

The Impact Of India's Imports, Exports, Investment In Flows, Gold And Oil Prices And Debt Obligations on the Exchange Rate Of Indian Rupee and US\$

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Abstract

Regarding the composition of foreign exchange reserves in the period under study, the RBI maintains the highest proportion of US dollar reserves. With regard to exchange rate and export/GDP, Import/GDP and Net Invisible/GDP, export and import are significant in explaining the fluctuations in exchange rate. With regard to exchange rate and long and short term debts, the long term debt is significant in explaining the changes in the exchange rate. Concerning Net FDI and Net portfolio investment with the exchange rate, and Net FDI is significant in impacting the exchange rate. The study further shows that the impact of average annual gold price and average OPEC crude oil price on exchange rate is positive. Indian rupee has been depreciating against US dollar for decades but, there are enough evidences to conclude that rupee needs to be depreciated a little more and rupee does not deserve the current level of appreciation owing to the fact that the current profitability trends in corporate sector and service sector and the inward flow of funds depends on weak rupee.

Keywords: Exchange rate, Imports, GDP, Exports, GDP, Foreign Investment and Debt Indicators.

Introduction

The value of the Indian rupee in terms of US dollar has wide ranging implications on various economic activities and it causes a lot of impact either positively or negatively on the contemporary economic fundamentals of India. From the Greek period, all empires and countries strived to make their currency dominant means of exchange to show their economic, social and political hierarchy. Moreover, an international reserve currency requires confidence, liquidity and adjustment. During the Roman period, Roman coinage was a preeminent currency and in the British period, the British Pound but today the US dollar enjoys as a most dominant currency in the world. Even though the Euro came into existence in Europe region as a common currency in the later period, the alternative currency to US dollar did not emerge in the past decades.

Review of Literature

Michael P. Dooley¹, 1995 surveyed academic literature on controls over international capital movements and asserted that the capital transactions controls have been effective in bestowing yield differentials but not effective in realizing policy objectives. Oliver Branchard, Francesco, Giavazzi and Elipa Sa², 2005 opined that the initial net effect of the shift US demands for foreign goods and the effect of shifts in foreign demand for US assets led to dollar appreciation but when both shifts, that led to eventual depreciation of the US dollar. J. Cunado, F Perez De Gracia³, 2005 studied the impact of oil price on economic activity in six Asian countries over the period 1975 Q. 1 to 2002 Q. 2 and found that oil prices have significant effect on macroeconomic activity

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and inflation. Hong Qiao⁴, 2007 concludes that the exchange rate changes can no longer be separated from domestic price level and the exchange rate cannot be used to predict the trade balance. Iir Miteza⁵, 2008 examines the effect of devaluation on aggregate output in Poland, Hungary, Czech Republic, Slovakia and Romania during the period between 1993-2000 and finds that there exists a long-run relationship between real output, real exchange rate, real money, and real wages and devaluation is not affecting output in the long run. Virginie Coudert and Cecile Couharde⁶, 2009 studied the large sample of developing countries and opined that the pegged currencies are more prone to over valuation than floating currencies Marcel Fratzscher and Arnald Mehi⁷ 2014 finds evidence to assert that the Renminbi will become the key driver of currency movements in Asia particularly after the global financial crisis in mid-2000s.

Objectives of the study

1. It aims to analyze the dominance of the US dollar over Indian rupee during the period under study.
2. It analyses the composition of Indian Foreign Exchange Reserves and its impact on the exchange rate of Indian rupee in terms of US dollar.
3. It examines the exchange rate relationship between Indian Rupee and US dollar in terms of Indian imports, exports and CAD.
4. It also tries to analyze the exchange rate of the Indian Rupee versus US dollar in terms of investment inflows and outflows.
5. It tries to trace the exchange rate relationship between the Indian rupees in respect of debt obligations of India.
6. It also examines the relationship among exchange rate, gold prices and oil prices.

The study is based on the secondary data collected from RBI publications. Relevant econometric tools have been applied to find the dimensions of such impact by the determinants on exchange rate of Indian rupee in terms of US dollar during the period under study.

Significance of the study

Since, the exchange rate fluctuations between Indian rupee and US dollar are influenced by the above mentioned determinants of exchange rate, this kind of study will be very useful to make further macroeconomic decisions regarding exchange rate policy of India.

Supremacy of Dollar versus Indian Rupee

According to IMF, the share of US dollar in Global Foreign Exchange holdings increased to 62.9 percent in the past six

years while the share of Euro which attained peak level of 28 percent in the third quarter of 2009 declined to 22.2 percent in the fourth quarter 2014 considering the past 13 years. The Euro zone debt crisis in 2010 caused doubts about the value of Euro in the international currency market and the ECB, for the first time, reduced interest rate below 0 percent in June 2014 with the aim of invigorating the economies in Europe. Again in 2015, the ECB initiated the large scale purchase of bonds towards the quantitative easing and revitalizing economic activity and however, there has been a shift from Euro to Dollar in the recent past.

