A review of the research carried in the area that one chooses to explore is very informative as it helps in placing each work in the context of its contribution to the understanding of the subject under study. The purpose of reviewing the related studies is to develop thorough understanding and insight into the work already done and areas left unexplored. Different researchers have dealt with different issues in a piecemeal pertaining to the topic undertaken in this study. It would, therefore, be quite useful to review the research work which has been carried out by different researchers in the area during the past couple of decades.

The present chapter is divided into five sections:

Section I: Attempts to review various studies on the relationship between exchange rate and economic growth.

Section II: Reviews the relationship between exchange rate and inflation rate in various studies.

Section III: Reviews various studies regarding the relationship of exchange rate and openness.

Section IV: Gives the collection of various studies regarding the relationship between exchange rate and Foreign Direct Investment.

Section V: Presents an overview of the literature relating to the choice of the appropriate exchange rate regime.

SECTION 2.1

2.1 EXCHANGE RATE AND ECONOMIC GROWTH:

Sebastian Edwards (1986) analyzed the effects of real exchange rate changes on real output growth for twelve developing countries using time-series annual data over 1965-80 and found negative short run effects on output. The study
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shows that the output reduction effect of devaluation seems to be a short-run phenomenon, which is completely reversed in the long run. The model used is:

\[ \log Y_t = \alpha + \gamma \text{time} + \beta_1 \log (GE/Y)_t + \beta_2 [\Delta \log m - \Delta \log m^*]_t + \beta_3 \log T_t + \beta_4 \log e_t + \epsilon_t \]

- \( Y \): Aggregate real output
- \( \beta_s \): Slope
- \( \alpha \): Intercept
- \( \gamma \): Trend rate of growth
- \( (GE/Y) \): Ratio of government Nominal Expenditure to Income
- \( \Delta \log m \): Actual rate of growth of nominal money
- \( \Delta \log m^* \): Expected rate of growth of nominal money
- \( T_t \): Trends of trade
- \( \epsilon_t \): Error term

Yeyati-Levy Eduardo and Sturzenegger Federico (2003) analyzed the relationship between exchange rate regimes and economic growth for a sample of 183 countries over the Post-Bretton woods period, using a new de facto classification of regimes based on the actual behaviour of the relevant macroeconomic variables. They found that for developing countries, less flexible exchange rate regimes are associated with greater output volatility. For industrial countries, regimes do not appear to have any significant impact on growth.

Iqbal Mahmood and Syed Zulfiqar Ali (2007) investigated the impact of exchange rate volatility on macroeconomic performance of Pakistan. Exchange rate volatility is taken as independent variable while GDP, manufacturing products, real exports and foreign exchange reserves of Pakistan are taken as dependent variables. Their study is based on the data span of 1975 to 2005. Annual data is used in this study on 31 observations. augmented Dickey Fuller
(ADF) test and OLS test have been applied on the variables to know how the volatility of exchange rate affects macroeconomic variables of Pakistan. Results indicated that GDP and manufacturing products of Pakistan are positively affected by volatility of exchange rate, while its negative effect has been found on real exports and foreign exchange reserves of Pakistan.

Lee-Lee Chong and Hui-Boon Tan (2008) found that the exchange rate movements seemed to be excessive over the years and resulted in several financial turbulences across the globe. To a large extent, most Southeast Asian economies are adopting semi-rigid exchange rate arrangements. However, those economies are still facing the exchange rate risk, the impact of exchange rate volatility on trade balance, foreign investment and economic growth is canvassed for four (Malaysia, Indonesia, Thailand and Singapore) neighbouring countries in a multivariate setting in contrast to most previous researches that are in a bi-variate setting. The empirical results indicated long-seen co-movement among them, however, none short-run relationship could be observed except for Indonesia. To conclude, the effect of exchange rate is still prevailing especially in the long run for small and open economies.

Esmaiel Abounoori and Hoda Zobeiri (2008) examined the effect of exchange rate gap (difference between official and parallel market rates) on economic growth in Iran during 1961-2007 based on Error correction Model. The result indicates that, there is a significant long run relationship between exchange rate gap and economic growth. Therefore they concluded that adopting a suitable exchange rate policy to adjust the real exchange rate may have an important role to increase output capacity and achieving higher economic growth.

