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# IMPACT OF FED RATE ON US DOLLAR - INDIAN RUPEE EXCHANGE RATE

Bilal Hasan Rizvi*
Dr. Amit Kumar Sinha**

## ABSTRACT

*Through this study, we attempt to understand the dynamics of Indian Rupee fluctuations against US Dollar that have been caused by the fluctuations in the Fed Rate. We tried to understand how the Fed Rate influence the Indian rupee - US Dollar exchange rate movements. After research work done via secondary method, we have observed that factors like differential interest rate, differential inflation rate, differential money supply in both the markets, differential output growth rate of both the countries, among others, are important factors which impact the fluctuation in the fed rate that accounts for approximately 91% variance of the Dollar-Rupee exchange rates and explain the exchange rate dynamics to a large extent. A few factors that were earlier considered to be important are not as significant as expected.*

***KEYWORDS**: Fed Rate, Exchange Rate, Differential Money, Growth Rate.*

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## Introduction

In the beginning when I started studying economics, I got to know that at one point in time 1 dollar was equal to 1INR. It really puzzled me about how did the difference between two currencies increase so much. It got me into trying to understand these differences in the currencies. It started with learning about how the US dollar became the world's leading reserve currency. The dollar's status as the global reserve currency was cemented in the aftermath of World War II by the 1944 Bretton Woods Conference, in which forty-four countries agreed to the creation of the IMF and the World Bank. At Bretton Woods, a system of exchange rates was created wherein each country pegged the value of its currency to the dollar, which itself was convertible to gold at the rate of $35 per ounce. This was designed to provide stability and prevent the "beggar-thy-neighbor" currency wars of the 1930s- a response to the great depression by which countries abandoned the gold standard and devaluated their currencies to try to gain a competitive advantage. Exchange rate (also known as conversion rate) between two currencies is the rate at which one currency can be exchanged for another. Exchange rates play a vital role in a country's level of trade, which is critical to almost every free market economy in the world today. Therefore, exchange rates are among the most monitored, analyzed and governmentally manipulated economic measures. Exchange rate matters not just on the big macroeconomic scene but also on a smaller one. It impacts the real return of an investor's portfolio, profitability of firms, growth of specific sectors amongst various other determinants of the economy.

The Indian rupee, which was on a par with the American currency at the time of Independence in 1947, has depreciated by a little more than 83 times against the greenback in the past 77 years. The Indian Rupee had gone down to an all-time low of 83.33 against the US dollar. This volatility has severely grown in the past few years which has affected major macro-economic data, including growth, inflation, trades, and investments.

### How the Increased US Fed Rates Will Impact India?

To combat inflation as it hits its highest point in forty years, the US Federal Reserve Bank raised interest rates for the third time by 0.75 percentage points, bringing the federal funds rate to a range of 3.0% to 3.25%. To strengthen the dollar, rates are predicted to rise and reach 4.4% by the end of this year.

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* M.Com. 2nd Year, Amity Business School, Amity Lucknow, U.P., India.
** Associate Professor, Amity Business School, Amity Lucknow, U.P., India.

The US economy is already being affected negatively by the country's rising inflation. It can also have a significant negative effect on developing nations like India, where the national currency will drop versus the strong US dollar and capital inflow will be impeded.

The US is the strongest economy in the world, an increase in interest rates inevitably has an impact on the whole market, including the Indian market. The increase will cause the US and Indian interest rate differentials to deepen. As a result, overseas investors may be persuaded to switch from Indian markets to US assets because:

- India's economy is one of emerging markets.
- One of the strongest economies in the world, the US is a developed nation.

It's also crucial to remember that rising fed rates will make the currency stronger and the rupee weaker against the dollar. While short-term investors will be scared off by the market's volatility and the weakening rupee and would therefore withdraw from the Indian markets, long-term investors may not be impacted by this.