With regard to US dollar, the US monetary policy all the time concerned with inflation, unemployment and growth rate of US and India is still uncertain about the US monetary policy regarding the rise of interest rate. The US interest rate is still ranging between 0 to 0.25 percent and the interest rate which was fixed after a few weeks after the collapse of the Investment bank, Lehman Brothers, and the interest rate has not been changed since 2006 and the US inflation target is 2 percent. The US has registered an annual average growth rate of 2.2 percent since 2009. If the federal resorts to high interest rate, the borrowing for car loans, mortgage loans, business borrowing will decline and the flow of money in US treasuries will have different effects. But at the same time, when the US banking system is flush with money, no need of increase or decrease interest rates and in that situation the effect of a small hike in interest rate will not have much effect in the US. With regard to the US dollar, US is one of the financial centers of the world and is blessed with advance technology whereas the Indian rupee is concerned; India is blessed with large manpower, abundant natural resources and large market. However, at the global level, a weak dollar may result in decline in commodity prices and further leads to deflationary tendencies at the global level. Owing to the supremacy of US dollar, Kazakhstan's currency fell by 30 percent and this has to dismantle the dollar peg. Currencies of Russia, Brazil, Turkey, Mexico weakened by 30 to 80 percent against the US dollar as compared to 2014 averages. The countries which produce commodities that have global commodity exposure are at risk because of the gyrations of the US dollar. In the world economy when the price falls, the currency value of US dollar will rise.

Composition of Indian Foreign Exchange Reserves

Though Gold is one of the components of Forex Exchange Reserves of India, its proportion is very meager. More than gold reserves and SDRs, foreign currency assets assume a pivotal place in the accumulation of Foreign Exchange in India. Table No-1 highlights the composition of Indian Foreign Exchange Reserves during the financial year between 1990-91 and 2014-15.

Indian Foreign Exchange Reserves which were \$5.83 billion in 1990-91 increased to \$ 54.10 billion in 2000-02 and further increased to \$309.72 billion in 2007-08 attained the level of \$341.63 billion in 2014-15. Reserve Tranche position with IMF which started in 2002-03 with a reserve of 672 Billion dollars increased to a peak level of 2.94 Billion \$ in 2010-11 and again declined to 1.292 Billion \$ in 2014-15. SDR reserve increased remarkably in 2009-10 to the level of 5.0 Billion \$ in 2009-10 and slightly declined in 2014-15 to the level of 3.985 Billion Dollars.⁸ India is now in a comfortable position to meet the requirements of imports for several months and hence, the part of Foreign Exchange Reserves can be hived off for setting sovereign wealth fund as created by China and Russia. For example, China's Foreign Exchange Reserves are \$2.8 trillion but one third of China's Foreign Exchange Reserves are locked in illiquid assets such as investment in infrastructure. RBI has been selling and buying US \$ very frequently from the market to overcome the exchange rate fluctuations.

Indian Rupee and US Dollar Exchange Rate

The value of Indian rupee has declined by 3.4 percent in terms of dollar since January 2015 and the value of Indian rupee has reached Rs 65.26 per US dollar in January 2015. It should be noted in this context that Indian exchange rate in terms of US dollar was Rs. 45 in 2011 and the problem of the US dollar is that the value of US dollar is appreciating against almost all currencies in the world. Generally, NRI Rupee deposit flood on weaker Indian currency in terms of dollar. NRI deposits from Non-Resident Indians climbed to 48 percent in the initial four months of the financial year 2015-16. The NRI deposits jumped to \$6.97 billion in April-July from \$ 4.71 billion a year earlier as per RBI bulletin September 2015. NRIs can deposit their money either in Foreign Currency Non Resident (BANK) Account (risk bears by Bank) or Non Resident (external) Rupee Account Deposits (risk by depositor). NRI deposits will increase during depreciation of Indian Rupee in terms of dollar and during such periods, large sums are repatriated to India. NRI remittance to their families in India are mainly from North America, Europe and repatriable deposits are mainly from Middle East Countries. There are about 11 million Non-Resident Indians and 17 million persons of Indian origin (PIOs) in the Indian diaspora and Indian diaspora are mostly in Gulf, the United States, South- East Asia and Nepal.

RBI purchases dollar from spot market as well as from forward market to stabilize the exchange rate. If China resorts to any further devaluation, it may lead to competitive devaluation by other countries. In India, tyre, steel and auto components are directly affected by Chinese devaluation while telecom and power are indirectly affected by their virtue of foreign currency borrowing. In fact, non-cohesive monetary policy resorted by

developed countries may result in increased volatility in the exchange rate in emerging countries. Currency wars between countries in the wake of the devaluation of Chinese Yuan may push up gold prices.

India underwent remarkable capital outflows and exchange rate depreciation in mid - 2013 when the US started reversing the stimulus and the monetary measures. If the US interest rate is stabilized, there will be stability in Indian Stock Market. If there is an uncertainty on the increase of interest rate in the US, it will also lead to instability in Indian Stock Market. Because of the impact of the slowdown of China's growth and uncertainty in the US interest rate hike, there will be selling pressure of portfolio investments in India. In India, usually there exists a difference between stock market and actual fundamental trends of the economy because whenever a country is facing stock market slow down, it may turn from investment economy to consumption economy. There can be huge cry about the downside in the stock market but often it is not perceived in upside market which can prove to be very much more than downside.