Philippe Aghion, Philippe Bacchetta, Romain Rancie and Kenneth Rogoff (2009) found that real exchange rate volatility can have a significant impact on productivity growth. However, the effect depends critically on a country’s
level of financial development. The results appear robust to time window, alternative measures of financial development and exchange rate volatility, and outliers. They also offered a simple monetary growth model in which real exchange rate uncertainty exacerbates the negative investment effects of domestic credit market constraints.

**Thomas Munthali, Kisu Simwaka and MacDonald Mwale (2010)** focused on the impact of real exchange rate on savings rate and economic growth. They explored the savings transmission mechanism through which such a link can take place in the country. Their results showed that real effective exchange rate (REER) volatility has adverse effects on economic performance. Contextually, an appreciated REER is significantly and positively correlated with economic growth, reflecting Malawi’s net-importer position. On the other hand, REER volatility is significantly and negatively correlated with growth, reflecting investors’ preference for a stable exchange rate. With regard to savings, they found that appreciation of the REER (or nominal exchange rate) would encourage savings. They also found that devaluation of the REER has an insignificant effect on economic growth in the long-run. The negative impact of real exchange rate volatility on economic growth suggests that eliminating real exchange rate volatility can have strong growth-enhancing effects.

**Ping Hua (2011)** estimated by using the Generalized Method of Moments (GMM) system estimation approach and panel data for the 29 Chinese provinces and over the period from 1987 to 2008. The results showed that the real exchange rate appreciation had a negative effect on the economic growth, higher in coastal than in inland provinces, contributing to a minimizing of the gap of GDP per capita between two kinds of the provinces. They showed moreover that the real exchange rate appreciation have negative effects on employment.
To conclude the impact of exchange rate on economic growth we can say the results are heterogenous in nature. There is no homogeneity in the results of the various researchers. Their findings suggest that the relationship between the exchange rate and economic growth is sometimes positive in nature, sometimes negative and even sometimes there exists no relationship between the two. As found by the Sebastian Edwards that effect of devaluation leads to output reduction but it is a short-run phenomenon. Iqbal Mahmood and Syed Zulfiqar Ali found that exchange rate volatility has positive impact on GDP. Contrary to Sebastian Edwards, Lee-Lee Chong and Hui-Boon Tan found that there exist long-run co-movement between exchange rate and economic growth. Again the contradiction to Iqbal Mahmood and Syed Zulfiqar Ali, Thomas Munthali, Kisu Simwaka and Mac Donald Mwale found negative impact of real exchange rate volatility on economic growth.

SECTION 2.2

2.2 EXCHANGE RATE AND INFLATION:

R.N. Aggarwal (1998) found that exchange rate in India had not been fully floated until the financial year 1992-93. Even after this the exchange rate market has required intervention on many occasions by RBI that sold US dollars in the spot and forward markets. Based on the theoretical foundations, alternative single equation models have been used to describe the behaviour of the nominal bilateral exchange rate between India and USA over the time period 1971-72 to 1996-97. The regression results seem to be quite satisfactory in terms of all the econometrics properties and expected signs of coefficients of the variables. Prices, interest rates and money supply in the home and foreign country were found important variables to explain the behaviour of the bilateral exchange rate. Other significant variables found all BOP items such as current and capital account balances and foreign exchange reserves. The results based on the 2 SLS method of estimation showed that the endogenous variables considered are highly correlated with each other. The exchange rate is found to
be determined by the domestic price index with a positive coefficient. The results showed that the model can be used for forecasting the exchange rate in the short run.

Hakan Berument and Mehmet Pasaogullari (2003) assessed the effects of real depreciation on the economic performance of Turkey by considering quarterly data from 1987 Q1 to 2001 Q3 using Granger Causality test. The empirical evidence suggested that the real depreciations are contractionary even when external factors like world interest rates, international trade, and capital flows are controlled. The results obtained from the analyses indicated that real exchange rate depreciations are inflationary.

Glenville Rawlins (2005) used quarterly data for period 1970-2004 for a group of eleven Caribbean and Central American countries. After a Unit Root Test it establishes the non-stationarity of almost all variables. He employed the Johanssen Cointegration technique, to investigate the existence of a stable long term relationship between current inflation differentials and the bilateral nominal exchange rate for each country, and four of the major industrial nations. The results are generally strong, with cointegration being confirmed in most cases. The implication of this result is that developing countries that implement policies to promote low and stable inflation levels gain increased leverage over their exchange rate.

