**Project**

**On**

**Impact of Second Bi-monthly Monetary Policy, 2018-19 on Interest Rate Differential of USD-INR and its effect on USD-INR Exchange Rate**



**In partial fulfilment of the requirements for the award of degree of**

**MASTERS OF BUSINESS ADMINISTRATION (2017-19)**

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**ACKNOWLEDGEMENT**

Any project of this nature calls for intellectual nourishment, professional help, and encouragement from many quarters.

Then, I would also like to thank Mr. Bhaskar Anand at the MIS Foreign exchange desk, Mr. Chinmay Gopal (Chief Dealer- Foreign Exchange, Treasury Division) for giving their practical insights about the current scenarios in their respective fields. I sincerely acknowledge and appreciate their valuable cooperation by Mrs. Anita Gupta. I would also like to thank Dipanwitta Dutta for providing me all the data required to do my research I would also like to appreciate the views and feedback they provided from time to time enabling me to complete this valuable report. I would also like to thank my family and friends for their support and encouragement. Without their guidance and support, this project would not have been complete.

I would specially like to thank Mr. Chinmay Gopal, my project guide at PNB, without whose guidance I would never have started on this voyage of discovery. I acknowledge with gratitude the timely suggestions and consistent cooperation received from him. I would like to express my deep gratitude to Mr. Shankar K. (Chief Manager, Human Resource Department) for allowing me to undergo training at this prestigious organization.

Finally, I would like to thank UIAMS to give me an opportunity and permission to work at PNB for my summer training and I am greatly thankful to Dr. Nishi Sharma for mentoring me throughout my project and helping me to resolve all my problems. I would also like to thank Mr. Amardeep Marwaha for providing all the mandatory information required for the training and project.

**PREFACE**

Exchange rates have been defined as a relative price of two national monies. More specifically, it can be stated that the exchange rate is "the ratio between a unit of one currency and the amount of another currency for which that unit can be exchanged at a particular time." As such, it can be seen that exchange rates are designed to facilitate the actual exchange of one currency for another. It would appear that exchange rates are relatively straightforward. However, this is unfortunately not the case.

PNB has one of the largest treasury in India, and Foreign Exchange plays a major part of it. The motive of all the organizations at the end of the day is profit making, and hence it is very important for PNB to track the daily exchange rate movements. But markets run on sentiments and at a given point of time, there are various factors prevalent in the market that affect currency fluctuations, be it be interest rate differentials or the political scenario of an economy. It’s not necessary that at all times, all factors are prevalent. Sometimes some factors become more dominant than others while other factors at this point of time may become slightly subdued but you cannot negate their role completely. Therefore, when so many factors are prevalent at a given point of time, it becomes difficult to find the impact of any one particular factor alone.

The project “Impact of Second Bi-monthly Monetary Policy, 2018-19 on Interest Rate Differential of USD-INR and its effect on USD-INR Exchange Rate” analysis the trend of the exchange rate movements before and after Second Bi-monthly Monetary Policy, 2018-19 and the impact of the change in interest rate differential on exchange rate. The conventional wisdom in recent times has brought a correlation into the mind-sets that if interest rates in a given foreign currency are higher than domestic, investors will be more likely to sell their local cash and buy bonds in the higher-paying brand. This will in turn stoke demand for the higher-interest-rate currency on the Foreign Exchange markets and raise its value. The most important interest rate to be considered is the benchmark rates as it is the interest rate based on which the other interest rates, T-bills, long and short bind yields, are changed. But it is difficult to find out an isolated impact of interest rates at a given point of time.

The project includes the monitoring of USD-INR as these currencies plays a major part of Foreign Exchange trading at PNB. These currencies have various factors based on which the exchange rate are affected. The magnitude of the impact of these factors on these currencies is different, based on the respective economic conditions and monitory policy. The trend of exchange rate and interest rate was monitored to analyze the impact. Conclusions are derived based on this analysis. It was found though the trend was not the same every time, but there was definitely an impact. Various factors are also found due to which the impact was diminished.

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* **ABSTRACT**

The project covers a wide gamut of concepts and instruments which affects exchange rate of USD-INR. One of the key and monitorable factor is interest rate differential. For understanding the concept we’ll learn about the treasury operations which are affected because of trade in Foreign exchange settlement.

In this project we’ll learn about the following concepts:-

* About PNB
* Treasury Operations
* Exchange Rate
* Interest Rate differential
* Monetary policy
* Effects of monetary policy on interest rate differential
* Factors affecting exchange rate
* Impact of interest rate differential on exchange rate

We analyse the above using tools of Research Methodology which are fundamental analysis and technical analysis.

Fundamental analysis is a qualitative analysis that involves studying the economy in general. Sensing the course of economy the required Industry is studied to know how the changes in the economy are to affect the industry. The final step involves studying the changes in the various sectors of Economy and Foreign market. This is known as the top-down approach.

Technical analysis on the other hand has nothing to do with such occurrences in the economy or industry and simply assumes that all that is worthwhile knowing is already reflected in the Exchange Rates. This technique involves plotting charts of a foreign exchange price over a period of time and using indicators that are mathematical calculations providing information about the underlying strengths and weaknesses of money, its volatility, bullish and bearish trends, etc. These indicators also generate buy and sell signal with respect to a Foreign exchange, which are of great help to all categories of investors and traders.

* **OBJECTIVE OF THE STUDY**
* To understand the Treasury operations of PNB.
* To study the intricacies of foreign exchange market and understand the functioning of Foreign Exchange department of PNB.
* Understand monetary policy of India.
* To understand the mechanism of interest rate differential.
* To determine various Macro factors affecting Foreign Exchange trade.
* Effects of monetary policy on USD-INR Foreign Exchange Trade and settlement.
* Determine the changes in Interest Rate differential of USD-INR pre and post Second Bi-monthly Monetary Policy, 2018-19 and determine the trend in change in interest rate differential of USD-INR.
* **SCOPE OF THE STUDY**

The aim of this project is to understand the mechanism of exchange rate of USD-INR and Interest Rate Differential. As Second Bi-monthly Monetary Policy 2018-19 was announced during the course of the internship this project will be discussing its effect on exchange rate and its impact on Interest Rate differential. This project will be covering all the macro factors such as Repo Rate, Reverse Repo Rate, Inflation, Crude Oil, US Treasury etc. due to which exchange rate and interest rate differential of USD-INR are affected. This will help to understand the trend in the Foreign Exchange Rate and Interest rate differential before Second Bi-monthly Monetary Policy, 2018-19 and after Second Bi-monthly Monetary Policy 2018-19.

* **About PNB:**



* **PROFILE**

Punjab National Bank, India’s first Swadeshi Bank, commenced its operations on April 12, 1895 from Lahore, with an authorised capital of Rs 2 lac and working capital of Rs 20,000. Far-sighted visionaries and patriots like Lala Lajpat Rai, Mr. E C Jessawala, Babu Kali Prasono Roy, Lala Harkisha n Lal and Sardar Dyal Singh Majithia displayed courage in giving expression to the spirit of nationalism by establishing the first bank purely managed by Indians with Indian Capital. During the long history of the Bank, 7 banks have merged with PNB.

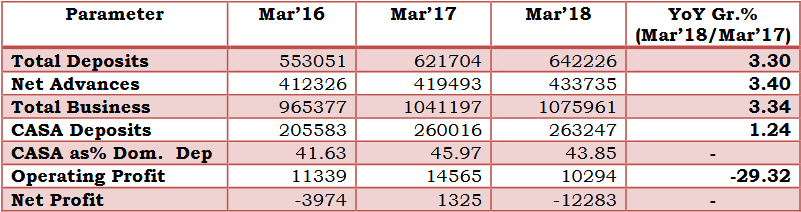
Despite facing a challenging business environment in FY’18, the Bank relying on its core strengths, has been able to steer through the tough times. The Bank’s brand image and trust reposed by its customers have been reflected in the growing customer base and rising business graph of the Bank. Domestic Business of the Bank crossed the milestone of Rs.10 lakh crore and the Bank continued to maintain its forte in low cost CASA deposits. The Bank has been able to reach out to its customers across the nation with it more than 6900 branches, of which nearly 62% branches are in Rural and Semi Urban Areas (RU-SU).

**MISSION PARIVARTAN**, a transformational exercise for Business Excellence is currently underway to improve upon the Efficiency, Productivity and Profitability for long term sustenance and giving the Bank an edge over its competitors. An independent ‘THINK TANK’ named ‘Mission Parivartan Division’ has been formed to initiate, implement and drive change through improvement in People, Products and Processes. This will enable Bank to continue to serve the customers with the enhanced vigour and zeal to live up to its tagline “the name you can Bank upon”.

**BUSINESS PERFORMANCE**

The Business figures of the Bank as on 31st March 2018 is given as under:

(Amt in Rs crore)



In terms of Bottom Line parameters, the Bank’s Operating Profit stood at Rs.10,294 crore and Net Interest Income of the Bank stood at Rs.14,922 crore as on FY’18. Cost of Deposits of the Bank declined to 4.96% in FY’18 from 5.33% in FY’17.

**INTERNATIONAL FORAYS**



With its presence virtually in all the important centres of the country, Punjab National Bank offers a wide variety of banking services which include corporate and personal banking, industrial finance, agricultural finance, financing of trade and international banking. Among the clients of the Bank are Indian conglomerates, medium and small industrial units, exporters, non-resident Indians and multinational companies.

* Punjab National Bank is serving over 100 million customers through more than 6900 branches and 447 extension counters - **largest amongst Nationalized Banks**.
* PNB regained its Number One slot amongst Nationalized Banks and 2nd place amongst Public Sector Banks (PSBs) with overall rank at 191st amongst Top 1000 World Bank by ‘The Banker’ in 2017

**DIGITAL BANKING**

The Bank’s journey towards digitalization continues through constant innovation and upgradation of its existing products and services. The Bank strives to provide hassle free and convenient banking services to more than 10 crore customers of the Bank.

The Bank has opened its first Proof of Concept (POC) Model of Digital Branch PNB DIGIHUT at Head Office, Dwarka. In order to promote digital transactions in village areas in closed group where there are internet connectivity issue, a digital set up named as PNB e-Rupaya Project, based on Food-Court Model has been started with pilot run in Rarah village in Bharatpur Circle, Rajasthan.

Some of the major developments are given as under:

* Security has been the mainstay, as Bank moved from paper ATM PIN to paperless Green PIN and commenced instant hot-listing of lost cards through call centres, besides, Interactive Voice Response System (IVRS) in branches and call centres.
* The Bank launched Integrated Fee Portal (IFP) in which the customers are on boarded for fee payments through Internet Banking Gateway. Customers can make payments through Internet Banking, Debit card and Credit card facilities, anytime.
* The Bank was granted in-principle approval by RBI to act as a Bharat Bill Payment Operating Unit and it was made live in September 2017.
* Data Centre of the Bank, Network Operating Centres (NOC) and Disaster Recovery (DR) site are ISO 27001:2013 certified for the period 2016-19.
* The Bank organized various Digital Campaigns and Digital Days for increasing the usage of its digital products.

**ENHANCED VISIBILITY**

To create a sustainable competitive advantage, the Bank continues to lay focus on strengthening brand equity by connecting with the Gen-Next segment. Towards this, the Bank has taken the following steps:

* The Bank has made its official debut on the social networking sites, Twitter and LinkedIn, with an aim of strengthening “Brand PNB” on social media and to engage with its customers in a cost efficient manner. The Bank also has presence on Facebook with 1 lakh likes at present.

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* The demonetization drive paved way for enhanced digitalization process. The Bank also aligned its strategy accordingly and paced up the digitalization process to provide superior banking experience to its customers.
* To carry forward the digital agenda and connect with Next Gen, the Bank has engaged Mr. Virat Kohli, the renowned cricketer and youth icon as brand ambassador of the Bank.

**WAY FORWARD**

Going forward, the Bank has taken up various measures to tighten internal control and vigilance measures. The Bank is also making consistent efforts toward faster recovery & resolution of NPAs through creation of dedicated teams in identified processes. The Bank is also focusing on strict control on credit slippages. The Bank aims to leverage its strengths, remove weaknesses, cash-in on opportunities and neutralize threats to achieve “Profitable growth with Conservation of Capital” through improved performance in ‘CASA & Recovery’.

**CORPORATE SOCIAL RESPONSIBILITY**

Twelve “Farmers’ Training Centres” are working under the aegis of the PNB Farmers’ Welfare Trust, which are located in rural and provide free of cost training on agriculture & allied activities and also for computer, cutting/tailoring/embroidery and entrepreneurship development. These FTCs have imparted training to 1278403 farmers and youth by conducting 42206 training programmes during the third quarter of the FY’18. Each of the FTCs has been converted into a centre of excellence as a pivot for exemplary Agricultural activities for the farmers.

The Bank has 55 Rural Self Employment Training Institutes (RSETIs) and 2 Rural Development Centre are operational. In these centres, 231177 persons were trained, out of which 81268 belonged to BPL families and 146208 were women. RSETIs are focusing on economic upliftment of participants by ensuring adequate credit for inclusive growth.

Total number of Financial Literacy Centres (FLCs) as on 31st March 2018 is 103. During the year 2017-18 (up to Mar’18) enquiries were made by 297629 persons and 700470 persons attended seminars conducted by FLCs.

Under PNB VIKAS-Village Adoption Scheme, the Bank has adopted 169 villages in different states. Further through PNB Ladli, the Bank is popularizing education among the girls in rural and semi urban areas. The Bank also has a scheme named Swachchh Vidyalaya Campaign to provide financial assistance for construction of toilets in government schools of adopted villages under PNB VIKAS. The Bank also has PNB Kisan Balak Shiksha Protsahan Yojana for providing financial assistance to the students of poor agriculture borrowers comprising of small farmers, marginal farmers, tenant farmers, oral lessees and agricultural labour.

