In the present scenario of globalization the choice of appropriate exchange rate regime has become challenging for the policy makers. The issue of exchange rate regime gained prominence since the increasing number of countries around the world adopted flexible exchange rate regime entailing higher volatility in exchange rate. Under flexible exchange rate mechanism, nominal exchange rate adjusts to offset changes in relative prices. Since, exchange rate has got serious implications for an external competitiveness of an economy, the public policies have been tracking the movements in exchange rate very closely so that the impact of exchange rate on macro-economic indicators can be monitored. From a policy perspective, the understanding of the changing relationship between exchange rate and various macro-economic indicators is extremely relevant for the Indian economy.

The wave of globalization, which started around the mid 1980s, driven by the dismantling of trade barriers, the liberalization of capital controls and significant advances in information and communication technologies, has brought about major changes in both production and trade patterns. Globalization might have also affected economies in more subtle ways by altering the various international activities. It has changed the impact of exchange rate movements on economic performance. It is more common a fact that developing countries are often beset by lack of credibility and limited access to international markets, they are beset by more pronounced adverse effects of exchange rate volatility on trade. Consequently, benign neglect of the exchange rate is not feasible option for developing countries. India adopted unified floating exchange rate regime in 1993.

The present study aimed at studying the exchange rate regime in India in pre-reform and post-reform periods and analyzing the impact of exchange rate
Summary, Conclusions And Policy Implications

on selected macro-economic indicators of Indian Economy such as economic growth measured by Gross Domestic Product (GDP), inflation rate, degree of openness and degree of international financial integration measured by Foreign Direct Investment (FDI) for the period 1991-2008. For examining the impact of exchange rate volatility on various macroeconomic indicators of Indian economy, we started with the introduction of the exchange rate regime and conceptual framework of exchange rate including various theories of exchange rate. Literally, the exchange rate is defined as the current market price for which one currency can be exchanged for another. Equilibrium rate of exchange must be maintained at par with values of different currencies. The par values and equilibrium rate are determined under different monetary systems. In this regard three theories have been elaborated viz., mint parity theory, purchasing power parity theory and balance of payments theory. We also discussed the types of exchange rate and different types of exchange rate regimes both conceptually and those given by IMF. The rationale of the study undertaken has also been given with the relationship of exchange rate with the selected macro-economic indicators. The impact of exchange rate volatility on GDP, inflation rate, trade openness and FDI is important for the policy implications as exchange rate fluctuations effect economic growth both positively and negatively under different conditions. The issue of the impact of exchange rate fluctuations has gained importance in the global era in both the ways i.e. both in the descriptive and policy implications perspective. Likewise, the relationship of exchange rate with inflation rate is also gaining prominence. Several studies suggested that flexible exchange rate regimes resulted in higher persistence of inflation and some researchers are of the view that exchange rate system has nothing to do with inflation rate. The relationship of exchange rate with trade openness and FDI is also important as exchange rate fluctuations do impact international trade activities of the country. By keeping in view the research gaps and rationale of the study we made objectives of the present study. The chapter scheme had also been stated in this chapter.
Chapter 2 dealt with the findings of the various researchers regarding the impact of exchange rate on economic growth, inflation rate, trade openness and Foreign Direct Investment (FDI). We have also covered the findings on the relevance of the choice of exchange rate regime.