India, which imports more goods from outside markets than it exports, is a country with an import surplus, and this year's CAD (current account deficit) is predicted to be at an all-time high. Additionally, according to national economists, the Reserve Bank of India will have to raise interest rates by at least 75 basis points to maintain the stability of the rupee and the interest rate differential between the US and India. This will lead other banks to raise their own interest rates, which will decrease demand and raise prices. The increase might cause money to leave the nation, causing import inflation to continue and raising domestic rates.

Also, the impact of fed rate is not the same in all the countries. Now different countries have different level of inflations and not all the economies are equal. Some countries have stronger economies compared to other countries and some have weaker economies comparatively. Hence forth the currencies of different countries are impacted in a different manner from the fluctuations of the Fed rate.

Fig. 1 shows the federal funds rate from 1965 through 2016. The shaded areas denote periods of rising interest rates. Fig. 2 zooms in on the six tightening episodes before the Global Financial Crisis, showing GDP growth in each episode relative to what one could have predicted using a simple forecasting model.[1] The bars measure average growth surprises from the beginning of each episode until one year after its end. For instance, in panel 1, Mexico's GDP growth from 1978:Q1 through 1982:Q2 was about 3 percentage points higher, on average, than what one could have predicted using data up to 1977:Q4.[2]

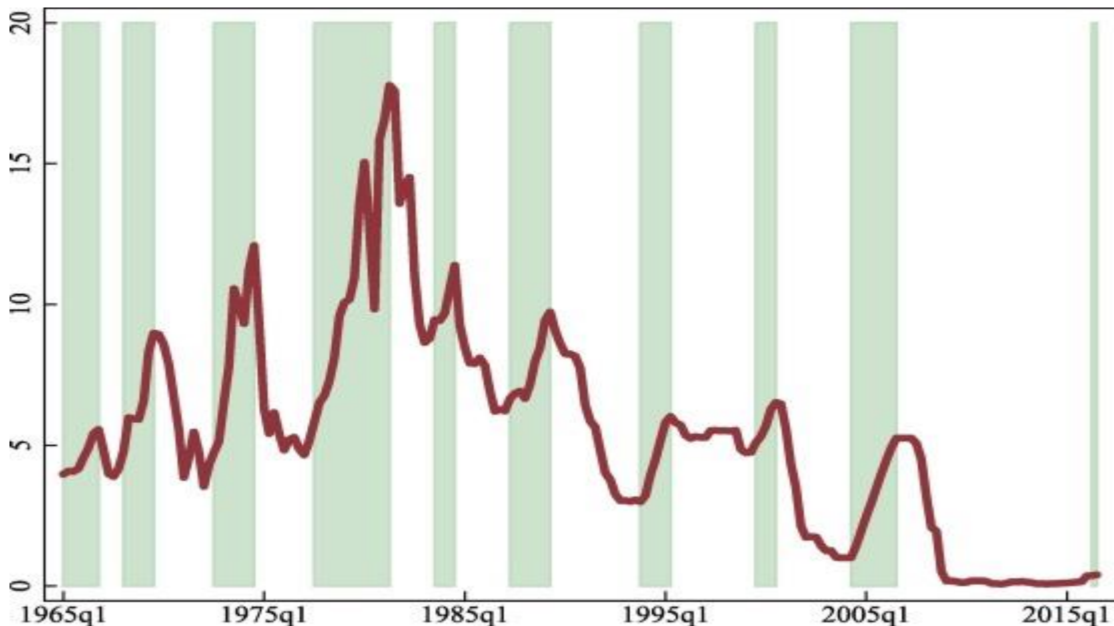

Fig. 1. The federal funds rate (FFR) from 1965: Q1 through 2016: Q2. **Note**: The shaded areas denote periods of interest rate tightening. A quarter t contains a tightening if it satisfies any of the following criteria: (1) the FFR does not fall in *t* and rises by at least 20 and 40 basis points in quarters t-1 and t-2, respectively; (2) the FFR does not fall by more than 30,20, and 10 basis points in t,t-1, and t-2, does not fall in t+1, and rises by at least 20 and 30 basis points in t+2 and t+3; (3) the FFR rises by at least 100 and 200 basis points in t-3 and t-2, and rises by at least 100 basis points in t+2.