* **HERITAGE**

***(A Saga of Excellence in Banking)***

Fired by the spirit of nationalism and founded on the idea that Indians should have a national bank of their own, Punjab National Bank Ltd was the result of the efforts of far-sighted visionaries and patriots, among whom were persons like Lala Lajpat Rai, Mr. E C Jessawala, Babu Kali Prasono Roy, Lala Harkishan Lal and Sardar Dyal Singh Majithia. Incorporated under the Act VI of 1882, Indian Companies Act, the Bank commenced operations on April 12, 1895 from Lahore, with an authorised total capital of Rs 2 lac and working capital of Rs 20,000. Prophetically, the Bank chose "Stability" as its telegraphic address, as the future course of events were to prove - the Bank withstood various financial crises including the trauma in the form of partition of India when the Bank had to close 92 offices (33%) in west Pakistan which constituted 40% of its deposits and 15 of its staff fell victims to the frenzy. The registered office was shifted to Delhi and the Bank honoured all the deposit claims of the refugees even on the basis of whatever little evidence they could produce. Subsequently, the Bank registered impressive performance and grew from strength to strength.

A pioneer throughout, the Bank distinguished itself by appointing auditors in 1895 long before it was mandatory; introduced the "teller" system in 1944 (another first ); established profit sharing bonus, provident fund and voluntary outside audit well before they formed keystones of good management.

Nationalisation came in 1969 which unleashed a new chapter in the long history of the Bank. Keeping with the economic ideology of catalysing development and amelioration of poverty by funding various self-employment schemes, PNB expanded its presence rapidly in unbanked areas. The Bank donned the role of a facilitator in providing the vital input of credit and consistently exceeded the national goals in respect of priority sector lending. With its large presence throughout the country and with a view to strengthening the rural credit delivery system, the Bank sponsored Regional Rural Banks (RRBs).

PNB has established itself firmly as one of the premier banking institutions in the country with a long tradition of sound and prudent banking. The bank`s growth has been aided by take-over/merger of 7 private sector banks during different periods in its history. The first ever and the only merger of a nationalized bank with PNB was in 1993, viz., New Bank of India.

By late 1980s when the first whiff of liberalization came about, the Bank initiated strategic moves towards diversification; and in 2002, 20% of government ownership was disinvested through a very successful IPO to the public. In 2003, the erstwhile Nedungadi Bank Ltd (e-NBL), a Kerala based private bank was amalgamated with Punjab National Bank. This was the seventh merger in PNB’s history of more than 115 years. PNB’s management team has been quite successful in managing the mergers and ensuring the integration process in a smooth and effective manner. It may be added that no other bank in the nationalized bank group has a track-record of so many mergers. This has improved the franchise value of the Bank, particularly, in the relatively underrepresented Kerala region. In order to meet future capital requirements on account of implementation of Basel II norms, in March 2005, the Bank came out with Follow-on Public Offer (FPO) through the book building process, reducing the shareholding of Gov. of India to 57.8%.

Punjab National Bank with more than 5400 domestic offices including Extension Counters has the largest network amongst the nationalized banks i.e. next only to SBI. The bank has a strong franchise value and provides a host of financial products and services, both to the retail customer and corporate business. It has continued to fulfil its social responsibilities and made significant progress in adoption of technology, keeping with its objective of transforming itself into a techno-savvy Bank.

During 2008-09, the Bank achieved the landmark of becoming the largest Nationalized Bank to bring ALL BRANCHES/EXTENSION COUNTERS into Core Banking Solution (CBS). The strong franchise enjoyed by the Bank, combined with its technological capabilities provides the Bank competitive advantages.

The Bank also continues to discharge its social obligations and addresses environmental concerns with added vigour, which include free medical camps, distribute artificial limbs, tree plantation and blood donation camps, besides donations to Hospitals, Schools etc. The Bank supports various societies, charitable institutions and NGO /organisations working for the benefit of downtrodden, weaker sections of society, orphans, underprivileged, spastics, handicapped, mentally retarded children, women in shelter homes, etc. The Bank also contributes for fighting diseases like diabetes, tuberculosis, AIDS, leprosy etc. Donations are also extended for purchase of water coolers, ambulances and building infrastructure facilities at hospitals/schools.

* **TREASURY DIVISION - ORGANISATIONAL STRUCTURE**

* **INTRODUCTION**

Traditionally, the treasury function in banks was limited to Funds Management, i.e., maintaining adequate cash balances to meet day-to-day requirements and Deploying surplus funds from operations. The treasury in a bank is also responsible for maintenance of reserve requirements (Cash Reserve Ratio and Statutory Liquidity Ratio).

The Treasury Division in our bank has integrated Treasury operations which

Comprise:

* **Front Office;**
* **Mid Office;**
* **Back office - Domestic,**
* **Forex Back Office.**

Besides performing the traditional roles, Treasury Division also performs the following functions:

* **Reserve management and Investment** - This involves meeting statutory requirements of maintaining Cash Reserve Ratio (CRR)/Statutory Liquidity Ratio (SLR) obligations and having an optimum mix of investment portfolio with the objective to improve Liquidity Coverage Ratio of the Bank.
* **Liquidity and Funds management** - This involves analysis of major cash flows; providing inputs to planning group on funding mix ( currency, tenor and cost) and yield expected in credit and investment. It also involves maintaining surplus liquid funds to meet intra-day liquidity requirements both in domestic and foreign currencies.
* **Asset Liability Management and Term money** - This involves determining the optimum size and growth rate of the balance sheet; and also prices the assets and liabilities in accordance with the prescribed guidelines.
* **Risk Management** - This involves managing all market risks associated with the bank’s assets and liabilities. Market risk also includes liquidity risk both under general and stressed market conditions besides preparing relevant group/solo basis contingency funding plan for different stress periods and scenarios. Risk management also includes management of credit risks on treasury products and operations risks on payments and settlements.
* **Derivative products** - Treasury Division develop Interest rate swaps, and other derivative products to hedge the bank’s exposure, sell such products to customers or other banks and trade in such products.
* **Arbitrage** - This involves simultaneous buying and selling of the same type of assets in two different markets in order to make risk-less profits.
* **Subsidiaries and Joint Ventures (JVs**) - The Treasury Division monitors the domestic Bank’s subsidiaries and also investments made by the bank in JVs.
* **Research Desk -** The Research desk works under Equity segment and perform following works:
* Guidance for investment in IPO/FPO/OFS/IPP.
* Guidance for investment in Mutual fund/VCF/Strategic investments.
* Preparing all slides and background papers/data for conducting Investment committee meetings.
* Preparing Research notes on Equity Stocks/ major financial events and data.
* Sending market related messages/e-mails to Senior Management.
* Daily News updating after going through the Newspapers.

Canalizing and managing other asset instruments into investment instruments e.g., instruments resulting out of Corporate Debt Restructuring, Asset Reconstruction, IBPCs, Pass Thru certificates, Asset Backed Securitization (ABS), Mortgage Backed Securitization (MBS), etc.

To minimize the level of provisional requirements due to non-performing investments.

* Guidelines issued by RBI, and other internal guidelines which are issued time to time by Bank will prevail over the Treasury Manual.
* It will be endeavour of Treasury Division to update the Manual in 3 years.
* **FRONT-OFFICE**

The scope of functions of front-office is to buy, sell and trade in money market instruments, SLR & Non-SLR securities, Forex, Equity, Derivatives and precious metal like Gold & Silver. The decisions in regard to any restructuring, reorganizing, pre-payment, etc. are taken at front-office.

The front-office dealers keep track of and develop their views on different asset class, securities, currencies, derivative products which are put up to Investment Committee and respective competent authority for arriving at trading/strategic investment entry/exit decisions. The Front-office functions are summarized as under:

* Significant interaction with various trading and delivery teams;
* Fund/Liquidity Management including Maintenance of CRR and SLR.
* Striking of Deals (trading) and earning profits from trading;
* Analyze all Primary issues and Place orders after seeking approval from the competent authority.

**DEALING ROOM**

The Dealing Room acts as the bank's interface to international and domestic financial markets and, generally, bears responsibility for managing market risks within the framework of prescribed procedures and guidelines.

All dealers active in day-to-day trading activities must acknowledge familiarity with and provide an undertaking in writing to adhere to the bank's dealing guidelines and procedures. The Dealers involved in bank’s trading activities must adhere the following requirements:

**a) Code of Conduct** - All dealers active in day-to-day trading activities in the Indian market must acknowledge familiarity with and provide an undertaking to adhere to Foreign Exchange Dealers’ Association of India (FEDAI) code of conduct (and Fixed Income Money Market, Derivatives Association of India (FIMMDA) Code of Conduct where applicable) and CCIL Clearing Corporation of India Ltd. (Code of Conduct where applicable).

**b) Adherence to Internal Limits** - All dealers must be aware of, acknowledge and provide an undertaking to adhere to the limits governing their authority to commit the bank to risk exposures, as they apply to their own particular risk responsibilities and level of seniority. The dealers are required to adhere the powers and the guidelines contained in the Investment policy of the Bank.

**c) Adherence to RBI limits and guidelines** - All dealers must acknowledge and provide an undertaking to adhere to their responsibility to remain within RBI limits and guidelines in their area of activity.

**d) Dealing with Brokers** - All dealers should be aware of, acknowledge and provide an undertaking to remain within the guidelines governing the bank's activities with brokers, including conducting business only with brokers authorised by bank.

**e) Compulsory Break** -The dealer should take at least one period of continuous Break of not less than 14 days during a financial year.

**f) Dealing Hours** - All dealers should be aware of the bank's normal trading hours, cut-off time for overnight positions and rules governing after hours and off-site trading (if allowed by the bank).

**g) Security and Confidentiality** - All dealers should be aware of the bank's requirements in respect of maintaining confidentiality over its own and its customers' trading activities as well as the responsibility for secure maintenance of access media, keys, passwords and PINS.

**h) Staff Rotation and Leave requirements** - All dealers should be rotated as per the bank's internal policy in regards to staff rotation.

1. Customer/User Appropriateness and Suitability Policy – The Bank have a ‘Customer/User Appropriateness and Suitability Policy’ in place in an Investment policy for transacting in complex treasury instruments such as, derivatives. The objective of such policy is to protect the bank against the credit, reputation and litigation risks which may arise on account of ‘misselling’ products to users who may not understand the nature of the risks inherent in these transactions or products. The front office dealers must be aware of such policy. The dealers should conduct proper due diligence regarding ‘user appropriateness and suitability’ of products before offering derivative products or other complex treasury instruments to users.

* **MID-OFFICE**

The mid-office of the Bank is under the administrative control of the IRMD, HO. It is considered to be the conscience keeper of the Treasury. It is responsible for the critical functions of independent market risk monitoring, measurement, analysis and reporting to the bank's Asset-Liability Management Committee (ALCO).

The mid-office provides independent risk assessment which is critical to Asset- Liability Management Committee (ALCO)'s key function of controlling and managing market risks in accordance with the mandate established by the Board/Risk Management Committee.

The Mid-office forecasts (simulations) showing the effects of various possible changes in market conditions related to risk exposures.

The main functions of mid-office are summarized as under:

**Management of risks:**

**(a)** Market risk which arises on account of:

- Interest rate movement

- Foreign exchange rate movement

- Commodity prices

- Equity prices

**(b)** Liquidity risk

**(c)** Country risk

**(d)** Independent market risk monitoring, measurement, analysis and reporting to bank’s ALCO (Asset Liability Management Committee).

**(e)** Formation of Investment policy for bank’s treasury.

**(f)** Formation of ALM policy for the bank.

**(g)** Calculation of capital charge.

* **BACK-OFFICE**
* The back-office is responsible for delivery, payment and settlement of all transactions entered-into by front-office officials.
* It is also responsible for reconciliation of securities portfolio with respective holding entity. Payment of brokerage to brokers, empanelment of brokers, reviewing performance of brokers and monitoring the volume of business passed on to each broker is also under the purview of back-office. The main functions of back-office are summed as under:
* Co-ordination with front-office to ensure optimum usage of all treasury dealing systems;
* Internal control and check over treasury dealings, confirmation and settlement activities, and accounting thereof;
* Ensuring compliance with stated treasury procedures and stipulations;
* Monitoring of SLR/CRR maintenance and submission of compliance reports and MIS to ED/CMD, Board of Directors and RBI;
* Audit facilitation (concurrent, statutory and AFI / RBI).

The key controls over market risk activities, and particularly over dealing room activities, exist in the back-office. It is critical that clear segregation of duties and reporting lines is maintained between dealing room staff and back-office staff, as well as clearly defined physical and systems access is also maintained between the two areas. It is essential that critical back-office controls are executed diligently and completely at all times including:

* **C*ontrol over confirmations on Deals****:* All confirmations for transactions concluded by the dealing room must be issued and received by the back-office only. Discrepancies in transaction details, non-receipts and receipts of confirmations without application must be resolved promptly to avoid instances of unrecorded risk exposure. (in case of OTC deals only).
* **Control over dealing accounts***:* Prompt reconciliation of all dealing accounts is an essential control to ensure accurate identification of risk exposures. Discrepancies, non-receipts and receipts of funds without application must be resolved promptly to avoid instances of unrecorded risk exposure. Reconciled items and discrepancies in these accounts must be kept under heightened management supervision.
* **Timely monitoring of non-performing investments (‘NPIs’**): RBI has defined NPIs as investments where the interest/return or principal has been in arrears for a period exceeding 90 days. The back office should not reckon income on such investments and should provide for depreciation on them appropriately. Such depreciation is further not allowed to be set-off against appreciation on other performing investments. The back-office should have appropriate procedures/controls instated for timely capturing of NPIs.
* **Monitoring and reporting of risk limits and usage***:* Reporting of usage of risk limits established by the Risk Management Committee as well as Counterparty risk limits should be assessed out by the back-office independently of the dealing room. Maintenance of all limit systems must also be undertaken by the back office and access to limit systems (such as counterparty limits, overnight limits, etc.) must be secure from access and tampering by unauthorized personnel. Since the bank has an independent mid-office function, this responsibility is passed on to the Mid-Office.
* **Control over payments systems***:* The procedure and systems for making payments must be independent in the back-office from the dealing function.
* **Reconciliation of SGL and Imprest accounts***:* The back-office is responsible for reconciliation of all imprest accounts and the securities whether held in physical form or in Demat form at prescribed intervals and place the same to the competitive authority and take corrective steps immediately for adjustment of unreconciled entries.
* **Broker’s Panel:** Back office should empanel brokers and review the performance of empanelled brokers on periodic basis and put up the same to the Board.
* **Brokerage:** Ensuring all brokerage payments and statements are received, reconciled and paid by the back office and under no circumstances authorised or any payment released by dealers.
* **Controls in respect of financial reporting and MIS**: Ensuring timely submission of all reports, notes and other MIS to the competent authority/ regulatory authority.
* Please refer to [ANNEXTURES 1](#annexture) for reference.