Iqbal Mahmood and Syed Zulfiqar Ali (2007) found positive relationship between exchange rate volatility and economic growth for Pakistan whereas Thomas Munthali, Kisu Simwaka and Mac Donald Mwale (2010) and Ping Hua (2011) found negative impact of exchange rate volatility on economic growth for Malawi and Chinese provinces respectively. Lee-Lee Chong and Hui-Boon Tan (2008) found long-run co-movement between exchange rate fluctuations and economic growth for Malaysia, Indonesia, Thailand and Singapore. Esmaiel Abounoori and Hoda Zobeiri (2008) too found the same results for the country Iran. Therefore, it can be concluded that the studies have unanimous findings for the relationship of exchange rate with economic growth. Ramiz ur Rehman, Muhammad Ateeq ur Rehman and Awais Raoof (2010) found in their study that there is positive relationship between exchange rate volatility and inflation rate for the countries U.K and Pakistan whereas Adetiyole, Kehinde Adekunle (2010) found that the relationship between exchange rate and inflation rate is not significant for the country Nigeria. B Imimole, A Enoma (2011) found the impact of exchange rate depreciation on inflation rate of Nigerian economy and found that exchange rate depreciation increases inflation in the economy i.e. they found positive relationship between the two. Niloufer Sohrabji (2011) examined the relation between exchange rates and prices in India and found that exchange rates are not the biggest determinant of price variation in the economy. Here, it has been concluded that there is no clear vision about the impact of exchange rate on inflation rate. Christopher F. Baum, Mustafa Caglayan and Neslihan Ozkan (2001) found non-linear effect of exchange rate volatility on trade flows for the thirteen developing countries but the study by Gerardo Esquivel and B. Felipe Larrain (2002) found stable exchange rate system improves trade for the twenty-eight developing countries. Prabijit Sarkar
Summary, Conclusions And Policy Implications

(1995) found no direct influence of exchange rate on dollar value of trade for the Indian economy. A.C. Arize (1995) obtained short and long-run influence of exchange rate volatility on the import flows of the United States. He found that there is significant long-run negative effect of exchange-rate volatility on the volume of imports, as well as, a significant short-run negative effect. The findings are heterogenous in case of relationship between exchange rate and trade openness also. Matteo Iannizzotto and Nigel J. Miller (2002) found no concluding evidence for the effect of exchange rate volatility on FDI for the country U.K. Contrary to this, Elijah Udoh and Festus O. Egwaikhide (2008) found that exchange rate volatility exerts significant effect on FDI in the Nigerian economy. Abdul Chowdhury and Mark Wheeler (2008) and Joseph D. Alba, Donghyun Park and Peiming Wang (2009) found that exchange rate volatility have positive impact on FDI flows for the countries, Canada, Japan, U.K and U.S. It has been said that the appropriateness of exchange rate regime is important for economic development. So we studied literature on exchange rate regime. Bacchetta Philippe and Wincoop Van Eric (1999) in their study found that trade could be higher in any of the exchange rate regimes depending on preferences and on the monetary policy rules followed under each system. On the contrary Haizhoh Huang and Priyanka Malhotra (2004) in their study of Asian and Advanced European countries found that choice of exchange rate regime affects economic growth and depends on the economic development. But we could not reach to the conclusive argument in favour of one type of exchange rate regime as the findings were heterogeneous. There was no unanimity in the findings of different researchers. Some were of the view that fixed exchange rate regime is favourable for economic development and some favoured flexible exchange rate regime. The story was same for all the variables under study. There was no clear picture about the impact of exchange rate on any of the selected variables.

In Chapter 3 we discussed the data source and methodology used to examine econometrically the impact of exchange rate volatility on macroeconomic indicators. The major data source is the DBIE i.e. Data Base
Summary, Conclusions And Policy Implications

on Indian Economy by RBI. The data used is the quarterly data for all the variables taken in the present study. The period of the study taken is 1991q1 to 2009 q2. The methodology used has been elaborated. The methodology used for analyzing the impact of exchange rate on selected macro-economic indicators is under the VAR framework. For finding out the impact of exchange rate on selected macro-economic indicators in the long run we used GARCH model. In the present chapter, we discussed Engle-Granger procedure for estimating long-run relationships but we did not use this method as the variables were not stationary at the same levels of integration. For finding out the stationarity of the series we used Augmented Dickey Fuller (ADF) test. The chapter also mentioned the alternative way of testing the stationarity i.e. Philips-Perron test. We used ARDL model also for finding long-run impact of exchange rate on selected macro-economic indicators but the sign of the relationships were not consistent with the correlation tests as there was either problem of heteroscedasticity or serial correlation in the ARDL model. Ultimately, we had to switch over to extension of ARDL model i.e. GARCH model to capture the volatility in the error term. In VAR framework we have models of causality i.e. Granger Causality tests, Sims Causality tests. For examining the short-run relationships we used Granger Causality test and it found the bidirectional relationship.