It is always not fair if a currency overshoots from their current level in the very short period. In this sense, rupee fell historically low of 68.93 on 28th August, 2013, and after that continued to register a strong trend after the appointment of RBI Governor, Dr. Raghuram Rajan who introduced a cluster of measures to contain the exchange rate volatility of Indian Rupee in terms of US dollar. It was supplemented by BJP government's encouragement to capital inflows and foreign participation in Indian Debt Markets. All these amounts to turning point for Indian Rupee from worst performing currency to best performing currency among emerging economies and ensured stability rate in the following 9 months. It is also supported by the fall in the crude oil prices in the world market and since 2014, it resulted reduction in CAD. Eventually, the rupee declined to 58.32 dollars in May 2014 even though the US almost ended the bond buying programme. Therefore, the rupee registered a significant reduction in volatility in the value of rupee in 2014 and as compared to 2013 and the same trend continued in 2015. During this period, Russian Ruble registered a fall as a result of the fall in crude oil price and the low level of realization from the export of crude oil from Russia.

The US is in the cusp of raising interest rate for the first time in 7 years. Recently, Fed. Chair Janet Yellen stated that interest rate will increase more slowly and hence emerging market countries sustain the current trend. If US raises interest rate remarkably, it may lead to another financial crisis in the US since the debtors in US find very difficult to pay back their dues. According to the World Economic Forums Global Competitive Survey, the US debt accounts for 103 percent of GDP.

Gold and Exchange Rate

If the Federal Reserve US increases its interest rate, the gold trade is keeping its fingers crossed. If it is not increased, the demand for gold will increase and ultimately the gold prices will increase. Indian people are emotionally attached to jewelry and the peculiar in gold demand in India is that it is one of the edge against various financial assets in the market to a considerable extent and owing to this reason, the demand for gold registered an increased price movement for decades as compared to other closely related assets. In India, gold usage is wide in terms of wearing gold, gift, investment and particularly, the rural India consumes about 60 percent of gold demand.

The Government of India has introduced the gold monetization scheme and the gold bonds schemes and these schemes may not be lucrative for gold buyers unless the gold buyers are investors in gold and the success of these schemes largely depends in interest offered for gold monetization and gold bond schemes by banking institutions. Banking institutions will convert the deposited gold into coins and bullion for storage and further offer for gold market. The gold depositor will not get the gold in the same form of ornaments and due to this reason, these schemes prove not to be a promising proposition because of the emotional sentiments attached to gold ornaments by depositors towards getting their gold back in original forms. Of course, these gold monetization and gold bond schemes may be a good proposition for gold deposited by temple authorities in India.

The government of India has floated the gold bond and gold monetization schemes to tap about 20, 000 tonnes of yellow metal lying idle in Indian households. Again, the government is also considering the provision of capital gains tax relief on these schemes. India imports about 1000 tonnes of gold every year and in 2014-15, India imported about \$35 million worth of gold and hence, the introduction of effective gold schemes curtails the massive gold imports. Under the gold monetization schemes, gold can be deposited from one year to 15 years which also earns interest rate and deposit will be denominated in gold instead of money and, on maturity, it can be redeemed at the prevailing value either in cash or gold. The cap on gold investment is 500 grams per person per year and that too only for Indian citizens or Indian institutions. Indians can purchase about 300 tonnes of gold bars or coins every year under the scheme and Gold Reserve Fund will be created to ameliorate risk in gold price changes.

The price of gold crashed to 4 year low in the month of August, 2015 selling Rs. 24980 per 10 grams in Indian markets while it was sold 5 years low in the global market. The reason may be the eroding demand for gold as an alternative investment. The Gold price in Singapore normally determines the price in

the Indian market. Strengthening of dollar and the expected hike in interest rate in the US may pop up such trend in the global gold market. In India, gold is an important item of import and gold import affect CAD and gold import in one way or another ultimately affects exchange rate of Indian Rupee.

The developed countries consider gold investment as protection against inflation while the developing countries consider inflation as protection against depreciation of rupee. Indians are buying gold by considering gold as a long term asset and, for the last 15 years, gold has bestowed return equivalent 13.66 percent⁹ Again, the purchase of gold is considered as an avenue for diversification of asset, because, its price movement is something different from returns from equity assets by the virtue of ever increasing price. As shown in the Table No 2, in India, import of gold and crude oil is the most important item of imports, the regression analysis has been applied to find the causal relationship among the variables during the period between 1991 and 2015.

Exchange Rate depends on average price of Indian gold and annual average price of OPEC crude oil price.

Exchange rate = f (APGX1 APCrudeOilX2)

The estimated regression equation-Exchange Rate=f(Annual Average Gold price X1 and Annual average OPEC crude oil Price X2)

Exchange rate = 33.559+.001X1+.018X2

T 12.882 2.528 .232

Sig .000 .01 .81

R2=.49 F Ratio=10.91. Sig=.001

The analysis of regression of exchange rate in respect of Indian average gold price and OPEC crude oil price reveals that one unit increase in gold price leads to .001 units increase in exchange rate while one unit increase in OPEC crude oil price leads to 0.18 units increase in exchange rate. The impact of average gold price on exchange rate in the study is significant. The estimated overall equation is also significant.

