

Currency Fluctuation Analysis – A Case Study

Sasipalli Venkata Sanyasi Rao¹, Krishnam Raju Gottumukkala², Hideaki Mukai³,
Majji Sashibhushan Rao⁴

¹Center for Excellence in Computer Technology, Hiroshima, Japan

²Center for Excellence in Computer Technology, Visakhapatnam, Andhra Pradesh, India

³Fuji Soft Co. Ltd. Hiroshima, Japan

⁴SITAM Engineering College, Vizianagaram, AP, India

ABSTRACT

In this research we analyzed the Forex fluctuations (Rupee against US Dollar) considering the view point of whether strong / weak government influences or government policy decisions influence the fluctuations, more towards depreciations. A case study on India ruling parties, strong / weak governments and their economic policies is presented. Strong government is defined as single party with one prime minister rule, weak government is defined as single party with multiple prime ministers or multi-party prime ministers. We considered the periods when the rupee experienced high fluctuations or depreciations, identified and analyzed the influencing parameters. Also checked with the general influencing factors of Forex. The whole period was considered since independence then the volatile periods were identified and then analyzed for these periods. Besides the general influencing factors of Forex, we found that the fluctuation or depreciation occurrence is not directly related to strong / weak government, but directly related to the strong or weak policy decisions.

Keywords: Strong / weak government, Forex fluctuation, Appreciation / depreciation, Economic Policies, Influencing factors, Change in currency value or Difference

1. INTRODUCTION

In the past, politics were the major determinant of global economy but now, the scenario is reversed; real economics concern are the drivers of the political decisions. But it is suspected that past scenario was really policy driven economy? If yes, were the governments able to drive the economy? Is it true in a biggest democratic country like India? Were the governments strong or volatile? We give a close look at these questions with a case study on Indian economy through Forex as a catalyst. Since exports and imports influence economic indices in which Forex plays a central role. [1] showed that there is great impact of Rupee fluctuations on Indian Economy but did not consider government policy influence.

Fluctuations in Forex force the economy figures, no doubt but the reasons for the fluctuations and grounds that force the situation are completely fuzzy and has many degrees of freedom. [2] showed that political stability is more vital than economic freedom in accelerating the growth but did not consider the influence of government policies. [3] distinguished between two characteristics instability and discovery by analyzing the times when speculation in the foreign exchange market is most extreme. Speculation is one of the most influencing factor in Forex, determining its amount in the Forex market is not easy [4]. Current account deficit is also another major factor that take any country to the edges of economic destruction. Since India is dependent on capital flows for financing the current account deficit, [5] studied the timings of Reserve Bank of India intervention in Forex markets. One can consider it is government policy decision.

Among such situations, India changed its exchange rate policy in March 1993, from government-determined exchange rate to market-determined exchange rate. What happened by this change? These are all open questions and a critical discussion or analysis can give some insight on the issues. In government-determined exchange rate system, anything that involve politics has a lot of lies in the situations that require short-term adjustments ignoring the long-term losses, but there is no chance for lies in the market-determined system (reverse scenario) and all faults must be faced and dealt with by the affected country or else its economy being devalued in the basket of world economies [6]. We exclude the argument on goodness of any system. For the analysis purpose of above mentioned questions, the ground dynamics we need here are political parties, their ruling periods and head of the governments, and most important information is how

much Rupee changed against Dollar in those governments, besides common factors that influence Forex [7]. We use Dollar to represent US Dollar. Rupee to represent Indian Rupee.

2. POLITICAL PARTY RULING AND FOREX SUMMARY

Let us define the analysis point based on the political party, ruling period and value of Rupee changed due to party policies or whatever thereof. Given a political party with a power to rule full term (single party or single prime minister for 5 years), say it is strong government, what are the reasons to influence Forex to change Rupee in large and the government Policies towards economic growth. Let us summarize the information, each government ruling period, its prime minister, the difference of depreciation or appreciation that forced economic scenario, and the factors that influence Forex [8]. As a whole or in precise, consider (1) Political party and its head, (2) Period, (3) Difference of Rupee value (appreciation or depreciation) as key parameters for analysis. Let us summarize this information, the political parties, their ruling periods and head of the government in below section.