## ABOUT PROJECT

* **OBJECTIVE**
* To understand Foreign exchange.
* Understand monetary policy of India.
* To understand the mechanism of interest rate differential.
* To determine various Macro factors affecting Foreign Exchange trade.
* Effects of monetary policy on USD-INR Foreign Exchange Trade and settlement.

## DESCRIPTION

Cross-border transactions have become larger and more frequent, foreign-exchange markets have become increasingly important to the global economy and have grown in relative size: whereas U.S. cross-border trade in goods and services and long-term securities are measured in trillions of dollars per month or year, turnover in foreign-exchange markets is measured in trillions of dollars per day.

These trades occurred between different agents (individuals, firms, banks, governments) and for different reasons, varying from tourist demand for currency to firms needing payment for goods in local currency, to banks for making profits.

When currencies are traded in the foreign-exchange market, participants (Banks) need to know the value of their currency relative to other currencies, just as participants in a traditional stock market need to know the value of the stocks they wish to buy or sell. In foreign-exchange markets, this price is known as the exchange rate, the number of units of one nation’s currency that must be traded to acquire one unit of another nation’s currency. In reality, a substantial portion of foreign-exchange trading occurs through an intermediate or a vehicle currency, that is, a currency that is widely used throughout the world. For example, the U.S. dollar serves as a global currency and the euro is becoming an important currency in Europe.

A strong currency can also have both a positive and a negative impact on a nation's economy. The same holds true for a weak currency. Currencies that are too strong or too weak not only affect individual economies, but tend to distort international trade and economic and political decisions worldwide. This is compounded by the fact that individual consumers can benefit from changes in the value of a currency, while producers in the same country are hurt. But the value of a currency alone does not dictate trade flows. Many other factors are involved. Nevertheless, changes in currency values can have a dramatic effect. The currency movements can potentially affect the trade balances, economic growth, price competitiveness and the returns investors receive on foreign investments. Ideally, currency values should be relatively stable and at a level that can sustain long-term economic growth both here and abroad. So, exchange rate movements are important to economic growth and to the returns investors (banks) receive on their investments, particularly their foreign investments.

Therefore before undertaking currency investment, it is important for the banks to understand the forces that drive exchange rates. Many of these factors are intangible and/or psychological, and, thus, are impossible to characterize. However, those factors which are generally recognized as fundamental determinants are inflation, interest rate, GDP, bop etc. All the other factors, except the interest rate depicts the economic condition of the country. The reserve bank’s change the monitory policy and the interest rate to keep these economic variables under control. So whenever the central bank changes the interest rates or there is just news for the change, sooner or later there is an impact on the exchange rate. The intensity of the impact varies with the monitory policy and the other economic factors prevalent at that time. Also it is very important to remember that the history repeats itself, and the future prediction of the exchange rate due to the change in the interest rate can be monitored by studying the past trend.

* **CONCEPT**

Conventional wisdom in recent times has brought a correlation into most people’s minds between interest rates and the strength of a currency. Conventional reasoning goes as follows: If interest rates in a given currency are higher than at home, investors will be more likely to sell their local cash and buy bonds in the higher-paying brand. This will in turn stoke demand for the higher-interest-rate currency on the forex markets and raise its value.

However, too many people, even serious traders and policymakers, have confused short term investment demand with real structural strength. They have forgotten that the whims of currency and bond traders seeking a place to park a few billion for the next 3 months are not the blood and muscle of a real economy. It is entirely true that in large developed economic zones with highly liquid financial markets do indeed exhibit this promiscuous tendency, but the flow of manufactured goods and physical resources, the things which ultimately give money its value, tend to follow slower, deeper trends instead.

In the short term, it is true- higher yields on debt will attract investors, which will boost demand for currency. In the long term, however, rising interest rates are actually often bearish for a currency. Here's why.

Fundamentally, interest is a speculation on the expectations of the future value of borrowed money and what is done with it in the meantime. It's a bet on risk. At the very bottom, lenders expect that the real value of the sum repaid will yield a profit over the real value of the sum loaned, at the time of repayment and lending respectively.

The value of a repaid loan has two important aspects: its nominal face value, which is an amount of currency traded in real time, and its real value, which is in some cases very hard to quantify, but ultimately is the matter of what can one buy with that sum, at that time. Thus, there are two components to the interest rate: the cost of the risk in the loan in constant (real) value, and the cost of the risk of the depreciation of the principal's real value over the period. One is a bet on the performance of the borrower, and the other is (in today's markets) a bet on the purchasing power of fiat currency over time.

Low interest rates imply that money is not expected to produce significant nominal returns, and lenders are willing to part with it on the cheap. This might be because they anticipate strength in the value of the money, and thus don't need to price into the loan the lost value in the money over its duration, or because there is too much liquidity and heavy competition to lend (even low interest rates pay better than cash sitting in the vault), which can happen when the economy is sluggish and there is a lot of cash chasing very few investment opportunities, or because the economy is running so smoothly and uneventfully that the risk in lending is very low (though 'stable' implies 'no growth' and thus means that things might be humming along, but they’re also stagnant. Industrial economies are funny like that).

High interest rates, however, demand that currency find a way to multiply itself much more aggressively. They reflect a climate of higher perceived risk in lending. Higher interest rates inherently carry the attitude of suspicion on borrowers' and lenders' parts alike. High interest rates are a signal of poor confidence in at least *some* part of the life-cycle of a loan.

Rising interest rates can be an indicator of economic strength if they imply that the productivity of capital has risen- not only can an individual borrower afford to pay back more, but there is also higher competition for capital and bidding up of its price in the market. This is if the return on investment component of the interest rate is what is rising. However, rising interest rates can also be an indicator of fundamental weakness in the value of a currency, and reflect an increase in the depreciation risk component instead.

The cost of capital in real terms could be considered to be the *real* interest rate, whereas the spread between the real interest rate and the nominal rate is that second component, the cost of inflation being priced into the cost of borrowed money.

If the economy is stagnant, and the money supply is expanding faster than real GDP, then there is a necessary dilution of the currency issue with respect to purchasing power in the physical economy. Interest rates’ rising in nominal terms without any confirmation from other economic indicators of growth (employment, wage pressure, productivity, savings, distribution of wealth, etc.) are a sure sign of currency debasement in progress and is an indicator of exactly the opposite from the short term forex moves: the currency is sinking in real value, not rising.

It is actually a good indicator of worldwide economic health to observe where capital is allocated and how it is priced. In a steadily growing economy, productive enterprises compete for capital to expand or establish their operations, and return a greater value of output product than was their capital investment. In a time when there is enormous opportunity for growth, the price of capital can get quite high, because it takes real resources to sink into the exploitation of new sectors of the playing field. Ultimately, that capital is real physical stuff and labor in the present, and too hot a competition for it leads to rising money prices and higher real interest rates.

In an environment where the real opportunities for growth are few, there is much capital chasing few good investments, and the price of money is cheap. More and more investment takes the form of reallocating existing wealth instead of producing new wealth. During such an environment, real interest rates are extremely low, though nominal rates might be quite high.

## RELEVANCE

In the modern economy, there is not an isolated arena standing alone from the rest of the globe. Economic activity and performance is a global phenomenon and capital markets are unified and worldwide. Individual currencies move against one another as wealth moves around the globe, but no currency is standing still- one moving ahead of another does not really imply the apparent shift in wealth from one denomination to the other, but rather only reveals the momentary relative speeds. One moving ahead could just as easily mean both falling behind with one falling behind faster.

When we see high interest rates and watch as the bond traders chase yields and exchange rates move in favor of higher-interest currencies, let us not forget the difference between real and nominal interest rates.

And on the subject of a 'healthy' economy, let there be no illusions- an industrial economy is not a healthy beast. It is by nature an unstable process, one where unending growth is necessary to postpone severe collapse. An industrial economy is an exercise in unsustainability under pressure: all competitors are locked into a race to consume a fixed pool of resources faster than the others, to prevent the others from getting the resources first. In the process of running this race, the contestants have to pull out every stop, try every trick, and sell as much of their future as necessary to stay in the running in the present. The name of the game is postponing the reckoning so it falls on someone else's tab. An industrial economy is the ultimate pyramid scheme, but while the going is good, we call it economic growth.

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The basic function of the Treasury Department at any bank is fund management and putting the available funds in profitable avenues. Forex constitutes a major chunk of such profits at PNB and can create havoc for the bank if not utilized properly. Therefore, it becomes essential for the bank to track currencies affectively, so as to take advantage of the interest rate differentials and thus make huge profits.

Also, knowing of the impact of interest rates on currency rates helps in both spot and forward markets since currency premiums, forward bookings and rates, etc. are based on these factors.

* **LITRATURE/CONCEPTUAL SUPPORT**
* **Interest rate differential**

The interest rate differential (IRD) weighs the contrast in interest rates between two similar interest-bearing assets. Traders in the foreign exchange market use interest rate differentials (IRD) when pricing forward exchange rates. Based on the interest rate parity, a trader can create an expectation of the future exchange rate between two currencies and set the premium, or discount, on the current market exchange rate futures contracts.

**REPO RATE/BANK RATE:**

Repo rate is the rate at which the central bank of a country (Reserve Bank of India in case of India) lends money to commercial banks in the event of any shortfall of funds. Repo rate is used by monetary authorities to control inflation. In the event of inflation, central banks increase repo rate as this acts as a disincentive for banks to borrow from the central bank. This ultimately reduces the money supply in the economy and thus helps in arresting inflation. The central bank takes the contrary position in the event of a fall in inflationary pressures. Repo and reverse repo rates form a part of the liquidity adjustment facility.

**FED FUND RATE:**

The interest rate at which US banks and other depository institutions lend money to each other, usually on an overnight basis. The law requires banks to keep a certain percentage of their customer's money on reserve, where the banks earn no interest on it. Consequently, banks try to stay as close to the reserve limit as possible without going under it, lending money back and forth to maintain the proper level.

Like the federal discount rate, the federal funds rate is used to control the supply of available funds and hence, inflation and other interest rates. Raising the rate makes it more expensive to borrow. That lowers the supply of available money, which increases the short-term interest rates and helps keep inflation in check. Lowering the rate has the opposite effect, bringing short-term interest rates down.

* **Exchange rate**

For all types of foreign exchange transaction that are made (spot, forward, option or variant on these three), the settlement process is the same. The two parties to the foreign exchange transaction will have made an agreement to trade an agreed amount of one currency in exchange for an agreed amount of a second currency. To settle this transaction, two separate currency payments are made. Although the two payments are linked via their association with the foreign currency deal or agreement, the two payments are independent. The payments are not, at present, conditional on each other.

Payment in one currency is made on the assumption that the counterparty you have traded with will make payment to you of the other currency in the agreed amount. This is how settlement risk arises. The foreign exchange settlement risk is that one party will make its foreign exchange payment and receive no payment in return.

Foreign exchange rates affect every walk of life, not just financial markets. Exchange rate movement can be significant for companies engaged in international trade, exposed to revenues and costs in foreign currency, or competing with foreign firms.

An exchange rate has been defined as a relative price of two national monies. More specifically, it can be stated that the exchange rate is "the ratio between a unit of one currency and the amount of another currency for which that unit can be exchanged at a particular time." As such, it can be seen that exchange rates are designed to facilitate the actual exchange of one currency for another. It would appear that exchange rates are relatively straightforward. However, this is unfortunately not the case.

Exchange rates are normally quoted in terms of a buying rate, a flat rate, and a selling rate. The buying rate is that which a bank will pay for a foreign currency, the selling rate is the rate a bank will charge for the currency, and the flat rate is an average of the buying and selling rates. In addition, the exchange rate which is quoted will often depend on various factors such as the market sector and type of foreign-exchange instrument involved. The foreign-exchange market can be divided into four main sectors:

* Retail--dealings with the general public;
* Wholesale--trading among banking institutions and, where permitted, between large firms and brokers;
* Foreign--dealings between domestic and foreign banks; and
* Supranational--dealings among large multinational corporations and large private banks.

The basic types of foreign-exchange instruments include foreign currencies, bank transfers, bills of exchange, letters of credit, and forward exchange contracts.

These varied circumstances call for different exchange rates, which can usually be classified into three main categories: spot rates, forward rates, and differential rates. Spot rates are the rates quoted for immediate delivery of a currency (usually two days). Forward rates are those quoted for delivery of a currency at a specified future date (usually within one year, but after the period for the spot rate). Differential rates may be either preferential or penalty rates which are limited to special markets or customers. They are normally found in economies where the government controls foreign exchange and differ from the spot and forward rates. In such cases, the government will often establish exchange rates based on the status of the transaction involved. If the government considers a transaction to be economically favorable, the exchange rates attached to it will often reflect that fact. That is, the government will often establish more favorable exchange rates for those transactions that it wishes to encourage. On the other hand, the government will also establish less favorable exchange rates for those transactions that it wishes to discourage. "Where controlled rates differ widely from the free-market rate for a currency, black-market rates usually appear as an equalizing mechanism. Consequently, the mere existence of a black-market rate is evidence of an overvalued currency."