Exports&Imports and the Exchange rate of Indian Rupee versus US Dollar

Indian exchange rate against the US dollar is not predominantly depending on Indian exports because India is not an exporting country and Indian GDP is depending more on domestic economic activities. The Indian power and telecom sector are affected indirectly by the devaluation of rupee against the dollar due to high cost of input and foreign

currency borrowing. Tyres, auto component, steel are directly affected by the large overhang of Chinese capacity in the global market. China accounted for 13 percent of global GDP and because of devaluation of Yuan, Ruble tumbles to 2 year low against dollar during August, 2015.

Weakness in the global economy in terms of declining World GDP growth, declining exports and falling prices are generally the problems for all trading countries around the globe. The major components of Indian exports namely petroleum, gems, jewelry and the major imports of crude oil and gold influence the exchange rate of Indian rupee versus the US dollar. Apart from the exchange rate, multiplicity of taxes in India on exportable goods affect the cost of certain exportable goods and services ultimately ends in export uncompetitive. Therefore, if GST is implemented in India, it would speed up freight movement and the export prices of goods and services can be free from the multiplicity of taxes, duties etc. and can earn competitive advantage in one way or another. The trade facilitation services for goods and services should be further strengthened along with possible domestic reforms and India should join the pluralistic agreement of WTO in better way to deal effectively the current situation in the exports of India. Thus, by inducing more exports, India can reduce CAD which may pave the way for exchange rate stability of Indian rupee in terms of US dollar.

Based on Table No. 3 the relationship between exchange rate and Export/GDP, Import/GDP and Net invisible has been analyzed.

$$\text{Exchange Rate} = f(\text{Export/GDP} \times X_1 + \text{Import/GDP} \times X_2 + \text{Net Invisible/GDP} \times X_3)$$

$$\text{Exchange Rate} = 11.950 + 5.570X_1 - 2.5X_2 + 2.18X_3 + u_1$$

$$T = 2.019 \quad 3.47 \quad -2.96 \quad 1.58$$

$$\text{Sig} = .056 \quad .002 \quad .007 \quad .128$$

R²=76 F=22.79 Sig=.00 Degrees of freedom=n-k=21; k-1=4; Critical F ratio=2.84 at 5 percent significance

The regression analysis of exchange rate in terms of export/GDP, Import/GDP and net invisible/GDP reveals that one unit increase in Export/GDP resulted in 5.5 units in exchange rate and one unit increase in Import/GDP resulted in 2.5 units decline in exchange rate. The effect of Net invisible/GDP on exchange rate is insignificant. The F ratio reveals that the estimated overall equation is significant

India merchandise exports which were \$306 billion in 2011-12, declined to \$300.4 billion in 2012-13 and further reached \$314.4 billion in 2013-14 and declined \$310 billion in 2014-

15, the merchandise export is likely to decline to the level of \$265 billion in 2015-16 owing to sharp decline in global commodity prices. For the past several months, even though the overall GDP has been growing and FDI inflows have been increasing, the exports have declined due to low global demand. During April –March 2016, exports declined by 15.87 % to \$ 261.13 billion against \$310.3 Billion in 2014-15. In the same way, imports also declined by 15.28 percent to \$379.6 Billion with the trade deficit of \$118.45 billion in 2015-16. The trade deficit in 2014-15 was \$137.69 Billion. The exporters and importers are hesitant to bet for future market and as a result there is a decline in prices. However, the CAD in India, which was 4.8 percent of GDP in 2013 declined to 1.4 percent of GDP in 2015¹⁰. The exchange rate affects negatively on the CAD provided the country is not an exporting country. Weak currency makes exports more competitive resulting imports very expensive and currency devaluation destroys domestic demand for imports. Apart from exports and imports, NRI contribution to CAD is also very important because their deposits in the financial instruments in India affect the Rs/US\$ exchange rate.

Foreign Investments and Exchange Rate of Indian Rupee versus US \$

The Exchange Rate is one of the critical factors for corporate profit and it was also reported that the exchange rate and corporate profitability are negatively related. The Indian public sector floats tax free bonds worth Rs.40000 Crore in this financial year and these tax free bonds are offered as long term instruments with different maturity periods covering 10, 15, 20 years. The long period bond carries high coupon rates and the interest rate is varying between 7.3 percent to 7.7 percent. People in the 30 percent tax bracket may find avenues for investing in bonds rather than fixed deposits. The current offer of bonds by national institutions is tremendous: for instance, National High Way Authority of India offers (24000 Crore) Indian Railway Finance Corporation (6000 Crore) Housing and Urban Development Corporation (5000 Crore), Indian Renewable Energy Development Agency (2000) Power Finance corporation (1000 Crore) Rural Electrification Corporation (1000 Crore) and National Thermal Power Corporation (1000 Crore)

Regarding the investment projects, the time lag between announcement and implementation has been shrinking since the commencement of the present government. As per the CMIE-CII analysis, out of 970 investment projects announced since May 2014, 365 projects were in the implementation stage and there has been a new momentum in investment in India in the last one year. Since May 2014 the Tata Group and Adani group has announced each 15 new investment plans.