A. Political Party Ruled in Periods and its Head

After independence, the political parties that ruled India in periods and the head of the government (prime ministers) are identified in the below table. We use the serial number # that can be referred to identify the prime minister in later sections. Abbreviations INC: Indian National Congress, BJP: Bharatiya Janata Party, JM: Jan Morcha, SW: Samajwadi Party, JD: Janata Dal.

Table 1: Political parties ruled India and the Prime Ministers.

#	Period	Party	Prime Minister (PM)	#	Period	party	Prime Minister (PM)
1	1947-64	INC	Shri Jawaharlal Nehru	10	1989-90	Jan Morcha (JM)	Shri V.P.Singh
2	1964-64	INC	Shri Gulzarilal Nanda	11	1990-91	Samajwadi (SW)	Shri Chandra Sekhar
3	1964-66	INC	Shri Lal Bahadur Shastri	12	1991-96	INC	Shri P.V.Narasimha Rao
4	1966-66	INC	Shri Gulzarilal Nanda	13	1996-96	BJP	Shri Atal Bihari Vajpayee
5	1966-77	INC	Smt. Indira Gandhi	14	1996-97	Janata dal (JD)	Shri H.D.Deve Gowda
6	1977-79	Janata	Shri Morarji Desai	15	1997-98	Janata dal	Shri Inder Kumar Gujral
7	1979-80	Janata	Shri Charan Singh	16	1998-04	BJP	Shri Atal Bihari Vajpayee
8	1980-84	INC	Smt. Indira Gandhi	17	2004-14	INC	Dr. Manmohan Singh
9	1984-89	INC	Shri Rajiv Gandhi	18	2014-	BJP	Shri Narendra Damodardas Modi

B. Depreciation or Appreciation in Each Government Head

In Policy driven or government determined and Market driven scenarios, we need to investigate the essential information such as year-wise change of Rupee against Dollar, head of the Government in that year and appreciation or depreciation under his rule. The information is organized in such a way considering the key parameters Rupee per Dollar, Prime Minister and Rupee difference from its previous value are tabulated in Table 2. Here Prime Minister is considered as responsible person to the ruling party in his capacity as its head and responsible for all policies that are approved. In this table, PM, PM, PM mean multiple prime ministers in the same year, number in the PM columns represents the serial number to identify who was the PM in that year (from Table 1). Diff represents the change of Rupee value (depreciation or appreciation or no change) against Dollar. (Forex Date Source: IMF, World Bank, OECD).

Table 2: Year, Rupee per Dollar, Prime Ministers in that Year, Difference of Depreciation, Party Ruled

Year	Rupee/ Dollar	PM	PM	PM	Diff	
1950	4.7619	1			0	
1951	4.7619	1			0	
1952	4.7619	1			0	
1953	4.7619	1			0	
1954	4.7619	1			0	
1955	4.7619	1			0	
1956	4.7619	1			0	
1957	4.7619	1			0	
1958	4.7619	1			0	
1959	4.7619	1			0	
1960	4.7619	1			0	
1961	4.7619	1			0	
1962	4.7619	1			0	
1963	4.7619	1			0	
1964	4.7619	1	2	3	0	
1965	4.7619	3			2	
1966	6.3591	3	4	5	1	
1967	7.5	5			0	
1968	7.5	5			0	
1969	7.5	5			0	
1970	7.5	5			0	
1971	7.4919	5			0	
1972	7.5945	5			0	
1973	7.742	5			0	
1974	8.1016	5			0	
1975	8.3759	5			1	
1976	8.9604	5			0	
1977	8.7386	5	6		1	
1978	8.1928	6			0	
1979	8.1258	6	7		0	
1980	7.8629	7	8		1	
1981	8.6585	8			1	
1982	9.4551	8			1	
1983	10.0989	8			1	
1984	11.3626	8	9		1	
1985	12.3688	9			0	
1986	12.6108	9			0	
1987	12.9615	9			1	
1988	13.9171	9			2	
1989	16.2255	9	10		1	
1990	17.5035	10	11		5	JM, SW
1991	22.7424	11	12		3	
1992	25.9181	12			5	INC
1993	30.4933	12			1	
1994	31.3737	12			1	
1995	32.4271	12			3	
1996	35.4332	12	13	14	1	
1997	36.3133	14	15		5	JD
1998	41.2594	15	16		2	
1999	43.0554	16			2	
2000	44.9416	16			2	
2001	47.1864	16			1	
2002	48.6103	16			2	
2003	46.5833	16			1	
2004	45.3165	16	17		1	
2005	44.1	17			1	
2006	45.307	17			4	INC
2007	41.3485	17			2	
2008	43.5052	17			5	INC
2009	48.4053	17			3	
2010	45.7258	17			1	
2011	46.6705	17			7	INC
2012	53.4372	17			5	INC
2013	58.5978	17			2	
2014	61.0295	17	18		3	
2015	64.1519	18			3	
2016	67.1953	18			1	
2017	66.123	18			1	
2018	65.234	18				