- Higher US interest rates have significant international spillovers that are, on average, almost as great as the domestic effects. After three years, an increase in U.S. interest rates caused by monetary policy affects GDP by 0.5% in advanced nations and 0.8% in emerging ones. These magnitudes are comparable to the domestic impacts of a U.S. monetary shock, which after two years cause the U.S. GDP to decline by roughly 0.7%.
- Standard exchange rate and trade channels are how higher U.S. interest rates are transferred to advanced economies. Specifically, when a nation's currency is (de facto) tied to the dollar or when trade volume with the US is strong, the responses inside advanced economies are larger.
- In developing nations, trade routes and exchange rates largely account for the variations in GDP responses amongst economies. Rather, a significant portion of the variations among economies can be explained by a vulnerability index, which we understand to represent a nation's financial fragility. More vulnerable economies would see a considerably greater decline in GDP in the event of a U.S. monetary tightening. Inflation, external debt, foreign reserves, and current account are combined to create this vulnerability index.

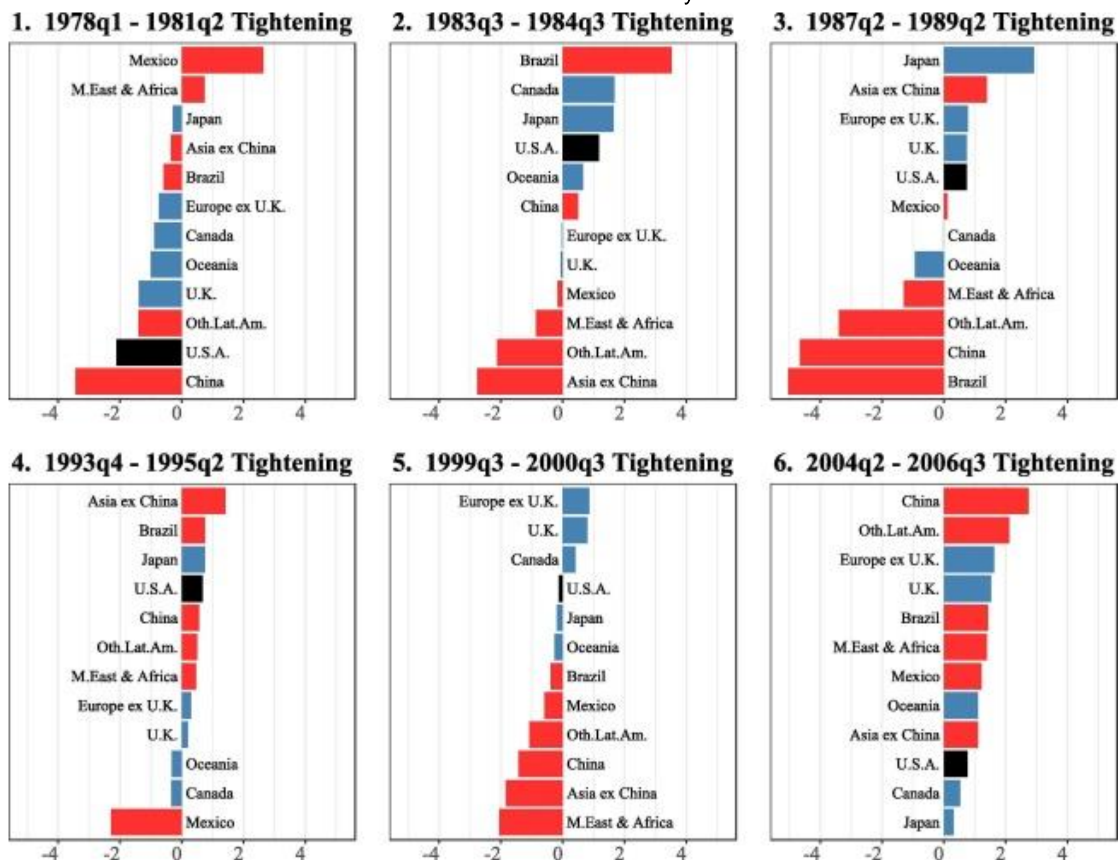


Fig. 2. Foreign GDP growth relative to forecast after U.S. interest rate increases. **Note**: Annual GDP growth surprises (actual minus forecast) in each region relative to ARIMA model in the aftermath of selected U.S. monetary policy tightening. The bars measure average growth surprises from the beginning of each episode until one year after its end.

## Review of Literature

### Literature Review

In the field of international finance and economics, there has been a great deal of interest in and research on the relationship between the Federal Reserve (Fed) interest rates and currency exchange rates, specifically between the US Dollar (USD) and the Indian Rupee (INR). The purpose of this literature review is to compile the research that has already been done and to comprehend how changes in the Fed rate affect the USD-INR exchange rate.

### Theoretical Background

The fundamental frameworks for comprehending the link between interest rates and currency rates are provided by the Interest Rate Parity theory and the Mundell-Fleming model. These theories state that, under normal circumstances, an increase in the domestic interest rate relative to international interest rates should result in an increase in the value of the home currency.

### Empirical Studies on US Dollar and INR Exchange Rate

Several empirical studies have investigated the impact of fed rate changes on the USD-INR exchange rate:

- Bekaert and Hodrick (1993) discovered that fluctuations in US interest rates had a big effect on currency rates, including the USD-INR rate. They noticed that the USD appreciates in value in relation to the INR when US interest rates rise.
- Extending this research, Kumar, and Lee (2006) discovered that fluctuations in the Fed rate affect not only the USD-INR exchange rate but also that the INR's susceptibility to these changes has grown over time, potentially because of greater capital flows and financial globalization.
- Ghosh and Roy (2016) concentrated on the time following the global financial crisis and discovered that the USD-INR exchange rate was significantly impacted by the Fed's unorthodox monetary policies, such as quantitative easing. They noticed that the USD-INR rate showed both long-term patterns and short-term volatility in response to news about changes in Fed policy.

### Factors Moderating the Impact

While the consensus suggests that Fed rate changes impact the USD-INR exchange rate, several factors can moderate this relationship:

- **International Economic Conditions:** The strength of this link may be impacted by international economic conditions. For example, safe-haven flows may bolster the USD during periods of global unpredictability, lessening the INR's sensitivity to changes in the Fed rate.
- **Indian Economic Factors:** The INR's reaction to changes in the Fed rate can also be influenced by domestic factors in India, such as GDP growth, inflation rates, and political stability. Robust internal economic foundations could potentially lessen the influence of external variables.
- **Capital Flows:** The fluctuations of currency rates can be influenced by the direction and volume of capital flows, including portfolio investments and foreign direct investment (FDI). Even when Fed rates rise, the INR may still be supported by increased capital inflows

### Conclusion

The literature continuously shows that the USD-INR exchange rate is significantly impacted by changes in Fed interest rates. However, several moderating factors may affect the impact's strength and durability. It is imperative for policymakers to acknowledge these dynamics and implement suitable strategies to effectively handle fluctuations in exchange rates and uphold economic stability. Additional investigation may provide a fuller understanding of how this link is changing considering shifting financial markets and global economic situations.

### Model

This empirical study is based on the impact of fed rate on US Dollar – Indian Rupee exchange rate. The main question of our paper is to determine how the fed rate affects the exchange rate relationship and the extent to which the fluctuation in the fed rate has an effect. As we have already

discussed, there are several variables that explain why there are fluctuations in the fed rate and therefore it impacts the exchange rate between INR and U.S. Dollar.