The investment through foreign sources will have an impact on the exchange rate particularly after the globalization of India. Infrastructure is one of the keys to faster growth in India which is attracting foreign investment in different ways. The current account surplus economies are capital exporters whereas the current account deficit economies such as India are capital importers. If a country attracts foreign investment, the exchange rate is influenced and there is chance of appreciation of local currency to a considerable extent. The Table No 4 presents the net investment inflows and investment outflows and the exchange rate of Indian rupee

Portfolio investment is a hot money. Based on Table No 4, the following is the relationship between exchange rate and NET FDI and NET portfolio has been analyzed during the period between 2001 and 2015.

Exchange rate = f(Net FDI X1 + Net portfolio X2)

| | | | |
|-----|------|------|-------|
| T | 19.5 | 2.55 | -.163 |
| Sig | .00 | .025 | .873 |

R²=.39; F Ratio=3.845; Sig=.051; N-k=15-3=12; K-1=3-1=2;

Critical Table value - 3.89. However, the overall equation proved to be insignificant.

The regression analysis of the exchange rate in terms of Net-FDI and Net-portfolio reveals that one unit increase in Net-FDI resulted in no change in the exchange rate and one unit increase in Net-portfolio investment resulted 1.6 units decline in the exchange rate. However, Net - FDI is significant in explaining the relationship but this model explains 39 percent of the total variation on the dependent variable.

Exchange Rate and Debt Indicators

India's external debt increased marginally to the level of \$480.2 billion in Dec.2015 as compared to end Dec. 2014. Government (Sovereign) external debt was \$90.7 billion at end Dec 2015 while non-government debt was \$389.5 billion at end Dec. 2015. Indian external debt is under manageable limit and India is under comfortable debt position. The debt policy is focusing in the short and long term debts by changing sovereign loans with longer maturity, changes in ECB, changing interest rates, changes in NRI deposits. During the period between Dec. 2015 and Dec 2016, the long term debt increased by 2.2 percent (\$8.8 Billion) and the short term debt declined by 4.6 percent (\$3.9 billion). The long term debt accounts for 82 percent at the end of Dec, 2014 while it is 83 percent in end Dec 2015. The increase in long term debt is mostly due to ECB and NRI deposits and these two items constituted 63.3 percent of India total external debt. During the

period between end March- Dec. 2010 and end March 2015, the ratio of government debt to GDP was ranging between 4.4 percent to 4.7 percent¹¹ Exchange rate Indian Rupee in terms of US Dollar is succumbed to the pressure of debt level but it is not staggering as found in certain developed countries. Based on Table No 5, the following is the impact of short term debt and long term debt on exchange rate during the period between 1994-95 and 2014-15.

Exchange rate=f(Long term debt X1 and Short term Debt X2)

Exchange Rate=29.854 +.00X1+.00X2+u1

t =8.034 2.96 -1.641

SIG =.00 .008 .118 R²=67;F=18 29; Sig=.00;

N-k=15-3=12 and k-1=3-1=2;Critical Table value=3.89

The regression analysis of exchange rate in terms of long term debt and short term debt reveals that one unit increase in long term debt resulted in 2.96 units increase in exchange rate while one unit increase in short term debt resulted in 1.6 units decrease in exchange rate. However, long term debt proved to be significant in explaining the relationship. The F ratio shows the estimated overall regression equation is significant.

Conclusion

Regarding the composition of Indian foreign exchange reserves, the study reveals that proportion of US dollar is highest followed by gold reserves and the very less proportion of SDRs and RTP is held during the period under study. The study on the impact of average annual gold price and average OPEC crude oil on exchange rate are positive but the effect of average gold price on exchange rate is significant. With regard to exchange rate, export/GDP, Import/GDP and Net Invisible/GDP, export has positive effect, import has negative effect and net invisible has positive effect. However, export and import are significant in explaining the fluctuations in exchange rate. With regard to exchange rate, long term debt and short term debt, the long term debt is significant in explaining the changes in the exchange rate. Concerning Net-FDI and Net portfolio investment with the exchange rate, Net FDI has positive effect but the net portfolio has negative effect and Net-FDI is significant in influencing the exchange rate. The policy actions against the fluctuations is warranted to correct misalignment between Indian Rupee and US Dollar in respect of rupee forward dollar market etc. Though the rupee gains strength from healthy economic fundamentals of the country. However, there are enough evidences to assert that depreciation of rupee may not go against the interest of the country owing to the fact that the corporate sector is facing

the pricing pressures and the current profitability trends of corporate sector and particularly in service sector should be protected by weak rupee. However, the study asserts that high volatility in the exchange rate that too in the short period cannot be justified in India on any account.