From the above table data, it can be observed that the multi PMs culture started in 1964, however, there seems no influence of multi-PMs or Government policy on Rupee – Dollar value. But the periods 1990 – 1997 and 2006 – 2012 are highly volatile in rupee situation and can see large fluctuations in Diff column (Rupee value again Dollar from its previous value). Since our intended hypothesis is to find out the influence of government policies for such of these depreciations or devaluations, we can narrow down our focus to restrict our analysis of Rupee fluctuations during these two periods only.

Thick line between 1993 and 1994 indicate the timing when India changed its Forex policy from government-determined to market-determined exchange rates. To indicate our focus on which data we are interested in, we marked them in different colors on the periods of high difference (depreciation) in Rupee value, linkage to multiple PMs.

In the following sections we will draw graphs for the above data in Table 2 for the analysis in the two periods, which also will be compared with the data of other influencing factors. And we will check the factors that usually influence the Forex Fluctuations for the identified periods.

3. RUPEE AGAINST DOLLAR AND ITS FLUCTUATION

The Rupee – Dollar exchange rate graph for the whole period since independence is shown in below graph. This graph is useful to study the long-term movement of rupee and gives information on future trend of Rupee value, for whatever reasons or causes that influence Rupee.

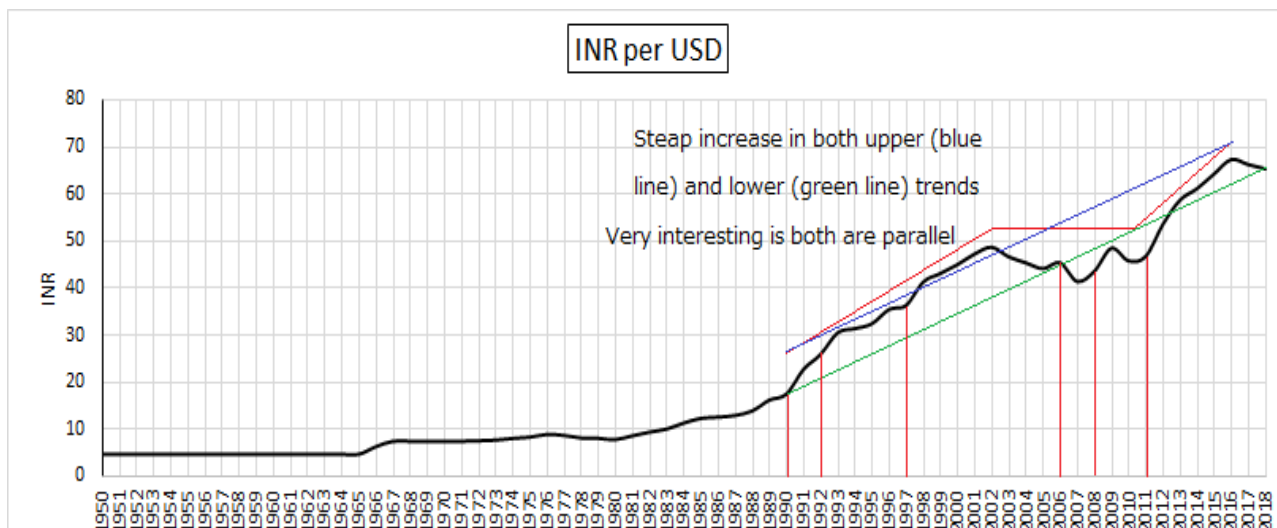


Figure 1: Rupee against Dollar and Rupee Behavior During the Two Periods

Rupee value difference from its previous value in its Dollar exchange rate is shown in the below graph for the whole period since independence. This graph is a useful depiction for different perspectives of Rupee behavior due to different influencing factors.