Chapter 4 presented the synoptic view of the exchange rate regime followed in pre and post reform period of Indian economy. The chapter was divided into three sections. First part dealt with exchange rate regime in the pre-reform period. This period was further divided into two parts. First sub-part dealt with the historical perspective of exchange rate regime (upto 1947). In this section it is concluded that the exchange rate of the rupee was revolved around pound sterling and gold standard. In 1931 gold exchange standard was abandoned. At that time, the Indian rupee became formally and firmly on the sterling peg with no link with metallic currency. The major achievement during 1930s in India was setting up of a Central Bank under the RBI Act, 1935. Second sub-part dealt with the exchange rate regime of period 1947 to 1991. In
Summary, Conclusions And Policy Implications

The beginning of this period i.e. in 1949 India devalued rupee because of many reasons particularly dependence of rupee on sterling area for exports as pound-sterling was also devalued also due to unfavourable balance of trade. For regulation of exchange rate, FERA was introduced in 1947 and placed on a permanent basis in 1957. After the devaluation of 1949 (30%), there was again devaluation in 1966 (36.5%). It was the result of financial crisis faced by the government i.e. consistent balance of payments deficit, the war with Pakistan in 1965 and a draught in the period 1965-66. Again, Indian economy caught in a trap of BOP crisis in 1980s, the situation of Indian economy went from bad to worse in this period. Ultimately, Indian economy had to resort to the Structural Adjustment Programme (SAP) in 1990s. The second part of the chapter dealt with the exchange rate regime in the post-reform period. We discussed post-reform period through various phases. These phases threw light on the fluctuations in the exchange rate as in 1993 unified floating exchange rate regime was adopted.

The last section of the chapter contained the trends in the selected macro-economic indicators, viz: GDP, inflation rate, trade openness and FDI, to justify the purpose of taking those indicators for econometric analysis in chapter 5 and 6. It was noticed from the trends of GDP growth that after 1993-94 GDP growth accelerated for the three consecutive years. It was the positive impact of the economic reforms. The increase in GDP growth was seen again after the year 2002-03 because of the interest rate deregulation. But owing to the global slowdown in the year 2008-09, GDP growth again fell down. Similarly, trends in the inflation rate were examined via two indicators i.e. WPI and GDP deflator. The latter can also be taken as a proxy for inflation rate. It was found that inflation rate was nearly 14 percent in 1991 and supply side factors were responsible for this high inflation rate. The inflation rate remained low and almost stable during the period 1999-2003. But in the year 2004 the inflation rate increased and the main reason behind this increase was hike in the prices of crude oil twice in the year. Again a spurt in the price level was noticed in the years 2006 and 2008.
The trends of the two major components of the BOP viz; the trends in the current account and capital account were also examined. During the period of the study i.e. from 1991-92 to 2008-09 trade balance remained in deficit. The reason behind was sluggish growth of exports. Regarding the trends in trade openness it was noticed that trade openness showed increasing trends except for the years 1996-07, 2001-02 and 2007-08. The overall balance had been favourable except for the years 1992-93, 1995-96, and 2008-09. The major deficit was in the year 2008-09. It was due to negative portfolio investment. FDI inflows took the major component position in the mid 1990s and increased almost thrice in 1992 i.e. 965 crores as compared to 316 crores in 1991. The FDI inflows had shown an increasing trend till 2008-09 except for the years 1998-2000 and 2002-04 when these had witnessed decrease in comparison to earlier year.

Chapter 5 examined empirically the impact of exchange rate on domestic factors i.e. GDP and inflation rate for which WPI was taken as a proxy for inflation rate. We did not take CPI as a measure of inflation rate as the data on CPI was on industrial workers and agricultural workers but not on all commodities. Various empirical exercises had been done to examine the impact of exchange rate on inflation rate. We used the VAR model for analyzing the results. The first exercise was to check the stationarity of the variables concerned. We found that both exchange rate and inflation rate were stationary at different levels.