## FACTORS WHICH INFLUENCE EXCHANGE RATES:

It is important you understand the forces that drive exchange rates. Many of these factors are intangible and/or psychological, and, thus, are impossible to characterize. However, those factors which are generally recognized as fundamental determinants are spelled out below.

1. **Interest Rates**

The correlation between a nation's interest rate and its exchange rate is as follows: We would expect savvy investors to invest their money where, for a given level of risk, the returns are highest.  Thus, when a disparity in interest rates exists between countries whose risk of default is equal, investors would likely lend to the country that was offering the higher interest rate.  In order to invest in or lend to another country, one must first obtain that nation's currency.  This increases demand for that nation's currency, and causes it to appreciate in value.

2. **Inflation**

A low rate of inflation, relative to other countries, implies that prices of goods in services in one country are increasing at a comparatively slow pace. These goods and services then appear cheaper in the eyes of foreigners, who increase demand. If the law of purchasing power parity holds, the nation's currency should appreciate to offset the relative decrease in prices. ([Chart in the annexure](#annexture4))

3. **Current-Account / Trade Balance**

When a country runs a current account deficit, it typically means that the nation imports more than it exports. This tends to skew the exchange rate in favor of the country that runs a trade surplus, as foreign demand for its currency must be comparatively high. In due course, the exchange rate may adjust so as to make the first nation's products affordable to foreigners, and bridge the gap between imports and exports. ([Chart in the annexure](#annexture4))

4. **Public (government) debt**

The relationship between government debt obligations and its exchange rate is not as cut-and-dried. Basically, government borrowing to finance deficit spending increases inflation, which literally eats into the value of that nation's currency. In addition, if lenders believe there is any risk of default, they may sell the debt (in the United States, this debt takes the form of treasury securities) on the open market, exerting downward pressure on the exchange rate.

5. **Political and Economic Factors**

Most investors are risk-averse; accordingly, they will invest their capital where there is a certain degree of predictability. They tend to avoid investing in countries that are typified by governmental instability and/or economic stagnation. In contrast, they will invest capital in stable countries that exhibit strong signs of economic growth. A nation whose government and economy are perennially stable will attract the most investment. This, in turn, creates demand for that nation's currency and causes its currency to appreciate in value.

## INTEREST RATE

Interest rates are the prices that bank pay to borrow money or are paid to lend money. Interest rates, like other prices, are determined by the forces of supply and demand. Higher interest rates in foreign countries provide incentives for domestic countries to save more and borrow less. Likewise, lower interest rates provide incentives for banks to borrow more and save less. When interest rates rise, businesses are likely to invest less in capital and households are likely to spend less on housing, cars, and other major purchases. Lower interest rates are likely to cause businesses to invest more in capital and households to buy more big ticket items. Also when the domestic interest rates are liberalized (increased) it attracts foreign capital in terms of both FII and FDI. In this way, interest rates affect the level of economic activity in the economy and hence the exchange rates. The Reserve Bank System is able to affect the level of interest rates through its monetary policy.

The reason behind taking only the benchmark rates was that, the benchmark rates are changed by the reserve banks taking into account the monitory policies and the economic condition, major factor being inflation. Also all the other interest rate or yields say T- bills, long and short term bonds are influenced by these benchmark rates.

The impact of interest rate differentials on the exchange rate was analyzed. The reasons were found out in cases where the trend was not the same or in other words were the interest rate differential failed to impact the exchange rate.

* **Second Bi-monthly Monetary Policy, 2018-19**

Monetary policy is the macroeconomic policy laid down by the central bank. It involves management of money supply and interest rate and is the demand side economic policy used by the government of a country to achieve macroeconomic objectives like inflation, consumption, growth and liquidity.

In India, monetary policy of the Reserve Bank of India is aimed at managing the quantity of money in order to meet the requirements of different sectors of the economy and to increase the pace of economic growth. The RBI implements the monetary policy through open market operations, bank rate policy, reserve system, credit control policy, moral persuasion and through many other instruments. Using any of these instruments will lead to changes in the interest rate, or the money supply in the economy. Monetary policy can be expansionary and contractionary in nature. Increasing money supply and reducing interest rates indicate an expansionary policy. The reverse of this is a contractionary monetary policy.

For instance, liquidity is important for an economy to spur growth. To maintain liquidity, the RBI is dependent on the monetary policy. By purchasing bonds through open market operations, the RBI introduces money in the system and reduces the interest rate.

On the basis of an assessment of the current and evolving macroeconomic situation at its meeting today, the Monetary Policy Committee (MPC) decided to:

* Increase the policy repo rate under the liquidity adjustment facility (LAF) by 25 basis points to 6.25 per cent.

Consequently, the reverse repo rate under the LAF stands adjusted to 6.0 per cent, and the marginal standing facility (MSF) rate and the Bank Rate to 6.50 per cent.

The decision of the MPC is consistent with the neutral stance of monetary policy in consonance with the objective of achieving the medium-term target for consumer price index (CPI) inflation of 4 per cent within a band of +/- 2 per cent, while supporting growth. The main considerations underlying the decision are set out in the statement below.

The eleventh meeting of the Monetary Policy Committee (MPC), constituted under section 45ZB of the amended Reserve Bank of India Act, 1934, was held from June 4 to 6, 2018 at the Reserve Bank of India, Mumbai.

2. The meeting was attended by all the members - Dr. Chetan Ghate, Professor, Indian Statistical Institute; Dr. Pami Dua, Director, Delhi School of Economics; Dr. Ravindra H. Dholakia, former Professor, Indian Institute of Management, Ahmedabad; Dr. Michael Debabrata Patra, Executive Director (the officer of the Reserve Bank nominated by the Central Board under Section 45ZB(2)(c) of the Reserve Bank of India Act, 1934); Dr. Viral V. Acharya, Deputy Governor in charge of monetary policy - and was chaired by Dr. Urjit R. Patel, Governor.

3. According to Section 45ZL of the amended Reserve Bank of India Act, 1934, the Reserve Bank shall publish, on the fourteenth day after every meeting of the Monetary Policy Committee, the minutes of the proceedings of the meeting which shall include the following, namely:–

1. the resolution adopted at the meeting of the Monetary Policy Committee;
2. the vote of each member of the Monetary Policy Committee, ascribed to such member, on the resolution adopted in the said meeting; and
3. The statement of each member of the Monetary Policy Committee under sub-section (11) of section 45ZI on the resolution adopted in the said meeting.

4. The MPC reviewed the surveys conducted by the Reserve Bank to gauge consumer confidence, households’ inflation expectations, corporate sector performance, credit conditions, the outlook for the industrial, services and infrastructure sectors, and the projections of professional forecasters. The MPC also reviewed in detail staff’s macroeconomic projections, and alternative scenarios around various risks to the outlook. Drawing on the above and after extensive discussions on the stance of monetary policy, the MPC adopted the resolution that is set out below.

Resolution

5. On the basis of an assessment of the current and evolving macroeconomic situation at its meeting today, the Monetary Policy Committee (MPC) decided to:

* Increase the policy repo rate under the liquidity adjustment facility (LAF) by 25 basis points to 6.25 per cent.

Consequently, the reverse repo rate under the LAF stands adjusted to 6.0 per cent, and the marginal standing facility (MSF) rate and the Bank Rate to 6.50 per cent.

The decision of the MPC is consistent with the neutral stance of monetary policy in consonance with the objective of achieving the medium-term target for consumer price index (CPI) inflation of 4 per cent within a band of +/- 2 per cent, while supporting growth. The main considerations underlying the decision are set out in the statement below.

Assessment

6. Since the last meeting of the MPC in April, global economic activity has continued to expand, though there has been some easing of momentum. Among advanced economies (AEs), the US economy began the year on a weak note on soft private spending and reduced residential investment; however, there seems to be a rebound in Q2:2018 with strong retail sales and improved employment data. The Euro Area growth decelerated in Q1; recent industrial production data as well as weak consumer and business sentiment suggest a loss of pace. The Japanese economy contracted in Q1, though it is expected to turn around in Q2 as indicated by recent data prints on exports and the manufacturing purchasing managers’ index (PMI).

7. Economic activity in major emerging market economies (EMEs) remained largely resilient. The Chinese economy maintained a strong momentum in Q1; more recent data on industrial production and PMI suggest that growth is likely to hold steady in Q2. The Russian economy appears to have picked up in recent months after a soft end to 2017; both manufacturing and services PMI rose in April. In South Africa, growth prospects have improved with the return of political stability as reflected in consumer confidence, manufacturing PMI and retail sales. In contrast, a stream of poor data from Brazil on high unemployment and soft industrial production show that the effects of recession linger.

8. Global trade growth has continued to strengthen, though geo-political tensions have contributed recently to declining export orders and air freight. Crude oil prices rose sharply till May 24 on heightened geo-political tensions, but moderated thereafter on expectations of easing of supplies by the Organisation of Petroleum Exporting Countries (OPEC) and Russia. Base metal prices, especially aluminium, have raised on account of US sanctions on Russia. Gold has witnessed selling pressure on a stronger dollar, but the metal gained last week on political uncertainty in the Euro Area. Inflation pressures have emerged in some key advanced and emerging economies, driven in part by rising commodity prices.

9. Financial markets have been driven mainly by monetary policy expectations and geo-political developments. Equity market performance has varied across regions with modest gains in the AEs on strong Q1 earnings and abating of trade tensions, while stocks in major EMEs have faced sell offs on a rising dollar and expectations of further rate hikes by the Fed. The 10-year sovereign yield in the US crossed 3 per cent in mid-May on strong economic data as well as expectations of tighter monetary policy and fiscal expansion, but softened subsequently on safe haven demand; yields softened in other key AEs as well. In most EMEs, however, bond yields have risen on reduced foreign appetite for their debt due to growing dollar shortage in the global market and on prospects of higher interest rates in AEs. In currency markets, the US dollar touched its highest level in May since December 2017. The euro depreciated significantly against the dollar reflecting a combination of factors, including soft growth data for the Euro Area, which suggested that monetary policy normalization by the European Central Bank could be delayed, and political uncertainty in its southern periphery. EME currencies have, by and large, depreciated against the US dollar.

10. On the domestic front, the Central Statistics Office (CSO) released on May 31 the quarterly estimates of national income accounts for Q4:2017-18 and provisional estimates for 2017-18. Gross domestic product (GDP) growth for 2017-18 has been estimated at 6.7 per cent, up by 0.1 percentage point from the second advance estimates released on February 28. This increase in growth has been underpinned by a significant upward revision in private final consumption expenditure (PFCE) due especially to improved rural demand on the back of a bumper harvest and the government’s thrust on rural housing and infrastructure. Quarterly data suggest that the economy grew at 7.7 per cent in Q4:2017-18 – the fastest pace in the last seven quarters. Gross fixed capital formation (GFCF) growth accelerated for three consecutive quarters up to Q4.

11. Industrial growth also strengthened, reflecting the robust performance of manufacturing, which accelerated for three consecutive quarters in Q4. Capacity utilization by manufacturing firms increased significantly in Q4:2017-18 as revealed in the latest round of the Reserve Bank’s order books, inventories and capacity utilization survey (OBICUS). The output of eight core industries accelerated in April on account of a sharp expansion in coal production, which reached a 42-month peak. Cement output also posted double-digit growth for the sixth consecutive month in April. However, electricity generation slowed down. As per the early results of the Reserve Bank’s April-June round of the industrial outlook survey (IOS), activity is expected to expand at a lower rate in Q1:2018-19 due to a significant rise in input prices and perceptions of softening domestic and external demand conditions. However, the manufacturing PMI remained in an expansionary mode for the tenth consecutive month in May on the back of new domestic orders and exports.

12. Although services sector growth was revised downwards on account of lower growth in some constituents such as trade, hotels, transport & communication, and financial services, it remained robust. Construction activity recorded the highest growth in Q4 in the new series (base 2011-12). Various high frequency indicators also suggest resilient performance of the services sector. Improving sales of tractors and two-wheelers suggest strengthening of rural demand. Commercial vehicle sales also accelerated in April. Revenue-earning freight traffic of railways picked up, driven by improved movement in coal, fertilizers, and cement. Growth in passenger vehicle sales accelerated but port traffic decelerated for the third successive month in April. Domestic air passenger traffic rose significantly in April. Two key indicators of construction activity showed improvement – cement production growth accelerated and steel consumption turned around. Services PMI moved slightly into contraction in May, reflecting decline in business activity and stagnation in new orders.

13. Retail inflation, measured by the year-on-year change in the CPI, rose sharply to 4.6 per cent in April, driven mainly by a significant increase in inflation excluding food and fuel. Excluding the estimated impact of an increase in house rent allowances (HRAs) for central government employees, headline inflation was at 4.2 per cent in April, up from 3.9 per cent in March. Food inflation moderated for the fourth successive month, pulled down by vegetables due to lower than the usual seasonal increase in their prices, and pulses and sugar which continued to experience deflation. However, within the food group, inflation increased in respect of cereals, fruits, prepared meals, meat and fish.

14. Fuel group inflation declined for the fifth month in a row in April mainly on account of a fall in the inflation of liquefied petroleum gas in line with international prices, and electricity. However, inflation in other major items of fuel such as firewood and chips, dung cake, kerosene and coal inched up. Inflation in the transport and communication sub-group accelerated due to the firming up of international crude oil prices, even though the domestic pass-through to petrol and diesel was incomplete. Inflation also picked up in clothing, household goods and services, health, recreation, education, and personal care and effects.