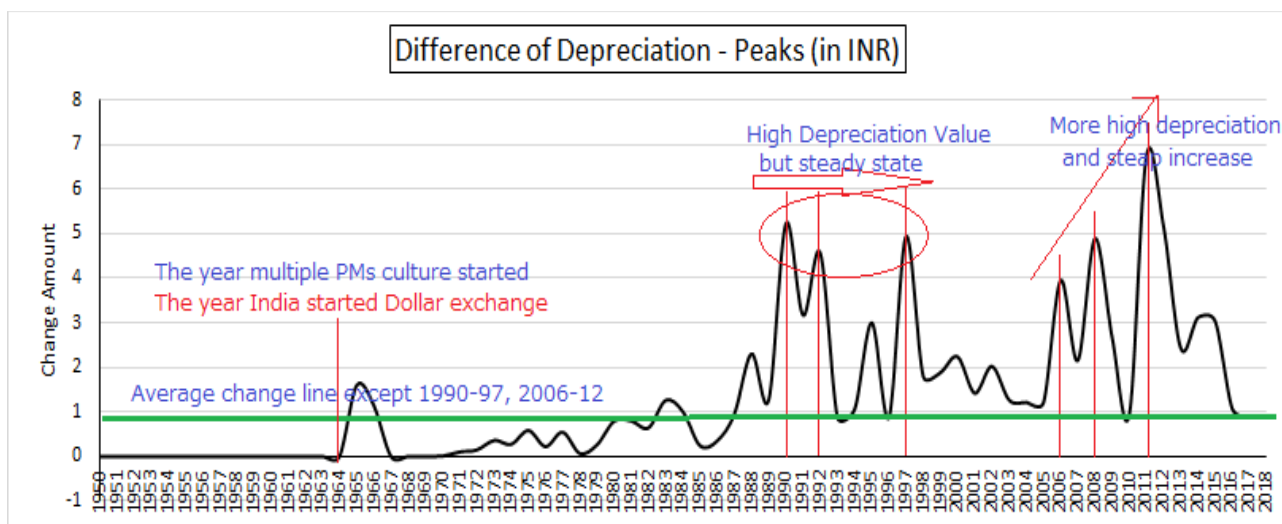


Figure 2: Difference of Depreciation Indices

The graph shows peaks (of rupee value change from its previous value). The green thick line indicates the average change line excluding the two periods of 1990-97 and 2006-12. The arrow in the first period shows the great fluctuation in the value but shows steady peaks, while the arrow in the second period shows steep increase in the difference of rupee value peaks with fluctuation.

4. KEY FACTORS FOR FOREX FLUCTUATIONS

The well said key factors that directly affect currency exchange are described below Figure 3. Each of the influencing factor is grouped into and described in the following table consistently for ease of study. The table summarizes the information for the parameters such as Influencing Factor, its Cause and Effect on Forex. Since the above graphs show only depreciation in Rupee value for all the years and more in the two particularly identified periods, we focus more on depreciation perspective.