References

1. Shepard E, Clifton T. 2000. *Are long hours reducing productivity in manufacturing. Int J Manpow* 21:540–552.
2. Michael P. Dooley, 1995, NBER-National Bureau of Economic Research, Cambridge-Working paper on 'A Survey of Academic Literature on Controls over International Capital Transactions), No. 5352, Cambridge, November-P- 2.
3. Oliver Branchard, Francesco Giavazzi and Elipa SA, 2005, 'International Investors, the US Current Account and the Dollar' *Brooking Papers on Economic Activity* P-1.
4. J. Cunado, F. Perez De Gracia, 2005, 'Oil prices, Economic Activity and Inflation Evidence for some Asian countries' *Quarterly Review of Economics and Finance* Elsevier Publications PP-65-83.
5. Hong Qiao, 2007, 'Exchange Rates and Trade Balances under the dollar standard' *Journal of policy making, Vol. 29, Issue 5th September-October* Pp-765-782).
6. Ilir Miteza, 2008, 'Devaluation and output in five transition countries: A panel co-integration Approach of Poland, Hungary, Czech Republic, Slovakia and Romania, 1993-2000' *Applied Econometrics and International Development, Vol. 6, No 1, 2006* p-77).
7. Virginie Coudert and Cecile Couharde, 2009, 'Currency Misalignments and Exchange Rate Regimes in Emerging and Developing Countries' *Review of International Economics, Vol 17, issue 1 February* pp-121-136.
8. Marcel Fratzscher and Arnald Mehi, 2014, 'China's Dominance Hypothesis and the Emergence of a Tri-polar Global Currency System' *The Economic Journal, Vol. 124, issue 581, December* P-41).
9. Reserve Bank of India Publications-Reserve Bank of India Bulletin-Respective years.
10. RBI-Hand book of Statistics on Indian Economy-gold price in respective years.
11. Reserve Bank of India Publications:https://rbi.org.in/scripts/publications_view.aspx?id=16685.
12. External Debt Management, Ministry of Finance and Reserve Bank of India.

Appendix

Table 1 : Foreign Exchange Reserves(1990-91 to 2014-15)(Financial Year)

| year | SDRs | | Gold | | Foreign Currency Assets | | Reserve Tranche Position | | Total | |
|---------|--------------|--------------|-------------|--------------|-------------------------|---------------|--------------------------|--------------|-------------|--------------|
| | Rs. Billion* | US\$ Million | Rs. Billion | US\$ Million | Rs. Billion | US \$ Million | Rs. Billion | US\$ Million | Rs. Billion | US\$ Million |
| 1990.91 | 2 | 102 | 68.28 | 3496 | 43.88 | 2236 | . | . | 114.16 | 5834 |
| 1991.92 | 2.33 | 90 | 90.39 | 3499 | 145.78 | 5631 | . | . | 238.5 | 9220 |
| 1992.93 | 0.55 | 18 | 105.49 | 3399 | 201.4 | 6434 | . | . | 307.44 | 9832 |
| 1993.94 | 3.39 | 108 | 127.94 | 3380 | 472.87 | 15068 | . | . | 604.2 | 19254 |
| 1994.95 | 0.23 | 7 | 137.52 | 4078 | 660.05 | 20809 | . | . | 797.8 | 25186 |
| 1995.96 | 2.8 | 82 | 156.58 | 4370 | 584.46 | 17044 | . | . | 743.84 | 21687 |
| 1996.97 | 0.07 | 2 | 145.57 | 4561 | 803.68 | 22367 | . | . | 949.32 | 26423 |
| 1997.98 | 0.04 | 1 | 133.94 | 4054 | 1025.07 | 25975 | . | . | 1159.05 | 29367 |
| 1998.99 | 0.34 | 8 | 125.59 | 3391 | 1254.12 | 29522 | . | . | 1380.05 | 32490 |
| 1999 | 0.16 | 4 | 129.73 | 2960 | 1529.24 | 35058 | . | . | 1659.13 | 38036 |
| 2000.01 | 0.11 | 2 | 127.11 | 2974 | 1844.82 | 39554 | . | . | 1972.04 | 42281 |
| 2001.02 | 0.5 | 10 | 148.68 | 2725 | 2491.18 | 51049 | . | . | 2640.36 | 54106 |
| 2002.03 | 0.19 | 4 | 167.85 | 3047 | 3414.76 | 71890 | 31.9 | 672 | 3614.7 | 76100 |
| 2003.04 | 0.1 | 2 | 182.16 | 3534 | 4662.15 | 107448 | 56.88 | 1311 | 4901.29 | 112959 |
| 2004.05 | 0.2 | 5 | 196.86 | 4198 | 5931.21 | 135571 | 62.89 | 1438 | 6191.16 | 141514 |
| 2005.06 | 0.12 | 3 | 256.74 | 4500 | 6473.27 | 145108 | 33.74 | 756 | 6763.87 | 151622 |
| 2006.07 | 0.08 | 2 | 295.73 | 5755 | 8365.97 | 191924 | 20.44 | 469 | 8682.22 | 199179 |
| 2007.08 | 0.74 | 18 | 401.24 | 6784 | 11960.23 | 299230 | 17.44 | 436 | 12379.65 | 309723 |
| 2008.09 | 0.06 | 1 | 487.93 | 10039 | 12300.66 | 241426 | 50 | 981 | 12838.65 | 251985 |
| 2009.10 | 225.96 | 5006 | 811.88 | 9577 | 11496.5 | 254685 | 62.31 | 1380 | 12596.65 | 279057 |
| 2010.11 | 204.01 | 4569 | 1025.72 | 17986 | 12248.83 | 274330 | 131.58 | 2947 | 13610.13 | 304818 |
| 2011.12 | 228.6 | 4469 | 1382.5 | 22972 | 13305.11 | 260069 | 145.11 | 2836 | 15061.3 | 294398 |
| 2012.13 | 235.4 | 4328 | 1397.4 | 27023 | 14126.3 | 259726 | 125.1 | 2301 | 15884.2 | 292046 |
| 2013.14 | 268.3 | 4464 | 1296.2 | 25692 | 16609.1 | 276359 | 110.2 | 1834 | 18283.8 | 304223 |
| 2014.15 | 249.44 | 3985 | 1191.6 | 21567 | 19854.58 | 317323 | 80.85 | 1292 | 21376.47 | 341638 |

Source: Reserve Bank of India Publications.