The model used was:

\[
\Delta \ln(WPI)_t = \alpha + \beta_1D_1 + \beta_2D_2 + \beta_3D_3 + \gamma \ln(WPI)_{t-1} + \sum_{i=1}^{p} \lambda_i \Delta \ln(WPI)_{t-i} + u_t
\]

\[
\Delta \ln(exrate)_t = \lambda + \alpha_1D_1 + \alpha_2D_2 + \alpha_3D_3 + \gamma \ln(exrate)_{t-1} + \sum_{i=1}^{p} \beta_i \Delta \ln(exrate)_{t-i} + u_t
\]

Exchange rate was stationary at level but inflation rate was stationary at first order of integration. Therefore, we could not apply Engle-Granger procedure. Then we moved to ARDL procedure for finding long-run impact of exchange rate on inflation rate.
Summary, Conclusions And Policy Implications

The ARDL model tested was:

\[
\ln(WPI)_t = \left( -\frac{\phi_i}{1-\sum_{i=1}^{k} \phi_i} \right) + \left( -\frac{\sum_{i=1}^{k} \beta_i}{1-\sum_{i=1}^{k} \beta_i} \right) \ln(\text{exrate})_t + \varepsilon_t
\]

But there was problem of heteroscedasticity in the results as the magnitude of the coefficient did not meet the theoretical requirements. The negative sign of the coefficient was not according to the theoretical model given by Mundell-Fleming. According to Mundell-Fleming model as exchange rate rises, net export increases consequently aggregate income rises. This increase in aggregate income pumps extra demand in the economy and thus pushes the price level upwards. This means that the magnitude of the coefficient should be positive. To find the problem in the results we applied LM statistic for the test of heteroscedasticity. The test of heteroscedasticity was positive indicating the problem. Now, to overcome the problem of autocorrelation and heteroscedasticity we applied GARCH model for finding the long-run impact of exchange rate on inflation rate.

The model tested is as follows:

\[
\ln(WPI)_t = \sum_{k=1}^{K} \phi_k \ln(\text{exrate})_{it} + \varepsilon_t
\]

\[
\sigma_i^2 = \omega + \alpha \varepsilon_{i-1}^2 + \beta \sigma_{i-1}^2
\]

We found long-run impact of exchange rate on inflation rate as positive. Then for the short-run analysis we applied the Granger-Causality test by applying the following model:

\[
\ln(WPI)_t = \alpha_1 + \sum_{j=1}^{m} \beta_j \ln(\text{exrate})_{t-j} + \sum_{j=1}^{m} \gamma_j \ln(WPI)_{t-j} + \varepsilon_t
\]

\[
\ln(\text{exrate})_t = \alpha_2 + \sum_{j=1}^{n} \theta_j \ln(\text{exrate})_{t-j} + \sum_{j=1}^{n} \delta_j \ln(WPI)_{t-j} + \varepsilon_2
\]

The results indicated that there is no impact of exchange rate on inflation rate in short-run but inflation rate is impacting exchange rate in the short-run. The relationship is unidirectional. The cause for no impact of exchange rate on the inflation rate in the short-run may be that the exchange rate and inflation rate
Summary, Conclusions And Policy Implications

are not directly influenced by each other. There may be other factors which
influence the impact of exchange rate on inflation rate. The policy implication
for the impact of exchange rate on inflation rate is that the increase or decrease
in the exchange rate does not impact the changes in the price level in the short-
run but it does affect it in long-run. There is no need for the central bank to
intervene in the exchange rate market to control inflation in the economy in the
short-run. But policies should be made for the long-run. Positive effect in the
long-run means with the increase in exchange rate i.e. depreciation there is
increase in inflation in the long-run. But simultaneously monetary policy
should be followed in such a manner that inflation could control variations in
the exchange rate in the short-run.