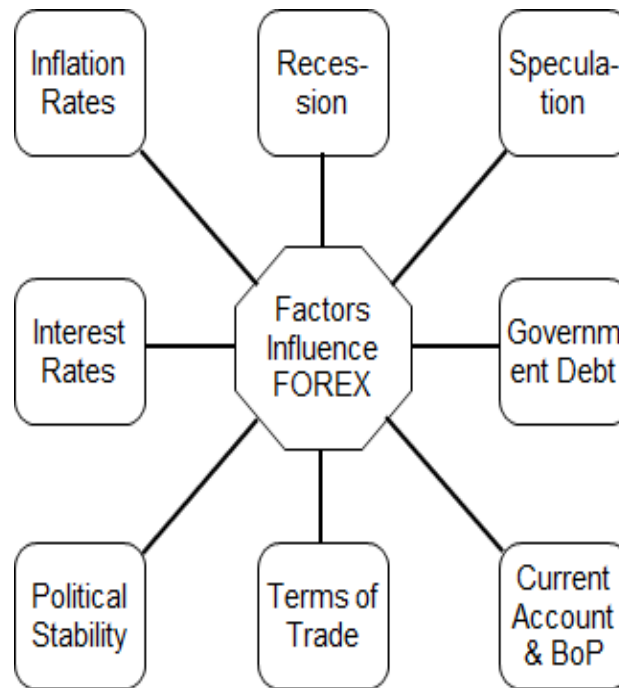


Figure 3: Factors influencing Forex

Table 3: Forex Influencing Factors

Group	Factor	Cause	Effect
Group I	Inflation Rates: Changes in market inflation cause changes in currency exchange rates.	Lower inflation rate	Appreciation
		Higher inflation rate	Depreciation
	Recession: When a country experiences a recession, its interest rates are likely to fall, decreasing its chances to acquire foreign capital.	Less recession	Appreciation
		More recession	Depreciation
	Speculation: If a country's currency value is expected to rise, investors will demand more of that currency to make a profit soon.	Positive speculation	Appreciation
		Negative speculation	Depreciation
Group II	Government Debt: Government debt is public debt or national debt owned by the central government. A country with government debt is less likely to acquire foreign capital, leading to inflation.	Less debt	Appreciation
		More debt	Depreciation
	Current Account & Balance of Payments: A country's current account reflects balance of trade and earnings on foreign investment.	Surplus of current account	Appreciation
		Deficit of current account	Depreciation
	Terms of Trade: Terms of trade is the ratio of export prices to import prices.	Export prices greater than import prices	Appreciation
		Import prices greater than export prices	Depreciation
Group III	Political Stability & Performance: A country's political state and economic performance can affect its currency strength.	Less risk of political turmoil	Appreciation
		More risk of political turmoil	Depreciation
	Interest Rates: Changes in interest rate affect currency value and foreign exchange rate.	Increase in interest rates	Appreciation
		Decrease in interest rates	Depreciation

For these described influencing factors towards Effects, we collected year-wise data which cover the two identified periods. Information on each of the influencing factor is depicted in graphs as shown below (Data Source: IMF)

Group I - Inflation Rate

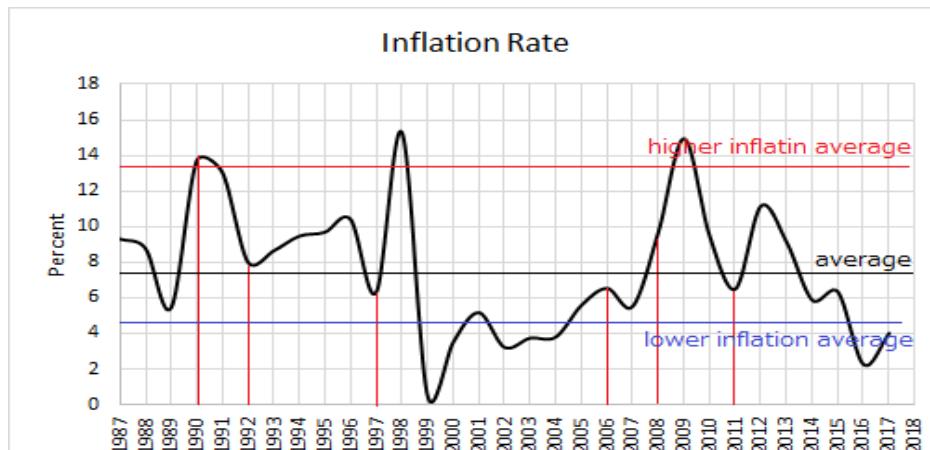


Figure4: Inflation Rates

Group I – Recession

Recession is directly dependent on Interest Rates which is analyzed in Group III.

Group I – Speculation

Speculation is the ratio of GDP Growth and Real Interests.