15. Liquidity in the system remained generally in surplus during April-May 2018. During April, the Reserve Bank absorbed surplus liquidity of ₹496 billion on a daily net average basis due to increased government spending, especially in the second half of the month. Reflecting easy liquidity conditions, the weighted average call rate (WACR) softened to 5.89 per cent in April (from 5.96 per cent in March). However, surplus liquidity in the system moderated considerably in the first half of May and the system moved into deficit in the third week of May mainly due to inflows on account of the goods and services tax (GST). The Reserve Bank conducted an open market operation purchase auction on May 17, 2018 to inject liquidity of ₹100 billion into the system. The system again turned into surplus in the last week of May reflecting mainly the payment of food subsidies. Surplus liquidity absorbed under the LAF on a daily net average basis declined to ₹142 billion in May. The WACR in May at 5.88 per cent remained broadly at the April 2018 level.

16. India’s exports grew in April 2018 after a marginal dip in the preceding month, supported mainly by non-oil exports, particularly engineering goods and chemicals. Import growth decelerated sequentially in April 2018; a significant decline in imports of gold as well as pearl and precious stones more than offset the impact of rising crude oil prices. Nevertheless, the trade deficit expanded in March and April from its level a year ago. External financing remained comfortable in 2017-18. While net foreign direct investment in 2017-18 was broadly comparable with the previous year, net foreign portfolio flows were stronger due to a sharp turnaround in debt inflows. However, foreign portfolio investors withdrew US$ 6.7 billion on a net basis from the domestic capital market in 2018-19 (up to June 4) reflecting volatility in global financial markets. India’s foreign exchange reserves were at US$ 412 billion on June 1, 2018.

Outlook

17. The first bi-monthly resolution of 2018-19 in April projected CPI inflation in the range of 4.7-5.1 per cent in H1:2018-19 and 4.4 per cent in H2, including the HRA impact for central government employees with risks tilted to the upside. Excluding the impact of HRA revisions, CPI inflation was projected at 4.4-4.7 per cent in H1:2018-19 and 4.4 per cent in H2. Actual inflation outcomes since the April policy have evolved broadly on the lines of the projected trajectory. However, there has been an important compositional shift. While the summer momentum in vegetable prices was weaker than the usual pattern, there was an abrupt acceleration in CPI inflation excluding food and fuel.

18. The headline inflation outlook is driven primarily by two countervailing effects. On the one hand, CPI inflation excluding food and fuel rose sharply in April over March by 80 basis points to reach an ex-HRA level of 5.3 per cent, suggesting a hardening of underlying inflationary pressures. Furthermore, since the MPC’s meeting in early April, the price of Indian basket of crude surged from US$ 66 a barrel to US$ 74. This, along with an increase in other global commodity prices and recent global financial market developments, has resulted in a firming up of input cost pressures, as also confirmed in the Reserve Bank’s IOS for manufacturing firms in Q2:2018-19. The resulting pick-up in the momentum of inflation excluding food, fuel and HRA has imparted persistence into higher CPI projections for 2018-19. On the other hand, food inflation has remained muted over the past few months and the usual seasonal pickup delayed, softening the projections in the short run. Taking these effects into account, projected CPI inflation for 2018-19 is revised to 4.8-4.9 per cent in H1 and 4.7 per cent in H2, including the HRA impact for central government employees, with risks tilted to the upside ([Chart 1](#annexture2)). Excluding the impact of HRA revisions, CPI inflation is projected at 4.6 per cent in H1 and 4.7 per cent in H2.

20. Turning to the growth outlook, the CSO’s provisional estimates have placed GDP growth for Q4:2017-18 at 7.7 per cent – 70 basis points higher than that in Q3 – given the sharp acceleration in investment and construction activity. With improving capacity utilization and credit off take, investment activity is expected to remain robust even as there has been some tightening of financing conditions in recent months. Global demand has also been buoyant, which should encourage exports and provide a further thrust to investment. The sharp rise in petroleum product prices, however, is likely to impact disposable incomes. Consumption, both rural and urban, remains healthy and is expected to strengthen further. According to the early results of the Reserve Bank’s IOS, activity in the manufacturing sector is expected to moderate marginally in Q2:2018-19 on account of deterioration in the overall business situation and order book. On the basis of an overall assessment, GDP growth for 2018-19 is retained at 7.4 per cent as in the April policy. GDP growth is projected in the range of 7.5-7.6 per cent in H1 and 7.3-7.4 per cent in H2, with risks evenly balanced ([Chart 2](#annexture2)).

21. A major upside risk to the baseline inflation path in the April resolution has materialized, viz., 12 per cent increase in the price of Indian crude basket, which was sharper, earlier than expected and seems to be durable. Crude oil prices have been volatile recently and this imparts considerable uncertainty to the inflation outlook – both on the upside and the downside. Several other risks remain. First, global financial market developments have emerged as another important source of uncertainty. Second, the significant rise in households’ inflation expectations as gathered in the May 2018 round of the Reserve Bank’s survey could feed into wages and input costs in the coming months. However, the pass-through to output prices remains muted presently. Third, the staggered impact of HRA revisions by various state governments may push headline inflation up. While the statistical impact of HRA revisions will be looked through, there is a need to watch out for any second round impact on inflation. Fourth, the impact of the revision in the MSP formula for kharif crops is not possible to assess at this stage in the absence of adequate details. Fifth, as forecast by the IMD, if the monsoon is normal and well-distributed temporally and spatially, it may help keep food inflation benign.

22. Against the above backdrop, the MPC decided to increase the policy repo rate by 25 basis points and keep the stance neutral. The MPC reiterates its commitment to achieving the medium-term target for headline inflation of 4 per cent on a durable basis.

23. The MPC notes that domestic economic activity has exhibited sustained revival in recent quarters and the output gap has almost closed. Investment activity, in particular, is recovering well and could receive a further boost from swift resolution of distressed sectors of the economy under the Insolvency and Bankruptcy Code. Geo-political risks, global financial market volatility and the threat of trade protectionism pose headwinds to the domestic recovery. It is important that public finances do not crowd out private sector investment activity at this crucial juncture. Adherence to budgetary targets by the Centre and the States – which appears to be the case thus far – will also ease upside risks to the inflation outlook considerably.

24. Dr. Chetan Ghate, Dr. Pami Dua, Dr. Ravindra H. Dholakia, Dr. Michael Debabrata Patra, Dr. Viral V. Acharya and Dr. Urjit R. Patel voted in favour of the decision. The minutes of the MPC’s meeting will be published by June 20, 2018.

25. The next meeting of the MPC is scheduled on July 31 and August 1, 2018.

* Please refer to [ANNEXTURE](#annexture2) for more reference.

26. Since the adoption of flexible inflation targeting in India (de facto in 2014 and de jure in 2016), the “great-disinflation” experienced by the Indian economy is a major accomplishment. After several years of high inflation in the run-up to 2014, the March 2018 CPI headline inflation (ex-HRA) rate of 3.9% is a testimony to the successful conduct of monetary policy given its consistency with the 4 +/- 2 percent target recommended by the Urjit Patel Committee report in 2014 and enshrined in the Reserve Bank of India Act, 1934 in 2016. Both the Reserve Bank of India and the Government of India should be congratulated in calibrating a monetary-fiscal mix that has helped engender this disinflation. Good luck helped with this outcome but so did good policy.

27. Inflation targeting however can truly become successful if the inflation target and the inflation forecast become identical on a durable basis. Locking in the 4 percent medium target therefore requires continual vigilance.

28. The revival of growth brings new inflationary risks that need to be carefully watched. The RBI’s enterprise surveys suggest that upward pressures in input and staff costs are being marked by an increase in selling prices. Staff costs in services increased by 6.6%, and 11.6% in manufacturing compared to the last round of the survey. Food inflation continues to be maverick with a 4th consecutive month decline: the usual seasonal uptick in April uncharacteristically surprised on the downside. CPI inflation ex food and fuel, which in April, sustained close to 6%, with strong momentum effects is worryingly becoming the main driver of inflation. Almost all components of CPI ex food fuel registered upticks suggesting that demand-pull forces are creeping into CPI headline inflation.

29. A major upside risk to the one-year ahead CPI projections has been the price of oil. This has been on a durable rise over the past six months, reflecting stronger global growth and the increasing costs of creating capacity in substitutes. While a strong dollar and the price of oil usually follow an inverse relationship, the usual “coupling” has been confounded by geo-political events in recent months. The volatility in the price of oil needs to be carefully watched, especially because higher fuel prices have helped harden inflationary expectations (both the 3- month ahead and 1-year ahead) to their highest level since September 2016.

30. The combination of cost-push and demand-pull factors at the current juncture has put one-year ahead inflation projections significantly above 4%. This warrants a monetary policy response. However, because of uncertainty surrounding the price of oil, and the nascent recovery of the economy, it would be opportune to take small steps.

31. I await details on the MSP policy. The outcome of a simultaneous twin terms of trade shock to the Indian economy as explained in my minutes of the April MPC meeting needs to be carefully watched.

32. I vote for an increase in the policy repo rate by 25 basis points at today’s meeting of the Monetary Policy Committee.

Statement by Dr. Pami Dua

33. Headline inflation rose to 4.6% in April from 4.3% in March and 4.4% in February, despite subdued food inflation. This was primarily due to a broad-based hardening of inflation excluding food and fuel with inflation rising in transport and communication, housing, health, recreation, education and personal care and effects. Even after excluding the estimated impact of the HRA adjustment for central government employees, inflation showed an uptick between March and April.

34. Furthermore, both qualitative and quantitative responses from the May round of the Reserve Bank’s Inflation Expectations Survey of Households reflect a hardening of inflation expectations. In particular, the survey reports a rise in households’ inflation expectations for three-month and one-year horizons. The May round of the Consumer Confidence Survey also shows a deteriorating outlook with respect to the price situation. The Reserve Bank of India’s Industrial Outlook Survey (IOS) reports pressures in input costs and selling prices. Firms surveyed for the manufacturing Purchasing Managers’ Index also indicate an increase in input and output prices.

35. The upside risks to inflation include geopolitical risks associated with crude oil prices, increase in other global commodity prices, implementation of HRA revisions (state governments), increase in kharif minimum support prices, fiscal slippage and a weaker Indian rupee. The downside risks include forecast of a normal monsoon, and moderation in global commodity prices due to slowdown in global growth.

37. However, global growth is losing steam, as anticipated earlier by the long leading indexes of international growth maintained by the Economic Cycle Research Institute (ECRI), New York. In particular, quarter-over-quarter GDP growth turned negative in Japan, and declined in the Eurozone, the U.K. and the U.S. in the first quarter of 2018. While U.S. GDP growth is expected to improve in the current quarter, ECRI’s forward-looking indexes still point to fading global growth prospects. Also, the global manufacturing Purchasing Managers’ Index fell to a nine-month low in May, underscoring a moderating global industrial growth outlook. Furthermore, growth in ECRI’s Indian Leading Exports Index is in a deepening cyclical downswing, suggesting that Indian export growth will remain in a cyclical downtrend at least for the next couple of quarters. Moreover, India’s domestic growth outlook is lackluster, at best, according to ECRI’s Indian Leading Index.

38. In the meantime, with underlying inflation pressures in a cyclical upswing, according to ECRI’s U.S. Future Inflation Gauge, U.S. inflation has also been on the rise, and is now at the Federal Reserve’s 2% inflation target. At the same time, the unemployment rate has dropped to an 18-year low, spurring the Fed to keep tightening monetary policy.

39. In India, with hardening of actual inflation, rising inflation expectations along with prevailing upside risks to inflation, I vote for an increase in the repo rate by 25 basis points while retaining the neutral stance.

Statement by Dr. Ravindra H. Dholakia

40. After the last MPC meeting (5th April, 2018), several macroeconomic uncertainties have reduced and a clearer picture is emerging. However, some basic uncertainties still remain on geo-politics, international trade policies and ability of some advanced economies to pursue interest rate hikes. More specifically, I consider the following factors for the repo rate decision in the present policy:

(i) Oil prices have further firmed up and geo-political developments indicate no respite likely on that count soon. For the next 12-18 months, the oil prices are likely to stay at higher level adding to the twin deficits (fiscal and current account) and inflationary pressures.

(ii) RBI survey of households for inflationary expectations in the May 2018 round shows a significant increase of about 90 bps and 130 bps respectively for 3 months and 12 months ahead compared to the March 2018 round. We may note that the impact on consumers’ inflationary expectations of an oil price increase is almost 4 to 5 times higher than the similar increase in food prices and, therefore, we have to consider these numbers cautiously.

(iii) RBI consumer confidence survey in April-May 2018 shows improvement in employment and household income outlook during the coming year. This indicates building up of demand pressures.

(iv) IIM Ahmedabad survey of businesses in April 2018 also shows a substantial increase of about 60 bps in their expectation of headline CPI inflation 12 months ahead compared to February 2018 and is around 4.7 per cent.

(v) Capacity utilization has increased substantially as revealed by different surveys. Growth in capital formation has also picked up. GDP growth at 7.7 per cent for 2017-18 Q4 assures that the Indian economy is firmly on the recovery path. All this indicates that the output gap has started closing. However, it has still not started exercising any pressure on unemployment and wage scenario and thereby on inflation. In this context, it is important to recognize that while the average growth during 2018-19 is likely to be around 7.4 per cent, in none of the quarters it is projected to exceed the 7.7 per cent mark observed in 2017-18 Q4. Growing protectionism around the globe and oil prices staying high can pose genuine downside risk to our growth.

(vi) RBI’s latest inflation forecast considering the CPI prints up to April 2018 for 2018-19Q4 stands 30 bps higher than its last forecast based on CPI data up to February 2018. It is forecasted at 4.7 per cent for 2018-19Q4, which is the same as expected by the businesses and is, therefore, more credible. Inflation rate likely to stay consistently above 4 – 4.5 per cent is a cause of concern, particularly when there are some upside risks. It brings down the expected real policy rate in India that is substantially less than our comparator countries like Brazil, Mexico, China and South Africa though it is negative for most other G20 countries. Most of the advanced G20 countries where the real policy rates are negative are committed to rate hikes over the coming year. Now when the economic growth is firmly on the path of strong recovery in India, growing inflation concerns need to be addressed.

