152295798
*DLJSPOT(-1) - 0.181135923358*DLGSPOT(-1) + 0.2788071374
*DLESPOT(-1) - 5.23468209954E-05) + C(22)*D(DLUSPOT(-1))
C(23)*D(DLUSPOT(-2)) + C(24)*D(DLJSPOT(-1)) + C(25)*D(DLJSPOT(
-2)) + C(26)*D(DLGSPOT(-1)) + C(27)*D(DLGSPOT(-2)) + C(28)
*D(DLESPOT(-1)) + C(29)*D(DLESPOT(-2)) + C(30)

Here, only C21, C22, C26 and C27 are showing P-value which is less than 0.05 thus influence GBPINR.

4) Equation for EUR variable

Equation: D(DLESPOT) = C(31)*(DLUSPOT(-1) - 0.00111152295798
*DLJSPOT(-1) - 0.181135923358*DLGSPOT(-1) + 0.278807137474
*DLESPOT(-1) - 5.23468209954E-05) + C(32)*D(DLUSPOT(-1)) +
C(33)*D(DLUSPOT(-2)) + C(34)*D(DLJSPOT(-1)) + C(35)*D(DLJSPOT(
-2)) + C(36)*D(DLGSPOT(-1)) + C(37)*D(DLGSPOT(-2)) + C(38)
*D(DLESPOT(-1)) + C(39)*D(DLESPOT(-2)) + C(40)

Here, C31, C32, C33, C36, C37, C38 and C39 are showing P-value which is less than thus they influence EURINR.

V. FINDINGS, SUGGESTION AND CONCLUSION

A. Findings

1) From the analysis, we can conclude that which currencies future rate influence the spot rate.
2) From OLS, future rate of USDINR influences spot rate of USDINR. Residual checking defines, there is no Heteroskedasticity, and there is no ARCH effect.
3) From OLS, future rate of EURINR does not influence spot rate of EURINR.
4) From OLS, future rate of GBPINR does not influence spot rate of GBPINR.
5) From OLS, future rate of JPYINR does not influence spot rate of JPYINR.

And also we had find what are all the cointegrated equation using Johansen Cointegration test.

Johansen Cointegration Test which says about the number of cointegration equation in Unrestricted Cointegration Rank Test (Trace), (Maximum Eigenvalue), (normalized by b'*S11*b=I), (alpha) from the P-Value.

At last, we had also noted what are all the factors influencing the currencies using Vector Error Correction Estimates;

a) Only C1, C2, C3, C4, C6 and C7 influence the USDINR future rate.
b) Only C11, C12, C14, C15 and C19 influence the JPYINR future rate.
c) Only C21, C22, C23, C24, C25, C26, 27, C28 and C29 influence the GBPINR future rate.
d) Only C34, C35, C38, and C39 influence the EURINR future rate.
e) Only C1, C3, C6, C7, C8 and C9 influence the USDINR spot rate.
f) Only C11, C12, C14 and C15 influence the JPYINR spot rate.
g) Only C21, C22, C26, and C27 influence the GBPINR spot rate.
h) Only C31, C32, C33, C36, C37, C38 and C39 influence the EURINR spot rate.

These are all the findings estimated from analysis using E-VIEWS.