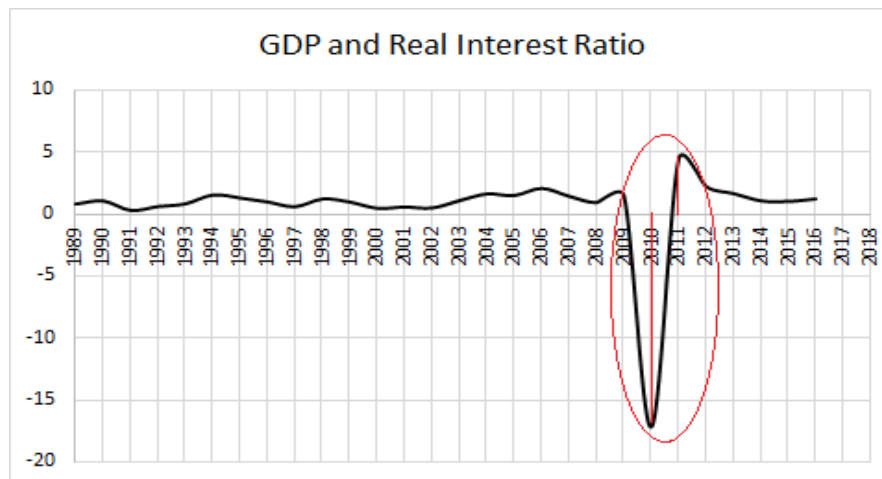


Figure 5: Speculation

Group II – Government Debt

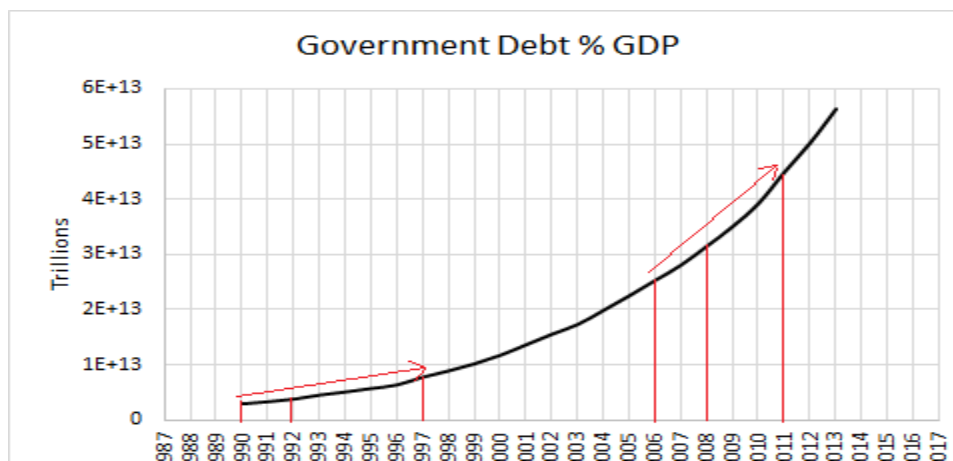


Figure 6: Government Debt

Group II – Current Account

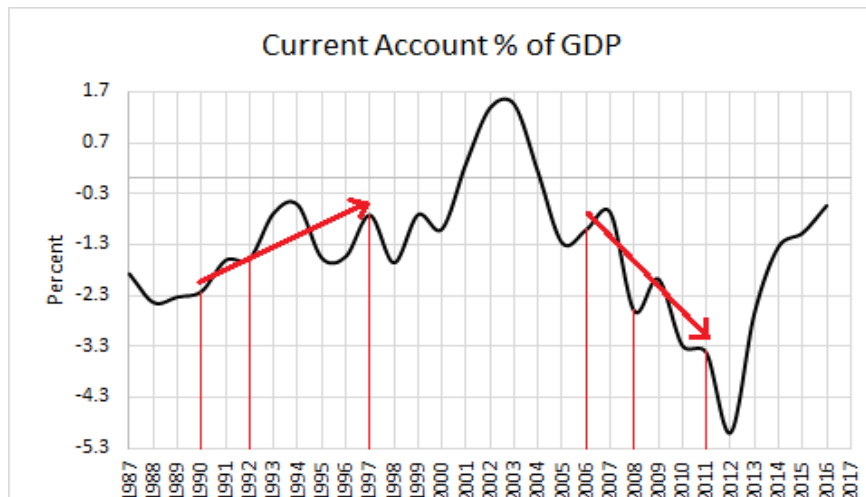


Figure 7: Current Account % of GDP

Group II – Terms of Trade

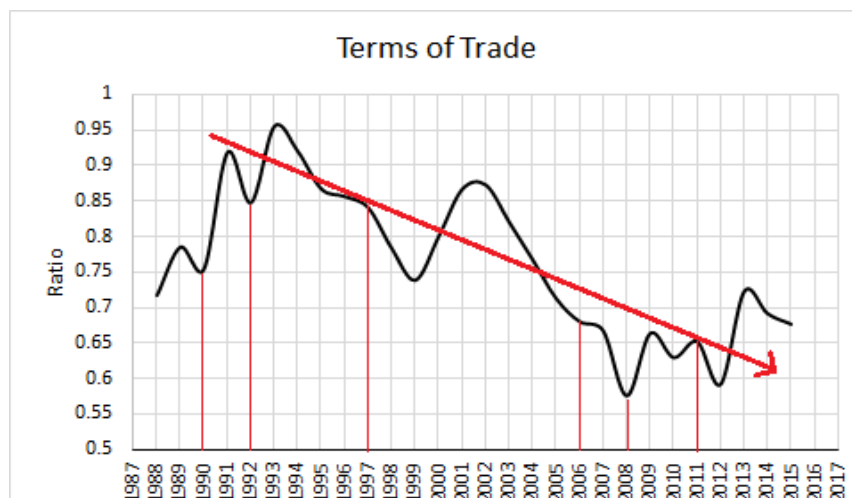


Figure 8: Terms of Trade

Group III - Political Stability

1964	4.7619	1	2	3	0	us
1965	4.7619	3			2	
1966	6.3591	3	4	5	1	us
1977	8.7386	5	6		1	us
1978	8.1928	6			0	us
1979	8.1258	6	7		0	us
1980	7.8629	7	8		1	us
1990	17.5035	10	11		5	JM, SW us
1991	22.7424	11	12		3	us
1992	25.9181	12			5	INC
1993	30.4933	12			1	
1994	31.3737	12			1	
1995	32.4271	12			3	
1996	35.4332	12	13	14	1	us
1997	36.3133	14	15		5	JD us
2006	45.307	17			4	INC
2007	41.3485	17			2	
2008	43.5052	17			5	INC
2009	48.4053	17			3	
2010	45.7258	17			1	
2011	46.6705	17			7	INC
2012	53.4372	17			5	INC