41. The upside risks to inflation such as MSP revision and HRA revision implementation by states are likely to be countered by reconfirmed normal monsoon forecasts and the lack of fiscal space in several states. Oil prices could turn on either side and hence present a genuine risk. There are chances that headline CPI prints in the coming months (H1) may turn out to be lower than expected by RBI (i.e. 4.8-4.9 per cent inflation) and in such a case, the inflation forecast 12 months ahead may come down. Although such possibilities are not ruled out, their chances are less. Under such circumstances, I believe that prudence lies in retaining the neutral policy stance, but increase the policy rate by 25 bps for now. Future course of action should depend on how the scenario on growth and inflation develops.

Statement by Dr. Michael Debabrata Patra

42. This time, I would imbue urgency into my vote to raise the policy rate by 25 basis points and align the operating target.

43. In my view, the prolonged period of staying on hold is denting the credibility of the MPC's commitment to maintaining inflation at the center of the target band. There is a rising risk that the public may start discounting this commitment: if it begins to believe that the MPC is willing to tolerate inflation in higher reaches, inflation expectations can be set adrift. The status quo is also dissipating the hard earned reputational bonus that accrued to the RBI for breaking the back of the high inflation episode of 2009-13. There was a lot of good luck then as international commodity prices collapsed, but good policy too as we set out a glide path of disinflation that took India out of the fragile five.

44. The major upside risks to inflation that the MPC has worried about in past resolutions are crystallizing on an on-going basis. Moreover, the early warning indicators – households' inflation expectations; professional forecasters' projections; input and selling prices captured in the RBI’s surveys and polled by purchasing managers; various input costs, farm and non-farm, including corporate staff costs; erosion in consumer confidence on the price situation – are all flashing amber or red. Markets and financial institutions are already getting ahead of the curve. Continuing policy inaction is running the danger of allowing inflation outcomes to slip away from the centre of the target band. The gains of macroeconomic stability that have defined the recent period as its greatest achievement could get frittered away.

45. Turning to growth, the economy is gathering speed. Buoyant sales growth, depleting inventories, rising capacity utilization and rising consumer optimism on spending, especially on discretionary items, all suggest that slack in the economy is being pulled in and the output gap is set to close. Consequently, demand-pull components are showing up in recent inflation readings. In this finely poised situation, inflation volatility can hamstring the new impulses of investment growth that have sprung up in recent quarters.

46. In my view, the time has come for the MPC to act unanimously to raise the policy rate by 25 basis points in a closing sliver of opportunity. This will demonstrate our resolve to return inflation to the centre of the target band. Monetary policy has to step in before it is too late and guide the economy along a non-accelerating inflation growth path.

Statement by Dr. Viral V. Acharya

47. In the Minutes of the April 2018 Monetary Policy Committee (MPC) meeting, I had indicated my growing concern around underlying inflationary pressures. These pressures have been manifesting as a strengthening of Consumer Price Index (CPI) inflation excluding food and fuel even after adjusting for the impact of Centre’s House Rent Allowances (HRA). There has been a rise in input costs due to supply shocks such as the sharp oil price surge witnessed over the past nine months. The strengthening of inflation also reflects aggregate demand pressures, which are confirmed in the now almost-closed output gap, improved capacity utilization figures, and a significant pick up in credit growth. As a result, the projection for medium-term headline CPI inflation has become firmer on the upside; it has moved closer to 5% and away from 4%, the latter being the mandated target of the MPC.

48. A key uncertainty at present relates to the oil price development over medium-term horizon that monetary policy operates at. Robust global growth, OPEC and Russian supply cuts, supply shock in Venezuela, and geo-political uncertainty around the Iranian supply have all pushed international crude prices uncomfortably high in a short span of time. The shape of Brent futures curve (now in “backwardation”, i.e., buying oil forward is cheaper than buying it in spot) suggests the markets are pricing in the risk of a “stock out” – not having access to supply when it is needed. The US shale gas response appears to not have been enough as of yet to dampen this stock-out risk since some of the supply faces pipeline-infrastructure headwinds in reaching the markets.

49. The one respite for headline inflation prints has been the continuing benign food inflation where seasonal pickup has remained muted due to a collapse in the prices of onions and tomatoes. This has imparted a short-run softening to inflation projections keeping them contained in the first half of 2018-19 in spite of the rising momentum in CPI ex-food, fuel and HRA. However, if the seasonal pick-up does manifest in the first half at some point, then the headline prints will have little abatement from any of its constituents. Under such a scenario, any upward pressure on food prices such as through generous minimum support prices (MSPs) would exacerbate headline inflation pressures.

50. Factoring in these considerations, there is no alternative to raising the policy rate by 25 bps so as to signal concern about underlying inflation, manage inflation expectations, and guard proactively against a further increase in inflation. However, considerable uncertainties around oil and food prices as well as the playing out of trade wars and global financial market outcomes led me to keep the stance neutral. It will allow the MPC to determine in a flexible manner what further monetary policy response is warranted based on an on-going assessment of the inflation situation, inflation expectations and growth prints in the coming months.

Statement by Dr. Urjit R. Patel

51. Looking ahead, projected inflation for Q4:2018-19 (at 4.7 percent) is 30 bps higher than that in the April resolution. The baseline inflation path faces several uncertainties, viz., (i) the outlook for oil prices; (ii) continuing volatility in global financial markets; (iii) the risk of the significant rise in households’ inflation expectations feeding into wages and input costs, even as the pass-through to output prices has remained muted so far; (iv) the impact of the likely revision in the MSP formula; and (v) second round impact on inflation on account of the staggered impact of HRA revisions by various state governments, though the direct statistical impact of HRA revisions will be looked through. However, a normal monsoon, by keeping food inflation benign, could act as a mitigating factor.

52. Domestic growth has strengthened with the Q4:2017-18 print at a seven-quarter high and now appears to be on a sustainable path. Investment activity, in particular, has accelerated. There has also been a pick-up in manufacturing and this is manifested in an increase in capacity utilisation. The services sector has been resilient with several high frequency indicators continuing to show robust growth in recent months even as PMI services moved slightly into contraction in May. Bank credit growth has continued to improve. The recent increase in oil prices, by impacting disposable incomes, may have some adverse impact on private consumption. On the whole, however, economic activity continues to be resilient with GDP growth for 2018-19 projected at 7.4 per cent, same as in the April policy.

53. Inflation risks have increased since the April policy. I, therefore, vote for an increase in the policy repo rate by 25 basis points. In view of prevailing uncertainties, it is apposite to maintain the neutral stance so as to respond to the evolving situation in a flexible manner.

**Summary**

Crude which is the major component of our imports had moved from low of $45 to $76 per barrel in last one year. Roughly, increase of $10 per barrel in crude leads to increase in $10-11 billion of Current Account Deficit and approximately pushes up inflation by 30-40bps.

Moreover, the world economies are also following the path of balance sheet consolidation and rate hikes. US 10 Yr Treasury have hardened almost 100bps in last one year on account of tightening monetary policy. Same is seen in other global economies. This had also added to the negative sentiments in our domestic Bond Market.

RBI hiked the FPI investment limit in central government security from 5% to 5.5% in FY19 and 6% in FY20 effective from 1st June. Further to boost FPI demand RBI permitted FPI to invest in papers with maturity less than 3 years also and raised aggregate cap in any gilt to 30% from 20%. All this developments have also not boosted FPI demand in Indian market and the Indian Bond market is continuously seeing FII outflows which is evident from chart 5

* Refer to annexures for [charts](#annexture4)

## FACTORS AFFECTING THE USD-INR EXCHANGE RATE

As we are analyzing all the exchange rates with respect to US dollar, it is important to know the factors affecting its rate. These are as follows:

* **Federal Reserve Bank (Fed):** The U.S. Central Bank has full independence in setting monetary policy to achieve maximum non-inflationary growth. The Fed’s chief policy signals are: open market operations, the Discount Rate and the Fed Funds rate.
* **Federal Open Market Committee (FOMC):** The FOMC is responsible for making decisions on monetary policy, including the crucial interest rate announcements it makes 8 times a year.
* **Interest Rates:** Fed Funds Rate: Clearly the most important interest rate. It is the rate that depositary institutions charge each other for overnight loans. The Fed announces changes in the Fed Funds rate when it wishes to send clear monetary policy signals. These announcements normally have large impact on all stock, bond and currency markets.
* **Discount Rate:** The interest rate at which the Fed charges commercial banks for emergency liquidity purposes. Although this is more of a symbolic rate, changes in it imply clear policy signals. The Discount Rate is almost always less than the Fed Funds Rate.
* **30-year Treasury bond:** The 30-year US Treasury Bond, also known as the long bond, or bellwether treasury. It is an important indicator of markets’ expectations on inflation. Markets most commonly use the yield (rather than price) when referring to the level of the bond. As in all bonds, the yield on the 30-year treasury is inversely related to the price. There is no clear-cut relation between the long bond and the US dollar. But the following relation usually holds: A fall in the value of the bond (rise in the yield) due to inflationary concerns may pressure the dollar. These concerns could arise from strong economic data.
* **Treasury:** The US Treasury is responsible for issuing government debt and for making decisions on the fiscal budget. The Treasury has no say in monetary policy, but its statements on the dollar have a major influence on the currency.
* **Economic Data:** The most important economic data items released in the US are: labor report (payrolls, unemployment rate and average hourly earnings), CPI, PPI, GDP, international trade, ECI, NAPM, productivity, industrial production, housing starts, housing permits and consumer confidence.
* **Stock Market:** The three major stock indices are the Dow Jones Industrials Index (Dow), S&P 500, and NASDAQ. The Dow is the most influential index on the dollar. Since the mid-1990s, the index has shown a strong positive correlation with the greenback as foreign investors purchased US equities. Three major forces affect the Dow.
* Global considerations. Consequently, these factors channel their way through the dollar
* **Cross Rate Effect:** The dollar’s value against one currency is sometimes impacted by another currency pair (exchange rate) that may not involve the dollar. To illustrate, a sharp rise in the yen against the euro (falling EUR/JPY) could cause a general decline in the euro, including a fall in EUR/USD.
* **Fed Funds Rate Futures Contract:** Interest rate expectations can be made through the Fed Funds rate in the futures market. The contract’s value shows what the Fed Funds interest rate (overnight rate) is expected to be in the future, depending on the maturity of the contract. Hence, the contract is a valuable barometer of market expectation vis-à-vis Federal Reserve policy. The rate is obtained by subtracting the contract’s value from 100, and comparing the result to the prevailing Fed Funds rate in the cash/spot market.
* **RESEARCH METHODOLOGY**

Fundamental and technical analyses are important tools in understanding stocks and indices. These techniques are widely used by analysts and investor to get hold of what market and individual securities are doing and provide an intelligent estimate of how they are going to react further.

The motive of Research Methodology is to determine the changes in interest rate differential due to change in rates due to amendment in monetary policy over the years. It will help us to determine the reason and effect of interest rate differential on USD-INR exchange rate with the help of fundamental analysis and technical analysis.

First and foremost I analyzed the various factors affecting foreign exchange rates in the three above mentioned economies. Thereafter I had developed a hypothesis to find out which factor affects the most and hence where does the interest rate differential factor stands in the respective economy. In order to implement this, I had just taken a random view of the employees in the foreign exchange at PNB, to find out what according to them are the most important factors affecting foreign exchange. After getting the feedback from the employees, we had taken out an average of the responses, to find out which factor seems to be having the maximum weight age. The output of this analysis can be seen in annexure 1.

This analysis showed that for the employees of PNB, the interest rate seems to be one of the most affecting factors of foreign exchange rates movement. (The interest rates taken into account were the benchmark rates for the three economies.) This research became the basic motivating fact of the study. Also lot of theories was studied, but unfortunately all theories were unable to prove a direct impact of interest rate differential on exchange rate movements ex the covered and the uncovered interest rate parity theorem.

Fundamental analysis will help us to understand the effect of Interest rate differential on USD-INR and technical analysis will help us to determine the reason of changes over the years. The trend of changes in exchange rate and interest rate differential will help us to conclude our results.

* **Fundamental Analysis:**

Fundamental analysis is a qualitative analysis that involves studying the economy in general. Sensing the course of economy the required Industry is studied to know how the changes in the economy are to affect the industry. This method of analysis is subjective i.e. the data collected regarding the foreign market in terms of its financial statements, future plans etc. are largely subjective and analysts/investors comprehend them in their own way and their conclusion regarding the economy.

The theoretical as well as empirical relationship between the interest rate differential and exchange rate has been a debatable issue among the economists. In a detailed analysis Gumus (2002) examined the relationship between exchange rates and interest rates and stressed that raising interest rates support the exchange rates in a crisis. He argued that higher interest rates raise the return that an investor obtains by investing in the country and therefore reduce the capital flight. Also, by increasing interest rates, it can be made very costly for speculators to take short positions in the currency under attack, and therefore speculation may be discouraged. Tight monetary policy can therefore signal the commitment of the monetary authority to defending the currency and be effective in restoring the confidence. These together support the currency and lead to an exchange rate appreciation.

**Relationship between Interest Rate Differential and Foreign Exchange Rate**

According to Mundell -Fleming model, an increase in interest rate is necessary to stabilize the exchange rate depreciation and to curb the inflationary pressure and thereby helps to avoid many adverse economic consequences. The high interest rate policy is considered important for several reasons.

Firstly, it provides the information to the market about the authorities’ resolve not to allow the sharp exchange rate movement that the market expects given the state of the economy and thereby reduce the inflationary expectations and prevent the vicious cycle of inflation and exchange rate depreciation.

Secondly, it raises the attractiveness of domestic financial assets as a result of which capital inflow takes place and thereby limiting the exchange rate depreciation.