B. Suggestion

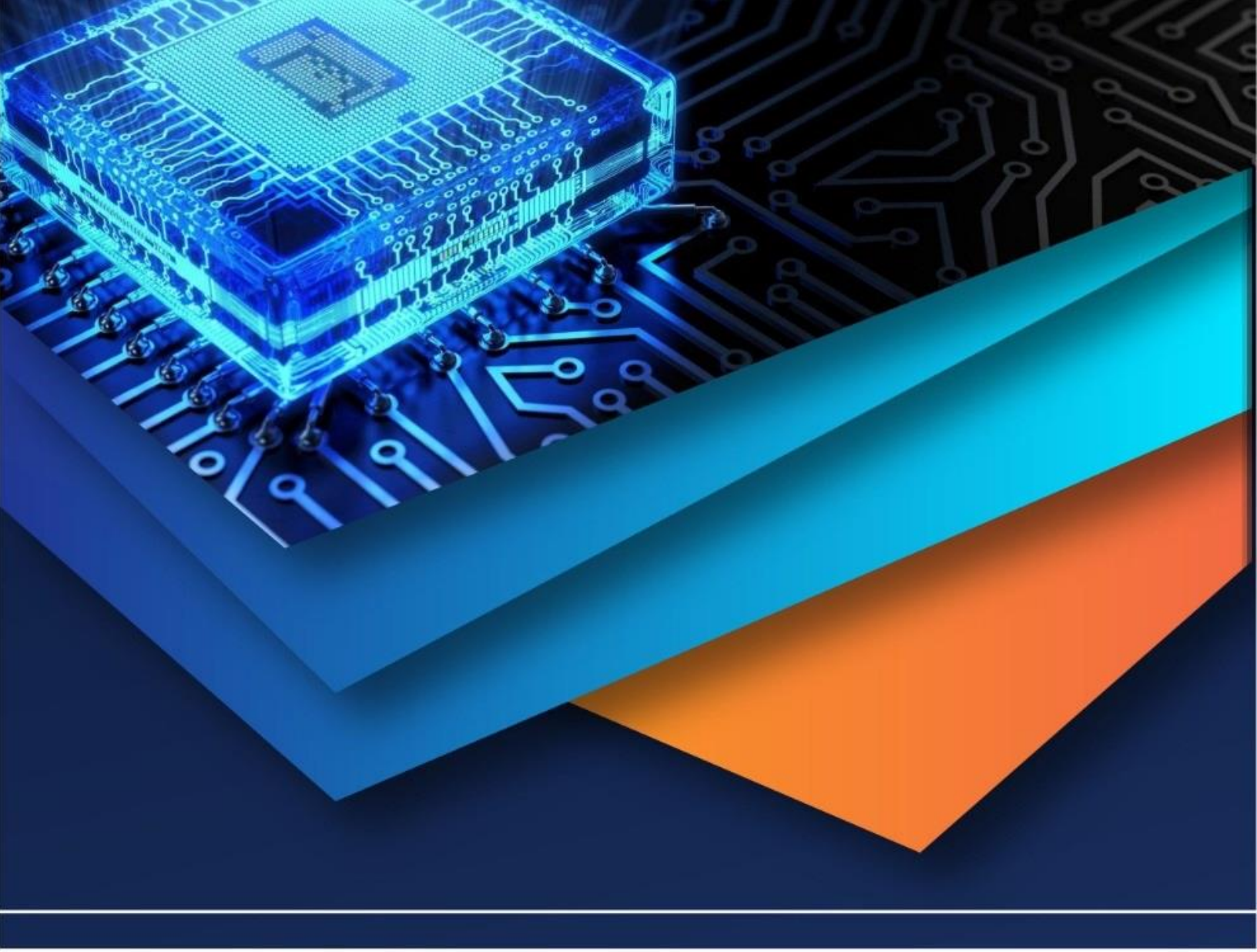
1) Since future rate has an influence on spot rate investors will be able to decide whether to invest, hold or sale based on the estimated future rate.
2) With the help of Vector Error Correction Estimates investors can have a clear idea about the long run influencing factor; based on these factors the investors will be able to decide what to do.
3) In overbought situations the investors may try their best to sell their investment but in oversold conditions, they decided to purchase.

VI. CONCLUSION

Foreign Exchange market is highly risk oriented. If we don't have thorough knowledge of the technical analysis then we might lose the money. A return of the investment in the currencies depends on the volatility of the market. Foreign exchange market is highly volatile. Volatility gives itself an 'opportunity' as well as 'risk' whichever way one may look at it, we can't wish it away. Some traders lost their money in the Foreign Exchange market due the fluctuation of the currency value and only remaining few traders are earning money. At the every point of trade investors were asked to maintain STOP LOSS order to minimize the loss. So the aim is "Don't focus on making money; focus on protecting what you have." If investors follow this strategy for a period of time then they can earn plenty of money in the Foreign Exchange market. The aim must be to ascertain the target of the market operators. Market is always up & down so based on this prevailing situation the investors either buy or sell the currencies.

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