Figure 9: Political Stability / Instability

Group III – Real Interest Rates

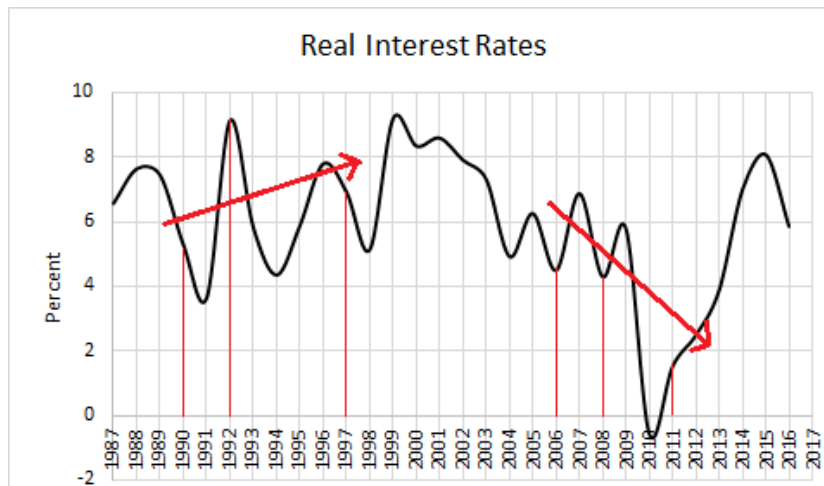


Figure 10: Real Interest Rates

5. ANALYSIS

Rupee per Dollar

In Figure 1, we can see steep increase in the upper bound and in lower bound as well. Very interesting is that these two lines are parallel to each other that indicate continuous upward trend in depreciation since 1990. We cannot see any advantage of changing the policy from government-determined to market-determined exchange rates system. Also, though it showed a bit stability during 2006 – 12, more steep increase was registered. Compared to the political stability, there is more multi-PMs during 1990 – 97 than 2006 – 12, however, the steepness during later period is more than that of previous period. It implies that there is no direct relation with the multi-PMs, instead it can be directly related with the policies and strength of the policies taken.