Thirdly, it not only reduces the level of domestic aggregate demand but also improves the balance of payment position by reducing the level of imports. Critics argue that the high interest rates imperil the ability of the domestic firms and banks to pay back the external debt and thereby reduce the probability of repayment. As a result, high interest rates lead to capital outflows and thereby depreciation of the currency.

However, it is unlikely to accept the changes in interest rate policy to be purely exogenous to stabilize the exchange rates because the monetary authorities in many countries resort to high interest rates policy when the currency is under pressure and low interest rates policy when the currency is in normalcy. In other words, declines in the value of the exchange rate may themselves prompt monetary authorities to raise domestic interest rates. For example, exchange rates depreciation in Thailand, Malaysia, Indonesia, Korea, and the Philippines during 1997-98 was associated with rising interest rates and vice versa. In other words, exchange rate depreciation may cause the rise in interest rate. Therefore, both the interest rate and exchange rate might be affecting each other.

Similarly USA’s Fed Fund Rate was also increased in the month of June and the increase in Bank rate or Repo Rate by RBI which balances the interest rate differential of USD-INR.

* **Technical Analysis**

Technical analysis on the other hand has nothing to do with such occurrences in the economy or industry and simply assumes that all that is worthwhile knowing is already reflected in the Exchange Rates. This technique involves plotting charts of a Foreign exchange price over a period of time and using indicators that are mathematical calculations providing information about the underlying strengths and weaknesses of the money, its volatility, bullish and bearish trends, etc. These indicators also generate buy and sell signal with respect to a Foreign exchange, which are of great help to all categories of investors and traders.

The data collected from the Reuters of PNB, treasury division help us to determine the interest rate differential of USD-INR calculate the monthly average of USD-INR exchange rate and the relationship between interest rate differential and exchange rate. It helps us to set the trend line over the period over the past one year before second bi-monthly Monetary policy of 2018 was declared for June and July 2018. With the help of data collected we can compare the results before and after monetary policy was declared.

**Following is the data of monthly average of USD-INR exchange rate.**

|  |  |
| --- | --- |
| **MONTH** | **US DOLLAR RATE** |
| May-17 | 64.43 |
| Jun-17 | 64.44 |
| Jul-17 | 64.45 |
| Aug-17 | 63.95 |
| Sep-17 | 64.46 |
| Oct-17 | 65.05 |
| Nov-17 | 64.85 |
| Dec-17 | 64.24 |
| Jan-18 | 63.65 |
| Feb-18 | 64.44 |
| Mar-18 | 65.04 |
| Apr-18 | 65.67 |
| May-18 | 67.55 |
| Jun-18 | 67.79 |

* Additional/Raw data at [annexure 3](#annexture3)

**Following is the data of Bank rate/Repo rate USA Fed Fund Rate and its application in deriving interest rate differential.**

|  |  |  |  |
| --- | --- | --- | --- |
| **MONTH** | **REPO RATE** | **USA RATE** | **INTEREST RATE DIFFERENTIAL** |
|  |  |  |  |
| May-17 | 6.25 | 1 | 5.25 |
| Jun-17 | 6.25 | 1.25 | 5 |
| Jul-17 | 6.25 | 1.25 | 5 |
| Aug-17 | 6 | 1.25 | 4.75 |
| Sep-17 | 6 | 1.25 | 4.75 |
| Oct-17 | 6 | 1.25 | 4.75 |
| Nov-17 | 6 | 1.25 | 4.75 |
| Dec-17 | 6 | 1.5 | 4.5 |
| Jan-18 | 6 | 1.5 | 4.5 |
| Feb-18 | 6 | 1.5 | 4.5 |
| Mar-18 | 6 | 1.5 | 4.5 |
| Apr-18 | 6 | 1.75 | 4.25 |
| May-18 | 6 | 1.75 | 4.25 |
| Jun-18 | 6.25 | 2 | 4.25 |
| Jul-18 | 6.25 | 2 | 4.25 |

**Following is the relation between interest rate differential and USD-INR exchange rate**

|  |  |  |
| --- | --- | --- |
| **MONTH** | **INTEREST RATE DIFFERENTIAL** | **USD-INR (per $ 0.1)** |
|  |  |  |
| May-17 | 5.25 | 6.443 |
| Jun-17 | 5 | 6.444 |
| Jul-17 | 5 | 6.445 |
| Aug-17 | 4.75 | 6.395 |
| Sep-17 | 4.75 | 6.446 |
| Oct-17 | 4.75 | 6.505 |
| Nov-17 | 4.75 | 6.485 |
| Dec-17 | 4.5 | 6.424 |
| Jan-18 | 4.5 | 6.365 |
| Feb-18 | 4.5 | 6.444 |
| Mar-18 | 4.5 | 6.504 |
| Apr-18 | 4.25 | 6.567 |
| May-18 | 4.25 | 6.755 |
| Jun-18 | 4.25 | 6.779 |
| Jul-18 | 4.25 | - |

* **CONCLUSION**

Hereby, after studying and tracking the USD-INR exchange rate movements with respect to the interest rate differential, it can be concluded that the interest rate differential movements do impact the exchange rate movements, though the impact may not be the same each and every time. In case of USD-INR though the trend was not always the same but interest rate differential did impact the exchange rate.

This is because for each economy there is different factors also which could influence the exchange rate, due to which the impact of interest rate differential change diminish, but the point to remember is that it is the interest rate which is changed to bring the economy under balance whenever there is a mismatch in the exchange rate.

Economies of the market affect the exchange rate because of the productivity difference which plays one of the major roles such as crude oil prices, inflation, treasury operation, import/export, debt, political factors etc.

* **RECOMENDATIONAS**

**Future Expectation:**

1. In the near future, the Indian bond market is seemed negatively biased only. There is upside risk seen to inflation on account of 1. MSP impact, 2. Rising crude prices, 3. State 7 CPC HRA implementation and 4. Fiscal slippage. Though a good monsoon may keep food inflation benign and support market.
2. On growth front, strong growth was seen in Q4FY18 indicating improvement in economy. However, it was led by strong government spending and cyclical recovery in industrial sector.
3. Higher inflation especially core inflation, sustained growth along with higher global yields will only further the rate hike cause in near future. We expect RBI to wait for impact of MSP policy and monsoon before going for another rate hike. If crude, INR movement and no global shocks are seen than the hike could be shifted to October. So we would say, future hike is more of data dependent and minutes will be giving clarity to the view of MPC members individually.
4. Technically also Spread between Repo and 10yr benchmark is hovering around 150bps which indicates 3-4 hikes and 1Yr OIS is also indicating 2-3 hikes in FY19.

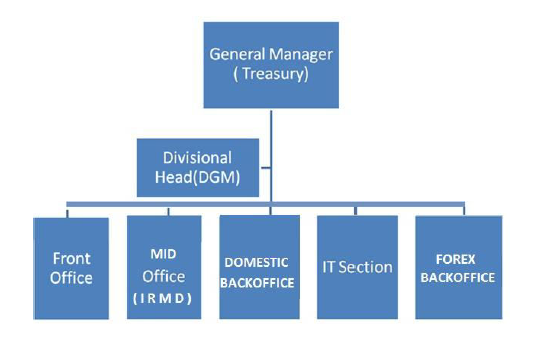
What can be done to improve the market:

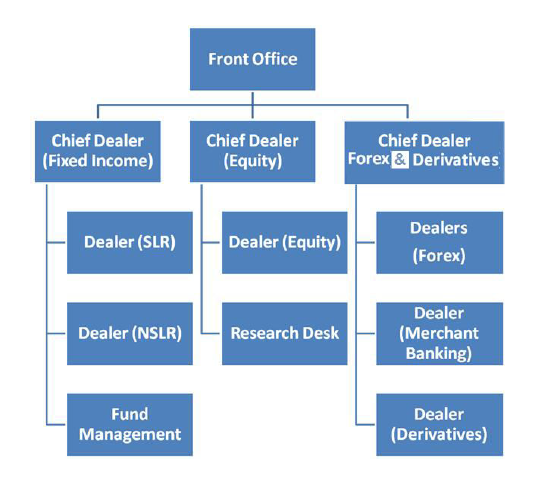
* Though currently liquidity is neutral, but once credit growth picks up especially in 2HY, we can expect OMO purchase announcement by RBI.
* Further to create demand among participants, RBI can increase the maximum cap of HTM for the time being.

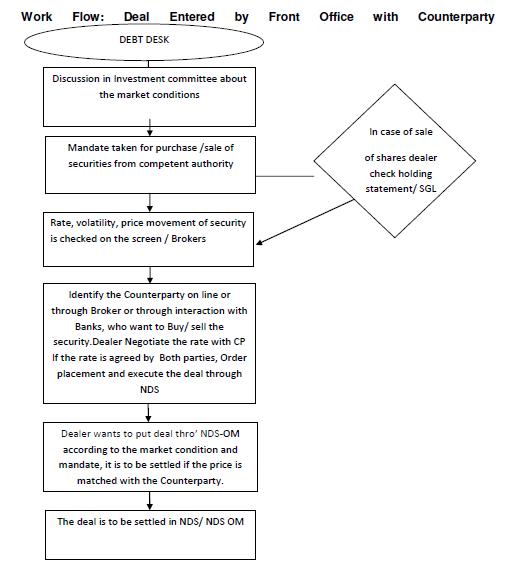
So far as the fixed income markets are concerned, the volatility in the bond prices continues to persist, largely fuelled by the upside risks to inflation due to rising crude oil prices, a volatile domestic currency and also because of foreign portfolio investors (FPIs) turning net sellers of Indian bonds. The bond yields traded close to around 7.99% have already priced in 50bps – 75bps interest rate hike by the RBI including June one.

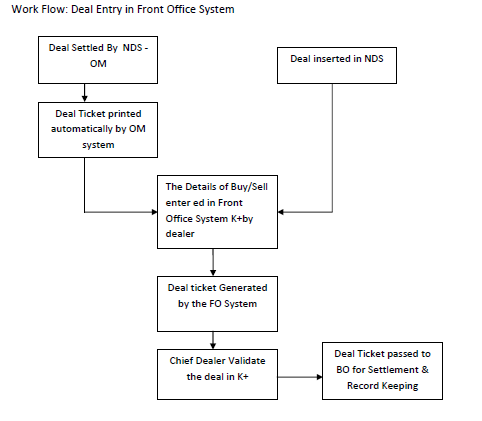
* **Bibliography**
* https://www.investopedia.com/terms/i/interest-rate-differential.asp
* https://www.pnbindia.in/profile.html
* http://treasurytoday.com/2002/07and08/foreign-exchange-settlement-risk
* Punjab National Bank Treasury manual, 2015
* https://www.rbi.org.in/Scripts/BS\_PressReleaseDisplay.aspx?prid=44125
* http://ais.utm.my/researchportal/files/2015/02/Example3-Res-Design.pdf
* http://indianresearchjournals.com/pdf/ijmfsmr/2013/may/6.pdf
* Minutes of the Monetary Policy Committee Meeting June 4-6, 2018 [Under Section 45ZL of the Reserve Bank of India Act, 1934]
* https://tradingeconomics.com/
* http://erepository.uonbi.ac.ke/bitstream/handle/11295/76775/Maina%2CStephen%20S\_%20The%20effect%20of%20interest%20rate%20differential%20on%20the%20foreign%20exchange%20rate%20in%20east%20african%20forex%20market.pdf?sequence=3&isAllowed=y

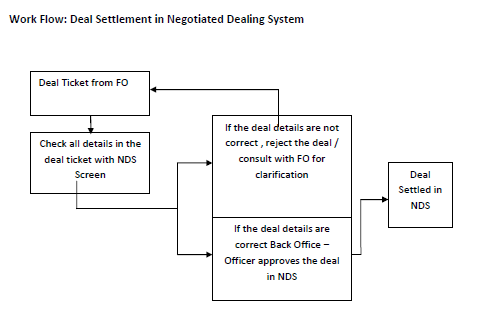
**ANNEXTURES:**

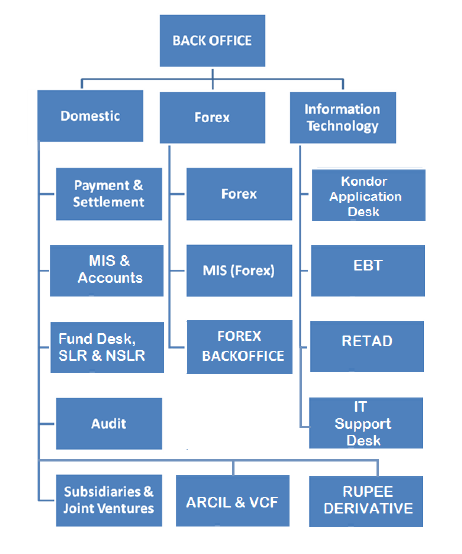
**ANNEXTURES 1** 



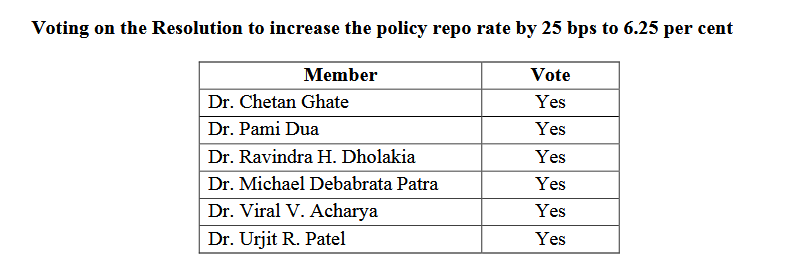


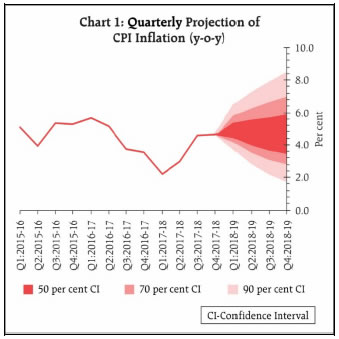


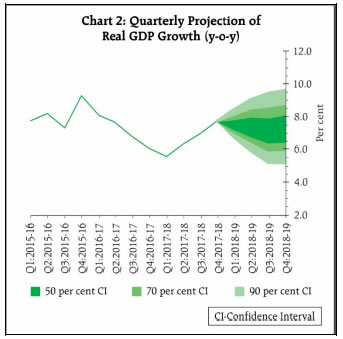




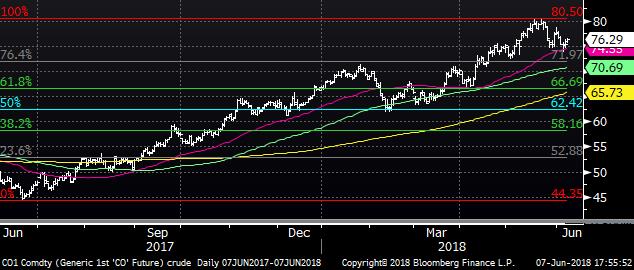
**Annexure 2**







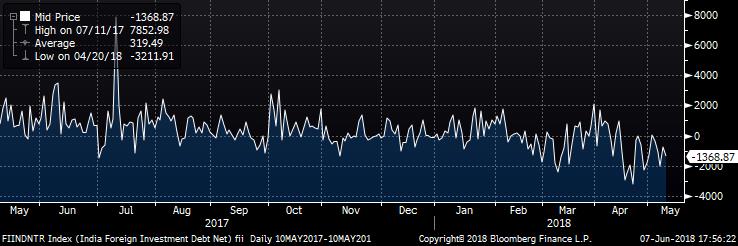
**Annexure 3**



(Chart 3: Crude Brent)