The chapter also discussed the empirical results on the impact of
exchange rate on GDP of the Indian economy. The theory applied for analysing
the relationship between exchange rate and the GDP is the monetarist approach
which believed that there is only short-run influence of the fluctuations of the
exchange rate on the GDP. Our results do not match with the theory. The
empirical results found the short run impact of exchange rate on the GDP and
also GDP impacting exchange rate in the short-run. The relationship was found
to be bi-directional in the short-run. There is also long-run impact of exchange
rate volatility on GDP. For examining the impact of exchange rate on GDP we
followed the same exercise as we did in examining the impact of exchange rate
on inflation rate. Here also we found that both exchange rate and GDP were not
cointegrated i.e. they are not stationary at same level of integration. For finding
stationarity we used ADF. The model is as follows:

\[
\Delta \ln(GDP)_t = \alpha + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \gamma \ln(GDP)_{t-1} + \sum_{i=1}^{n} \lambda_i \Delta \ln(GDP)_{t-i} + u_i \\
\Delta \ln(exrate)_t = \lambda + \alpha_1 D_1 + \alpha_2 D_2 + \alpha_3 D_3 + \gamma \ln(exrate)_{t-1} + \sum_{i=1}^{n} \beta_i \Delta \ln(exrate)_{t-i} + u_i
\]

Therefore, we applied the ARDL procedure and the model is as follows:

\[
\ln(GDP)_t = \left( -\sum_{i=1}^{n} \frac{\beta_i}{1 - \gamma \beta_i} \right) + \left( -\sum_{i=1}^{n} \frac{\alpha_i}{1 - \gamma \beta_i} \right) \ln(exrate)_{t-i} + \nu_t
\]
Summary, Conclusions And Policy Implications

but the results were not in line with the correlation coefficient results. So we switched to GARCH model. The model is given below:

\[ \ln(GDP)_t = \sum_{k=1}^{k} \phi_k \ln(exrate)_{kt} + \epsilon_t \]

\[ \sigma_i^2 = \omega + \alpha \epsilon_{i-1}^2 + \beta \sigma_{i-1}^2 \]

In applying GARCH model we found that there is long-run impact of exchange rate on GDP. For examining short-run impact we applied Granger-Causality test and for testing the Granger causality we applied the model as below:

\[ \ln(GDP)_t = \alpha + \sum_{i=1}^{n} \beta_i \ln(exrate)_{t-i} + \sum_{j=1}^{m} \gamma_j \ln(GDP)_{t-j} + \epsilon_t \]

\[ \ln(exrate)_t = \alpha_z + \sum_{i=1}^{n} \theta_i \ln(exrate)_{t-i} + \sum_{j=1}^{m} \delta_j \ln(GDP)_{t-j} + \epsilon_{z_t} \]

and found the relation to be bi-directional i.e. both exchange rate and GDP impact each other in the short-run. The policy implication of the relation between exchange rate and GDP is that the monetary authorities i.e. RBI should intervene in the exchange rate market in the both long-run and short-run to regulate the economic growth. And economic growth also influences the exchange rate in short-run implying that changes in the policies can also influence the exchange rate in the short-run.

In chapter 6 an attempt was made to examine the impact of exchange rate on the international factors i.e. trade openness and the Foreign Direct Investment empirically. Trade openness is the sum of exports and imports as a percentage of GDP and Foreign Direct Investment has been taken as the FDI as a percentage of GDP. The chapter began with the relationship between exchange rate on the capital inflows and the trade. The first section of this chapter included the impact of exchange rate on the trade openness. As we know the cointegration tests cannot be applied as long as the variables are integrated of the same order. As we have discussed earlier that exchange rate is stationary at levels but the trade openness is stationary at 1st degree of integration, therefore, cointegration tests are not possible. For analysing stationarity ADF has been used. The model is as under:
\[ \Delta \ln(TROP)_t = \alpha + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \gamma \ln(TROP)_{t-1} + \sum_{j=1}^{p} \lambda_j \Delta \ln(TROP)_{t-j} + u_t \]

\[ \Delta \ln(exrate)_t = \lambda + \alpha_1 D_1 + \alpha_2 D_2 + \alpha_3 D_3 + \gamma \ln(exrate)_{t-1} + \sum_{j=1}^{p} \beta_j \Delta \ln(exrate)_{t-j} + u_t \]