**Data Sources**

We consider quarterly data for the seven independent variables mentioned above for a period of 21 years (1993-2013). Also, data for the dependent variable is considered for the same period. We obtained the data from various sources like RBI's database on Indian Economy, Economic Research database of Federal Bank of St. Louis, World Bank Development Index, IMF's e-Library data.

**Hypotheses**

So, our Null Hypotheses are as follows:

$H_{01}$: Fed rate changes do not impact the USD INR exchange rate.

$H_{02}$: The Fed rate hikes (or fluctuations in the us Dollar) impact all the countries in a similar manner.

And the Alternative Hypotheses are:

$H_{01}$: Fed rate changes do Impact the USD INR exchange rate.

$H_{02}$: The Fed rate fluctuations do not impact all the countries in a similar manner.

**Conclusion**

The U.S. Dollar is the strongest currency in the world, it practically dominates the world. It has been dominating the world economy ever since the end of World War 2. The fed rate became a global thing when the dollar became the world's leading reserve currency. Its status as the global reserve currency was cemented in the aftermath of World War 2 by the 1944 Bretton Woods Conference, in which 44 countries agreed to the creation of the IMF and the world bank. Now a reserve currency is a foreign currency that a central bank or treasury holds as part of its country's formal exchange reserves. Countries hold reserves for weathering economic shocks, paying for imports, service debts etc. The dollar henceforth became the strongest economy in the world after the post war world.

Starting with the hypothesis that every country is impacted the same when there are fluctuations in the fed rate. Now the Fed rate impacts every country in the world because there is no country in the world that doesn't deal in US dollars. Although economically strong countries are not impacted that drastically by the changes in fed rate but it's the poorer countries and the developing countries that must bear the brunt of those fed rate changes a lot. In this assignment we have discussed the impact of changes in fed rate on poor countries, developing countries and other financial things that impact the economies of the world, for example the impact on stock markets, foreign exchange markets etc. According to the research done in this research paper with the help of secondary sources, we have learned that it is not the case as every currency has a different value across the globe. Currencies from developed countries are stronger so they are impacted a little less because the exchange rate between those countries is not that high. But for developing countries or countries which are poor suffer a lot because of the exchange rate between their currencies and the U.S. dollar.

The focus of this project has been the impact of fed rate changes on U.S. dollar INR exchange rate. The impact of a US Fed rate hike can lead to a rise in interest rates in the US, which can attract capital flows from other countries. This can lead to a reduction in foreign investment in India, which can affect economic growth.

So, we are focusing on the hypothesis that states that states that fed return rate does not impact the US Dollar and INR exchange rate. Since the US will have lower interest rates, there will be more dollars available, hence the biggest effect on India may be a weakening of the dollar and a strengthening of the rupee, which would result in cheaper import costs. The largest portion of India's overall imports is oil, of which it buys more than 80%. A strong dollar increases the country's import cost and exacerbates the current account deficit, both of which raise the fiscal deficit—the difference between government revenue and expenditure. It will also be less expensive for India to finance its foreign debt if the currency strengthens.

If the inflation in USA increases and the Indian rupee strengthens a bit it will have a positive impact on the country as a whole but will impact USA differently also will have a negative impact on Indian exporters Indian exporters will experience a decline in revenue if the rupee strengthens as a result of a weakening dollar. On the other hand, imports will be less expensive, which is advantageous for

businesses who rely on imports for their supply of subsidiary items or raw materials. Travel abroad and loans for overseas education will both become more affordable.

**Remarks**

It is a well-known fact that fed rate fluctuations are very difficult to predict, and that a random walk forecasts currency rates better than any economic model. If it was easy to forecast the fed rate movements to reasonably good levels of accuracy and certainty.

However, from recent literature we learn the impact fed rate has on US dollar INR exchange rate and we try to understand why those fluctuations cause changes in the exchange rate. Furthermore, we have also discussed the impact of fed rates on different countries about how it affects the first world countries and the third world countries. The US Dollar became the reserve currency in the aftermath of World War II by the 1944 Bretton Woods Conference.

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