(Chart 4: US 10 year Benchmark)



(Chart 5: FII Inflow/Outflow)

**ANNEXTURE 4**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **2017** | | | | | | | |
| **DATE** | **USD RATE** | **DATE** | **USD RATE** | **DATE** | **USD RATE** | **DATE** | **USD RATE** |
| 02-May-17 | 64.2072 | 03-Jul-17 | 64.7525 | 01-Sep-17 | 63.9804 | 01-Nov-17 | 64.5256 |
| 03-May-17 | 64.1439 | 04-Jul-17 | 64.8168 | 04-Sep-17 | 64.0468 | 02-Nov-17 | 64.593 |
| 04-May-17 | 64.2115 | 05-Jul-17 | 64.7209 | 05-Sep-17 | 64.1164 | 03-Nov-17 | 64.5764 |
| 05-May-17 | 64.3079 | 06-Jul-17 | 64.7779 | 06-Sep-17 | 64.2146 | 06-Nov-17 | 64.7267 |
| 08-May-17 | 64.2154 | 07-Jul-17 | 64.7342 | 07-Sep-17 | 64.0276 | 07-Nov-17 | 64.8064 |
| 09-May-17 | 64.5065 | 10-Jul-17 | 64.5405 | 08-Sep-17 | 63.8664 | 08-Nov-17 | 65.0592 |
| 11-May-17 | 64.438 | 11-Jul-17 | 64.5025 | 11-Sep-17 | 63.8859 | 09-Nov-17 | 64.8967 |
| 12-May-17 | 64.3043 | 12-Jul-17 | 64.4969 | 12-Sep-17 | 63.9474 | 10-Nov-17 | 65.0147 |
| 15-May-17 | 64.1188 | 13-Jul-17 | 64.4384 | 13-Sep-17 | 63.9818 | 13-Nov-17 | 65.4272 |
| 16-May-17 | 64.0758 | 14-Jul-17 | 64.4539 | 14-Sep-17 | 64.0692 | 14-Nov-17 | 65.5171 |
| 17-May-17 | 64.0214 | 17-Jul-17 | 64.3666 | 15-Sep-17 | 64.0774 | 15-Nov-17 | 65.3689 |
| 18-May-17 | 64.3441 | 18-Jul-17 | 64.3301 | 18-Sep-17 | 64.0371 | 16-Nov-17 | 65.2969 |
| 19-May-17 | 64.9906 | 19-Jul-17 | 64.3211 | 19-Sep-17 | 64.1769 | 17-Nov-17 | 64.8462 |
| 22-May-17 | 64.5632 | 20-Jul-17 | 64.4273 | 20-Sep-17 | 64.3637 | 20-Nov-17 | 65.0565 |
| 23-May-17 | 64.7751 | 21-Jul-17 | 64.3185 | 21-Sep-17 | 64.5256 | 21-Nov-17 | 65.0386 |
| 24-May-17 | 64.8586 | 24-Jul-17 | 64.4494 | 22-Sep-17 | 64.9596 | 22-Nov-17 | 64.7453 |
| 25-May-17 | 64.5088 | 25-Jul-17 | 64.358 | 25-Sep-17 | 64.8357 | 23-Nov-17 | 64.7949 |
| 26-May-17 | 64.5945 | 26-Jul-17 | 64.4208 | 26-Sep-17 | 65.3371 | 24-Nov-17 | 64.7328 |
| 29-May-17 | 64.5565 | 27-Jul-17 | 64.1216 | 27-Sep-17 | 65.6947 | 27-Nov-17 | 64.6948 |
| 30-May-17 | 64.6336 | 28-Jul-17 | 64.1483 | 28-Sep-17 | 65.7604 | 28-Nov-17 | 64.4206 |
| 31-May-17 | 64.5459 | 31-Jul-17 | 64.0773 | 29-Sep-17 | 65.3552 | 29-Nov-17 | 64.4058 |
| 01-Jun-17 | 64.4704 | 01-Aug-17 | 64.0683 | 03-Oct-17 | 65.5529 | 30-Nov-17 | 64.4332 |
| 02-Jun-17 | 64.4208 | 02-Aug-17 | 64.069 | 04-Oct-17 | 65.2899 | 04-Dec-17 | 64.3799 |
| 05-Jun-17 | 64.3485 | 03-Aug-17 | 63.6314 | 05-Oct-17 | 65.1758 | 05-Dec-17 | 64.3764 |
| 06-Jun-17 | 64.3516 | 04-Aug-17 | 63.7091 | 06-Oct-17 | 65.2276 | 06-Dec-17 | 64.4467 |
| 07-Jun-17 | 64.4538 | 07-Aug-17 | 63.7375 | 09-Oct-17 | 65.3074 | 07-Dec-17 | 64.5388 |
| 08-Jun-17 | 64.3554 | 08-Aug-17 | 63.7382 | 10-Oct-17 | 65.2652 | 08-Dec-17 | 64.4649 |
| 09-Jun-17 | 64.2584 | 09-Aug-17 | 63.7491 | 11-Oct-17 | 65.2691 | 11-Dec-17 | 64.3616 |
| 12-Jun-17 | 64.3407 | 10-Aug-17 | 63.9437 | 12-Oct-17 | 65.1003 | 12-Dec-17 | 64.4834 |
| 13-Jun-17 | 64.4453 | 11-Aug-17 | 64.1693 | 13-Oct-17 | 64.9301 | 13-Dec-17 | 64.4525 |
| 14-Jun-17 | 64.3141 | 14-Aug-17 | 64.0253 | 16-Oct-17 | 64.7603 | 14-Dec-17 | 64.2798 |
| 15-Jun-17 | 64.2801 | 16-Aug-17 | 64.2428 | 17-Oct-17 | 64.9226 | 15-Dec-17 | 64.0958 |
| 16-Jun-17 | 64.5883 | 18-Aug-17 | 64.1048 | 18-Oct-17 | 65.0649 | 18-Dec-17 | 64.1065 |
| 19-Jun-17 | 64.3788 | 21-Aug-17 | 64.0285 | 23-Oct-17 | 65.0239 | 19-Dec-17 | 64.1205 |
| 20-Jun-17 | 64.4672 | 22-Aug-17 | 64.1099 | 24-Oct-17 | 64.9256 | 20-Dec-17 | 64.0577 |
| 21-Jun-17 | 64.6025 | 23-Aug-17 | 64.1272 | 25-Oct-17 | 65.1386 | 21-Dec-17 | 64.0883 |
| 22-Jun-17 | 64.495 | 24-Aug-17 | 64.0676 | 26-Oct-17 | 64.7888 | 22-Dec-17 | 64.0409 |
| 23-Jun-17 | 64.5365 | 28-Aug-17 | 63.8701 | 27-Oct-17 | 65.0931 | 26-Dec-17 | 64.0538 |
| 27-Jun-17 | 64.4572 | 29-Aug-17 | 64.0174 | 30-Oct-17 | 64.9338 | 27-Dec-17 | 64.1577 |
| 28-Jun-17 | 64.5288 | 30-Aug-17 | 63.9431 | 31-Oct-17 | 64.7745 | 28-Dec-17 | 64.1716 |
| 29-Jun-17 | 64.4715 | 31-Aug-17 | 64.0154 |  |  | 29-Dec-17 | 63.9273 |
| 30-Jun-17 | 64.7379 |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- |
| **2018** | | | | | |
| **DATE** | **USD RATE** | **DATE** | **USD RATE** | **DATE** | **USD RATE** |
| 01-Jan-18 | 63.6697 | 01-Mar-18 | 65.2261 | 02-May-18 | 66.6636 |
| 02-Jan-18 | 63.6728 | 05-Mar-18 | 65.053 | 03-May-18 | 66.6093 |
| 03-Jan-18 | 63.4833 | 06-Mar-18 | 64.9941 | 04-May-18 | 66.7681 |
| 04-Jan-18 | 63.3914 | 07-Mar-18 | 64.9627 | 07-May-18 | 67.106 |
| 05-Jan-18 | 63.3823 | 08-Mar-18 | 64.9212 | 08-May-18 | 67.0809 |
| 08-Jan-18 | 63.3482 | 09-Mar-18 | 65.0784 | 09-May-18 | 67.3815 |
| 09-Jan-18 | 63.469 | 12-Mar-18 | 65.0199 | 10-May-18 | 67.3786 |
| 10-Jan-18 | 63.8264 | 13-Mar-18 | 64.9567 | 11-May-18 | 67.2203 |
| 11-Jan-18 | 63.7364 | 14-Mar-18 | 64.9875 | 14-May-18 | 67.3153 |
| 12-Jan-18 | 63.5263 | 15-Mar-18 | 64.9366 | 15-May-18 | 67.5288 |
| 15-Jan-18 | 63.4125 | 16-Mar-18 | 64.8737 | 16-May-18 | 67.7156 |
| 16-Jan-18 | 63.7602 | 19-Mar-18 | 65.0375 | 17-May-18 | 67.8276 |
| 17-Jan-18 | 63.9797 | 20-Mar-18 | 65.1993 | 18-May-18 | 67.9577 |
| 18-Jan-18 | 63.8431 | 21-Mar-18 | 65.2162 | 21-May-18 | 68.0883 |
| 19-Jan-18 | 63.7183 | 22-Mar-18 | 65.0622 | 22-May-18 | 68.0187 |
| 22-Jan-18 | 63.8895 | 23-Mar-18 | 65.1333 | 23-May-18 | 68.2139 |
| 23-Jan-18 | 63.7722 | 26-Mar-18 | 64.9055 | 24-May-18 | 68.3872 |
| 24-Jan-18 | 63.6439 | 27-Mar-18 | 64.7973 | 25-May-18 | 68.26 |
| 25-Jan-18 | 63.4983 | 28-Mar-18 | 65.0441 | 28-May-18 | 67.443 |
| 29-Jan-18 | 63.547 | 03-Apr-18 | 65.024 | 29-May-18 | 67.8201 |
| 30-Jan-18 | 63.7534 | 04-Apr-18 | 65.0232 | 30-May-18 | 67.6288 |
| 31-Jan-18 | 63.6878 | 05-Apr-18 | 65.0601 | 31-May-18 | 67.4526 |
| 01-Feb-18 | 63.6113 | 06-Apr-18 | 64.9884 | 01-Jun-18 | 67.184 |
| 02-Feb-18 | 64.0781 | 09-Apr-18 | 64.9287 | 04-Jun-18 | 67.0543 |
| 05-Feb-18 | 64.0295 | 10-Apr-18 | 64.9368 | 05-Jun-18 | 67.1794 |
| 06-Feb-18 | 64.2723 | 11-Apr-18 | 65.1272 | 06-Jun-18 | 67.0397 |
| 07-Feb-18 | 64.1377 | 12-Apr-18 | 65.3496 | 07-Jun-18 | 67.0181 |
| 08-Feb-18 | 64.1616 | 13-Apr-18 | 65.2226 | 08-Jun-18 | 67.5228 |
| 09-Feb-18 | 64.3686 | 16-Apr-18 | 65.4476 | 11-Jun-18 | 67.3353 |
| 12-Feb-18 | 64.2838 | 17-Apr-18 | 65.6124 | 12-Jun-18 | 67.4571 |
| 14-Feb-18 | 64.1259 | 18-Apr-18 | 65.6814 | 13-Jun-18 | 67.6251 |
| 15-Feb-18 | 63.9222 | 19-Apr-18 | 65.7837 | 14-Jun-18 | 67.6875 |
| 16-Feb-18 | 63.9097 | 20-Apr-18 | 66.0167 | 15-Jun-18 | 67.9739 |
| 20-Feb-18 | 64.5254 | 23-Apr-18 | 66.2177 | 18-Jun-18 | 68.0248 |
| 21-Feb-18 | 64.8161 | 24-Apr-18 | 66.3622 | 19-Jun-18 | 68.1511 |
| 22-Feb-18 | 65.0458 | 25-Apr-18 | 66.6983 | 20-Jun-18 | 68.0838 |
| 23-Feb-18 | 64.8227 | 26-Apr-18 | 66.8299 | 21-Jun-18 | 68.195 |
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