Then we proceed with the ARDL procedure to estimate long-run impact of exchange rate on the trade openness. ARDL model is as follows:

\[ \ln(TROP)_t = \left( \frac{\alpha_1}{1-\sum_{i=1}^{p} \beta_i} \right) + \left( \frac{\sum_{j=1}^{p} \beta_j}{1-\sum_{i=1}^{p} \beta_i} \right) \ln(exrate)_t + \nu_t \]

But the magnitude of the coefficient did not match the correlation coefficient. So we applied LM statistic to find if there is any problem in the results. We found the problem of serial correlation. Then we shifted to the GARCH model to estimate the long-run impact. GARCH model is as follows:

\[ \ln(TROP)_t = \sum_{k=1}^{k} \phi_k \ln(exrate)_t + \varepsilon_t \]

\[ \sigma^2_{\varepsilon} = \omega + \alpha \varepsilon^2_{t-1} + \beta \sigma^2_{\varepsilon_{t-1}} \]

The results were satisfactory as we found the significant negative long-run relationship. This implies that exchange rate has impact on trade openness in the long-run. This implies that with depreciation there will be less trade openness. As we found the long-run impact the next step would be to find the short-run relationship. For finding short-run impact of exchange rate on trade openness we applied Granger Causality test. Granger Causality test model is given below:

\[ \ln(TROP)_t = \alpha_1 + \sum_{i=1}^{n} \beta_i \ln(exrate)_{t-i} + \sum_{j=1}^{m} \gamma_j \ln(TROP)_{t-j} + \epsilon_{1t} \]

\[ \ln(exrate)_t = \alpha_2 + \sum_{i=1}^{n} \theta_i \ln(exrate)_{t-i} + \sum_{j=1}^{m} \delta_j \ln(TROP)_{t-j} + \epsilon_{2t} \]

We found no short-run impact of exchange rate on trade openness. But trade openness has impact on exchange rate. The relationship is unidirectional.

The second section of the chapter covered the estimation of the impact of exchange rate volatility on the Foreign Direct Investment (FDI). Here also
Summary, Conclusions And Policy Implications

We found that exchange rate and FDI are not integrated of the same order. ADF test had been used for testing stationarity:

\[ \ln(FDI)_t = \beta_{10} + \beta_{12} \ln(exrate)_t + \gamma_{11} \ln(FDI)_{t-1} + \gamma_{12} \ln(exrate)_{t-1} + u_{(FDI)_t} \]

\[ \ln(exrate)_t = \beta_{20} + \beta_{21} \ln(FDI)_t + \gamma_{21} \ln(FDI)_{t-1} + \gamma_{22} \ln(exrate)_{t-1} + u_{(exrate)_t} \]

Therefore, we dropped the idea of applying cointegration tests for finding the impact. We followed the ARDL procedure by using the following model:

\[ \ln(FDI)_t = \left( \frac{-\phi_1}{1 - \sum \phi_i} \right) + \left( \frac{-\psi_1}{1 - \sum \psi_j} \right) \ln(exrate)_t + \nu_t \]

The coefficient was more than unitary elastic but at the same time it was non-significant too. This prompted us to apply the LM statistic and we encountered the problem of serial correlation. The alternative of the ARDL approach was the GARCH model. We found the long-run impact of exchange rate on the FDI by applying GARCH model. The model is as follows:

\[ \ln(FDI)_t = \sum_{i=1}^k \phi_i \ln(exrate)_{i,t} + \varepsilon_t \]

\[ \sigma^2_t = \omega + \alpha \varepsilon^2_{i,t-1} + \beta \sigma^2_{i,t-1} \]