Table 2 : Exchange Rate, Average price of Gold and OPEC average price of crude oil.

| Year | Exchange Rate of Rs/\$ | Average price of gold Rs/10 grams | OPEC-average price of crude oil /barrel \$ |
|---------|------------------------|-----------------------------------|--|
| 1990-91 | 17.94 | 3451.52 | 18.62 |
| 1991-92 | 24.47 | 4297.63 | 18.44 |
| 1992-93 | 30.64 | 4103.66 | 16.33 |
| 1993-94 | 31.36 | 4531.87 | 15.53 |
| 1994-95 | 31.39 | 4667.24 | 16.86 |
| 1995-96 | 33.44 | 4957.6 | 20.29 |
| 1996-97 | 35.49 | 5070.71 | 18.86 |
| 1997-98 | 37.16 | 4347.07 | 12.28 |
| 1998-99 | 42.07 | 4268.17 | 17.44 |
| 1999-20 | 43.33 | 4393.56 | 27.6 |
| 2000-01 | 45.68 | 4473.6 | 23.12 |
| 2001-02 | 47.69 | 4579.12 | 24.36 |
| 2002-03 | 48.39 | 5332.36 | 28.1 |
| 2003-04 | 45.95 | 5718.95 | 36.05 |
| 2004-05 | 44.93 | 6145.38 | 50.59 |
| 2005-06 | 44.27 | 6900.56 | 61 |
| 2006-07 | 45.24 | 9240.32 | 69.04 |
| 2007-08 | 40.26 | 9995.62 | 94.1 |
| 2008-09 | 45.99 | 12889.74 | 60.86 |
| 2009-10 | 47.44 | 15756.09 | 77.38 |
| 2010-11 | 45.56 | 19227.08 | 107.46 |
| 2011-12 | 47.92 | 25722.42 | 109.45 |
| 2012-13 | 54.4 | 30163.93 | 105.87 |
| 2013-14 | 60.5 | 29190.39 | 96.29 |
| 2014-15 | 61.14 | 27414.55 | 49.49 |

Source: 1. RBI-Hand book of Statistics on Indian Economy-gold price in respective years.
2. Bombay Bullion Association and press trust of India-Gold Price.
3.OPEC average oil price-The Statistical Portal, Statista-2016.

Table 3 : Exchange rate of Rs/US\$ and the percentage of CAD components In India GDP

| Year | Exchange rate Rs./US\$ | Exports/GDP | Imports/ GDP | Net invisible/ GDP | CAD/GDP |
|---------|------------------------|-------------|--------------|--------------------|---------|
| 1990-91 | 17.94 | SS5.8 | 8.8 | -0.1 | -3 |
| 1991-92 | 24.47 | 6.8 | 7.9 | 0.6 | -0.4 |
| 1992-93 | 30.64 | 7.7 | 9.9 | 0.8 | -1.4 |
| 1993-94 | 31.36 | 8.2 | 9.7 | 1 | -0.4 |
| 1994-95 | 31.39 | 8.3 | 11.1 | 1.8 | -1 |
| 1995-96 | 33.44 | 9.1 | 12.3 | 1.5 | -1.7 |
| 1996-97 | 35.49 | 8.8 | 12.6 | 2.6 | -1.2 |
| 1997-98 | 37.16 | 8.7 | 12.5 | 2.4 | -1.3 |

| Year | Exchange rate Rs./US\$ | Exports/GDP | Imports/ GDP | Net invisible/ GDP | CAD/GDP |
|---------|---------------------------|-------------|--------------|--------------------|---------|
| 1998-99 | 42.07 | 8.2 | 11.4 | 2.2 | -1 |
| 1999-00 | 43.33 | 8.3 | 12.3 | 2.9 | -1 |
| 2000-01 | 45.68 | 9.9 | 12.6 | 2.1 | -0.6 |
| 2001-02 | 47.69 | 9.4 | 11.8 | 3.1 | 0.7 |
| 2002-03 | 48.39 | 10.6 | 12.7 | 3.4 | 1.3 |
| 2003-04 | 45.95 | 11.1 | 13.3 | 4.6 | 2.3 |
| 2004-05 | 44.93 | 11.8 | 16.5 | 4.3 | -0.3 |
| 2005-06 | 44.27 | 12.6 | 18.8 | 5 | -1.2 |
| 2006-07 | 45.24 | 13.6 | 20.1 | 5.5 | -1 |
| 2007-08 | 40.26 | 13.4 | 20.8 | 6.1 | -1.3 |
| 2008-09 | 45.99 | 15.4 | 25.2 | 7.5 | -2.3 |
| 2009-10 | 47.44 | 13.4 | 22 | 5.9 | -2.8 |
| 2010-11 | 45.56 | 15 | 22.4 | 4.6 | -2.8 |
| 2011-12 | 47.92 | 16.8 | 27.1 | 6.1 | -4.2 |
| 2012-13 | 54.4 | 16.7 | 27.4 | 5.9 | -4.8 |
| 2013-14 | 60.5 | 17 | 24.9 | 6.1 | -1.7 |
| 2014-15 | 61.14 | 15.4 | 22.5 | 5.7 | -1.4 |