Difference of Depreciation

From Figure 2, though the Rupee convertibility journeyed with Pound Sterling until Independence, it started exchange with Dollar after independence and the rate was set equal value for Rupee and Dollar. Since there were no external borrowings on the balance sheet of India, at the time of independence, the Rupee was at parity with Dollar. It continued up to 1964. Since then the Rupee was on the devaluation line. 1990 – 97 period shows high depreciation but steady state, while 2006 – 12 shows more high depreciation with increasing states. Compared with the political stability, though the first period exhibits instability, the steadiness of Rupee registered, and the second period exhibits stability (one party – one PM), steep increase of Rupee registered. It implies that multi-PMs has no influence on Forex, but the strong or weak policies taken by the governments can be considered for the registered depreciations.

Inflation Rate

Average higher inflation rate is 13.116 while average lower inflation rate is 4.702 and general average rate is 7.6 in the whole period 1987 – 2018. The lower average is close to the general average, but the higher average is more away from general average. It results in higher inflation therefore depreciation is expected, which corresponds to the depreciation shown in Figure 1. It means Inflation Rate also influenced the Rupee convertibility. Coming to the identified periods,

Periods	Higher Peaks	Lower Peaks	Analysis
1990 – 97	2	1	More number of higher peaks show that there is more fluctuation
2006 - 12	1	2	Less number of lower peaks show that there is less fluctuation

Hence, as stated in the Table 3, the above data reveals that there is high depreciation in Rupee value.

Speculation

The short period 2009 – 11 shows very large speculation. If we map it to the other causes like current account in terms of GDP, 2010 was very particular. This unfavorable situation occurred in 2006 -12, while there was one-PM government. It means that there was no influence of one-PM government or strong government, it can all depend on the strong or weak policies taken by the government.

Government Debt

Government debt graph also shows that the first period experiences slight increase, while the second period exhibits steep increase. If we consider the and compare with the political stability, though the later period has relatively stable government the policies taken can be seen so weak. Hence this key factor also influenced the depreciation of Rupee.

Current Account

Compared to the period 1990 – 97, the period 2006 – 12 shows more rigorous down trend. As per the descriptions in Table 3, deficit tends to depreciation. Again, there seems no direct relation with the stability of the government or 1-PM or multi-PMs, it can be directly related to the strength of policies taken.

Terms of Trade

Terms of trade shows all-time down trend. The first period shows somewhat good ratio due to liberalizations announcement, but the later period exhibits unfavorable indices. Imports are more expensive in the later period. Overall downtrend threatens the situation to become more worse. The government policies seem so weak to push the situation into a burden scenario. This key factor also influenced the Forex towards depreciation of Rupee more in later period.

Political Stability Analysis

Political stability of Indian government during the periods show quite different scenario. During early years of independence, though there were multi-PM trend, the difference of depreciation is negligible. However, in the period 1990 – 97 it may be considered that instability caused much depreciation. And strangely the period 2006 – 12 has the government stable but high depreciation. It means that though single party – one-PM rule concept was adopted the weakness of the government policy influenced the depreciation. Hence this factor in terms of strong / weak policies influenced the Forex towards Rupee depreciation.

Real Interest Rates

The graph shows, Interest rates fluctuated during 1990 – 97 but performed towards up-trend. During the second period, though there was fluctuation, it performed towards down-trend, especially in 2010 situation was so worse. Decreased interest rates show the depreciation, hence this key factor also influenced the Forex towards Rupee depreciation.

CONCLUSION

From the analysis, it is understood that common factors that influence Forex are justified by the data of general tendencies in each influencing factor compared to the Rupee vs Dollar graph in respect of depreciation. However, the political stability or instability factor behaved bit differently, showing that there is no influence of strong government (single party ruling full term with 1 prime minister) or weak government (multi prime minister or multi party). The analysis result showed that it all depends on how strong the government policies are. And the period 1990 – 97 which included the change of Forex policy from government-determined to market-determined did not give to any benefit to the economy, more depreciation occurred in the period 2006 – 12. Further, the analyses show there is way to predict the long-term behavior, a question arises, can we develop some models taking the data locally for short-term behaviors, which is more practical for any immediate actions and results.

On this view this research provides different avenues for further research, short-term predication or forecast analysis using statistical models such as Markov Models, which depend only on its immediate previous value. Since most of the short-term government policies yield their effect immediately, we can use these Markov Models for prediction of Rupee value quickly based on market determination. And long-term forecast analysis can also be performed using some discrete models, such as discrete event modeling, which allows selection individual interest or short-term and global workflow or long-term.

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