The relationship between the exchange rate and FDI is negative and significant. The next step involved finding short-run impact of exchange rate on the FDI. For this we applied the Granger Causality test by analyzing the following model,

\[ \ln(FDI)_t = \alpha_1 + \sum_{i=1}^x \beta_i \ln(exrate)_{i,t-1} + \sum_{j=1}^m \gamma_j \ln(FDI)_{j,t-1} + e_{1t} \]

\[ \ln(exrate)_t = \alpha_2 + \sum_{i=1}^x \theta_i \ln(exrate)_{i,t-1} + \sum_{j=1}^m \delta_j \ln(TROP)_{j,t-1} + e_{2t} \]

and we found that there is no short-run impact of exchange rate on the FDI. But FDI has impact on exchange rate in short-run. The relationship was unidirectional. The absence of impact of exchange rate on FDI in short-run is...
Summary, Conclusions And Policy Implications

may be because that FDI in short-run may not depend upon exchange rate but on other factors such as interest rate, taxation policies, infrastructure etc.

The study found the interesting findings as the exchange rate has long-run impact on the domestic factors viz., inflation rate and the GDP. Exchange rate has no impact on the inflation rate in the short-run but it has impact on GDP in short-run. The relationship of the exchange rate with the inflation rate and GDP is positive as per the theory and through the empirical excercise (found by the correlation coefficient test). The impact of exchange rate on the international factors viz., trade openness and FDI is significant in the long-run but there is no short-run impact was found. The relationship of exchange rate with trade openness and FDI is negative in long-run. This is known in the economic theory that with exchange rate depreciation there will be less capital inflows thus attracting few FDI. But with the currency appreciation it becomes attraction for the foreign investors to invest in the country.

Policy Implications:

Movements in exchange rate have important implications for the economies’ business cycles, trade and capital flows and are therefore crucial for understanding financial performance and changes in economic policy. Timely forecasts of exchange rates can provide valuable information to policy makers and participants in the spheres of international finance, trade and policymaking. Policy makers in India should consider both the existence and the degree of exchange rate volatility and notice the likely impact of the exchange rate volatility on each economic variable. On these lines we have studied the impact of fluctuations in the exchange rate on the domestic factors viz., inflation rate and GDP and international factors such as trade openness and FDI and found that there is need of the RBI to intervene in case of these factors in the long-run and in case of some factors short-run intervention is also required.

a) The study has found significant long-run positive impact of exchange rate volatility on inflation rate indicating that the model has a self-adjusting mechanism for correcting any deviation of the variables from
Summary, Conclusions And Policy Implications

equilibrium. The GARCH model used for examining long run impact has explained 53% variations by the exchange rate. The remaining 47% of the variations can be explained through a number of other factors such as interest rate, money supply and bank credit changes in monetary and fiscal policies. The findings suggest that there is a need for the RBI to intervene in the exchange rate market to influence inflation rate in the long-run.

b) We did not find any short-run impact of exchange rate fluctuations on inflation rate. It is therefore suggested that policy makers should use exchange rate policies to complement other macro-economic policies as there can be other factors which influence the inflation rate in the economy in the short-run. There may be indirect relationship between the two. It has also been observed that inflation rate do impact exchange rate in the short-run, therefore, the intervention of the policy makers is required in the short-run so that the domestic policies can help in managing the fluctuations in the exchange rate.

c) We examined that exchange rate fluctuations have significant positive long-run impact on GDP indicating that exchange rate management in India can boost growth in the country in the long-run. The GARCH model used in our study to control the volatility in the error term explained 30% variations by the exchange rate. The remaining 70% of the variations can be explained by other factors such as interest rate, population, exports etc. It implies that the intervention is required in the long-run by the RBI in the exchange rate market to increase the economic growth in India. This also means that the fluctuations in the exchange rate should be checked to ensure the steady economic development in the country.

d) By using Granger causality test we examined the short-run impact of exchange rate on the GDP and found that exchange rate has impact on GDP in the short-run and also GDP has impact on exchange rate which means that in the short-run there is bidirectional relationship between
Summary, Conclusions And Policy Implications

the two. This implies that exchange rate policies play crucial role in increasing the economic growth of the country in short-run also. Likewise, domestic policies has also larger role in influencing the fluctuations in the short-run.