Source: Reserve bank of India publications [tps:rbi.org.in/scripts/publications view.aspx? Id=16685](https://rbi.org.in/scripts/publications_view.aspx?Id=16685)

Table 4 : Indian Exchange rate and FDI and Portfolio Investment-2000-01 to 2014-15

| Year | Exchange rate Rs./ US\$ | Direct investment to India US\$ Million | FDI by India US\$ Million | Net FDI US\$ Million | Net Portfolio Investment US\$ Million | Total Investment US\$ Million | Total Investment in NRI Deposit Schemes US\$ Million |
|---------|-------------------------|---|---------------------------|----------------------|---------------------------------------|-------------------------------|--|
| 2000-01 | 45.68 | 4031 | 759 | 3272 | 2590 | 5862 | 2317 |
| 2001-02 | 47.69 | 6125 | 1391 | 4734 | 1952 | 6686 | 2728 |
| 2002-03 | 48.39 | 5036 | 1819 | 3217 | 944 | 4161 | 2976 |
| 2003-04 | 45.95 | 4322 | 1934 | 2388 | 11356 | 13744 | 3641 |
| 2004-05 | 44.93 | 5987 | 2274 | 3713 | 9287 | 13000 | -962 |
| 2005-06 | 44.27 | 8901 | 5867 | 3034 | 12494 | 15528 | 3719 |
| 2006-07 | 45.24 | 22739 | 15046 | 7693 | 7060 | 14753 | 4321 |
| 2007-08 | 40.26 | 34729 | 18835 | 15893 | 27433 | 43326 | 179 |
| 2008-09 | 45.99 | 41738 | 19365 | 22372 | -14030 | 8342 | 4289 |
| 2009-10 | 47.44 | 33109 | 15143 | 17966 | 32396 | 50362 | 2922 |

| Year | Exchange rate Rs./US\$ | Direct investment to India US\$ Million | FDI by India US\$ Million | Net FDI US\$ Million | Net Portfolio Investment US\$ Million | Total Investment US\$ Million | Total Investment in NRI Deposit Schemes US\$ Million |
|---------|------------------------|---|---------------------------|----------------------|---------------------------------------|-------------------------------|--|
| 2010-11 | 45.56 | 29029 | 17195 | 11834 | 30293 | 42127 | 3239 |
| 2011-12 | 47.92 | 32952 | 10892 | 22061 | 17170 | 39231 | 11920 |
| 2012-13 | 54.4 | 26953 | 7134 | 19819 | 26891 | 46711 | 14844 |
| 2013-14 | 60.5 | 30763 | 9199 | 21564 | 4822 | 26386 | 38406 |
| 20-15 | 61.14 | 34426 | 1799 | 32627 | 40934 | 73561 | 14057 |

Source: Reserve Bank of India publications

Table 5 : India's External Debt-US Million Dollars(End March1994-95 to 2014-15)

| Year | Exchange Rate Rs./US\$ | Long term Debt | Short Term Debt | Total Debt |
|---------|------------------------|----------------|-----------------|------------|
| 1994-95 | 31.39 | 94739 | 4269 | 99008 |
| 1995-96 | 33.44 | 88696 | 5034 | 93730 |
| 1996-97 | 35.49 | 86744 | 6726 | 93470 |
| 1997-98 | 37.16 | 88485 | 5046 | 93531 |
| 1998-99 | 42.07 | 92612 | 4274 | 96886 |
| 1999-00 | 43.33 | 94327 | 3936 | 98263 |
| 2000-01 | 45.68 | 97698 | 3628 | 101326 |
| 2001-02 | 47.69 | 96098 | 2745 | 98843 |
| 2002-03 | 48.39 | 100245 | 4669 | 104914 |
| 2003-04 | 45.95 | 108222 | 4431 | 112653 |
| 2004-05 | 44.93 | 116279 | 17723 | 134002 |
| 2005-06 | 44.27 | 119575 | 19539 | 139114 |
| 2006-07 | 45.24 | 144230 | 28130 | 172360 |
| 2007-08 | 40.26 | 178669 | 45738 | 224407 |
| 2008-09 | 45.99 | 181185 | 43317 | 224498 |
| 2009-10 | 47.44 | 208606 | 52329 | 260935 |
| 2010-11 | 45.56 | 252901 | 64990 | 317891 |
| 2011-12 | 47.92 | 282587 | 78179 | 360766 |
| 2012-13 | 54.4 | 312676 | 96697 | 409373 |
| 2013-14 | 60.5 | .354590 | .91678 | .446268 |
| 2014-15 | 61.14 | .391126 | .84686 | .475813 |

Source: External Debt Management, Ministry of Finance and Reserve Bank of India