e) It has been observed from the empirical analysis that exchange rate policies are effective in controlling the international factors i.e. trade openness and the FDI in the long-run. It is found that exchange rate volatility has negative impact on FDI in the long-run. Therefore, RBI should intervene in the exchange rate market to attract more FDI in the economy. The important lesson to learn from this study is that policy makers should pay attention to those factors that negatively affect on FDI flows (contrary to the requirements of international treaties on trade). The GARCH model has explained 52% variations in exchange rate by the exchange rate. The remaining variations are due to internal conditions of the country such as infrastructure, tariff structure, etc. Policymakers need to review the tariff system and any other barriers that may act to inhibit a smooth FDI flows into the country. It is important for the policy makers to consolidate and maintain the credibility of the trade policies for sustainable growth and development.

Though capital flows are generally seen to be beneficial to an economy, but a large surge in flows over a short span of time in excess of the domestic absorptive capacity can, however, be a source of stress to the economy giving rise to upward pressures on the exchange rate, overheating of the economy and possible asset price bubbles. Therefore, capital flows should be within the safe limits and this boundary limit has to be decided by the policy makers.

f) We found no short-run impact of exchange rate on FDI but it is found that FDI do impact exchange rate in the short-run therefore FDI can be one of the tools in policy maker’s arsenal to avoid exchange rate variability and therefore, closer examination of the determinants of
FDI management could help design policies that aim to increase the efficiency of external management and the controls of FDI can also improve vulnerability in the exchange rate market.

g) In the present study it is found that there is significant negative long-run impact of exchange rate volatility on trade openness. The policy makers should intervene in the exchange rate market to control the trade openness of the country i.e. the amount that country could easily absorb. The model has explained 59% variations in the exchange rate. The remaining variations are explained by terms of trade, capital flow among others. These factors should also be taken care of.

h) The present study examined that there is no short-run impact of exchange rate on trade openness but trade openness do impact exchange rate in the short-run. Therefore policy changes via trade openness can stabilize the exchange rate.

i) There is much room for policy intervention; attention may also be given to government fiscal, foreign debt and investment policies when considering exchange rate objectives. Our analysis suggests that even after adopting the flexible exchange rate regime, long-term success depends on a commitment to sound economic fundamentals. Preserving stability in the market would require more flexibility, adaptability and innovations with regard to the strategy for liquidity management as well as exchange rate management. With the likely fluctuation in the foreign exchange market rising in future, further development of the foreign exchange market will be crucial to manage the associated risks.

j) In the present scenario the role of Reserve Bank of India is important in keeping continuous watch on exchange rate fluctuations. As the conduct of exchange rate policy in India is currently guided by three major purposes. Firstly, to maintain orderly conditions in the foreign exchange market and to prevent the emergence of destabilising and self-fulfilling speculative activities. Secondly, to help in maintaining
an adequate level of foreign exchange reserves. Thirdly, to help eliminate market constraints with a view to facilitating the development of a healthy foreign exchange market.

Whether the exchange rate regime is fixed, floating or the combination of the two, there is no way that a country can insulate its economy from external influences. It is an illusion to think that the floating exchange rate regime could neutralize the impact of external factors. In order to achieve the appropriate exchange rate regime, the various segments of economic policy should be well-coordinated and should complement each other. It is also recommended that the economic policy should be well-directed and well-spelled and simultaneously the policy makers should be well-informed and explicit in the objectives that should be result oriented.

Limitations of the study:
1. The quarterly data on GDP from the period 1991 to 1995 is not available. Therefore we had to interpolate the series for finding the missing values.
2. Due to unavailability of the GDP quarterly data we could not find the impact of exchange rate on macroeconomic factors in the pre-reform period empirically.
3. The data on Consumer Price Index is not given for all commodities. Due to this we have constrained the measurement of inflation rate to WPI only.

Scope for the future research:
The present study has taken impact of exchange rate volatility on four macroeconomic indicators viz.; inflation rate, GDP, trade openness and FDI. There can be other variables also on which the impact of exchange rate can be seen. One can also see the impact of monetary policy on the exchange rate. The research on impact of exchange rate on inflation rate is very limited on Indian economy. It can be studied further with different measures of inflation rate.