Magda Kandil and Ida Mirgzair (2005) examined the effects of exchange rate fluctuations on real output and prices in sample of 33 developing countries for the period 1971-2000. The theoretical model decomposes movements in the exchange rate into anticipated and unanticipated components. Unanticipated currency fluctuations determine aggregate demand through exports, imports and the demand for domestic currency, and determine aggregate supply through the cost of imported intermediate goods. Anticipated exchange rate depreciation, through the supply channel has limited effects on output growth and price inflation. Unanticipated currency fluctuations appeared more
significant with varying effects on output growth and price inflation across developing countries.

Jean-Claude Maswana (2006) investigated using a variant of the Granger non-causality test for using monthly data from January 1990 to September 1996 examine the interaction between inflation and the exchange rate in the Congo. The findings indicate that the Granger causality between inflation and the exchange rate is bidirectional in the short run, but in the long run only exchange rate causes inflation without a feedback effect. The estimation results point to three major policy considerations: an exchange rate-based stabilization plan, a temporary fixed-exchange regime that should gradually shift towards a more flexible exchange rate regime in the medium term, and a wide range of fiscal and macroeconomic reforms.

Nguyen Thi Thuy Vinh and Seiichi Fujita (2007) examined the impact of real depreciation on economic performance in Vietnam for period January 1992 to April 2005 using VAR approach. The study showed that a real devaluation has positive impact on both output and inflation. The devaluation shock may affect inflation and output growth via raising money supply and improving trade balance. However, the real exchange rate changes do not have significant effect on output in long run.

Jarita Duasa (2008) examined the significant impact of exchange rate shock on prices of Malaysian imports and exports. He adopted Vector Error Correction (VECM) Model using monthly data of nominal exchange rates, money supply, prices of imports and prices of exports covering the period of M1 : 1999 to M12 : 2006. For further analysis, he adopted an innovation accounting by simulating variance decompositions (VDC) and impulse response functions (IRF). VDC and IRF serve as tools for evaluating the dynamic interactions and strength of causal relations among variables in the system. IRF is used to calculate the exchange rate pass-through on import prices and export prices. The findings indicated that, while the exchange rate
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official rate, while the import ratio in the economy shows a near two-way balance causality with the consumer price index.

Ramiz ur Rehman, Muhammad Ateeq ur Rehman and Awais Raoof (2010) investigated the relationship between inflation, interest rates and exchange rates in UK and Pakistan by taking monthly data for the year 1994-2009. A Multiple Regression Model is applied to check the relationship of inflation and interest with exchange rate. Results showed that a significant but positive relation is found between inflation and exchange rate while a negative and significant relation is found between interest rate and exchange rate.

Victor Pontines (2011) examined the issue on whether countries that target inflation systematically experience higher exchange rate volatility by using Treatment Effects Model. He examined this impact on 22 industrial and 52 developing countries for the period 1985 to 2005. The analysis indicated that nominal and real exchange rate volatility are both lower in inflation targeting countries than countries that do not target inflation. More importantly, the analysis also suggested that developing countries that target inflation have lower nominal and real exchange rate volatility than non-inflation targeting developing countries.

B Imimole, A Enoma (2011) examined the impact of exchange rate depreciation on inflation in Nigeria for the period 1986–2008, using Auto Regressive Distributed Lag (ARDL) Cointegration Procedure. The research found that exchange rate depreciation, money supply and real gross domestic product are the main determinants of inflation in Nigeria, and that Naira depreciation is positive, and has significant long-run effect on inflation in Nigeria. This implies that exchange rate depreciation can bring about an increase in inflation rate in Nigeria. They also found that inflationary rate in Nigeria has a lagged cumulative effect. Therefore they conclude that although Naira depreciation is relevant in ensuring an improvement in the production of
exportable commodities, it must not be relied upon as a potent measure for controlling inflation in Nigeria.

Niloufer Sohrabji (2011) examines the relation between exchange rates and prices in India over three periods, 1975-1986, 1992-1998 and 1999-2010. A Vector Autoregression (VAR) model of oil prices, food prices, output gap, exchange rates, consumer prices and interest rates is estimated for each period. The results showed that there is incomplete Exchange Rate Pass Through (ERPT) and exchange rates are not the biggest determinant of price variation. However, exchange rates have played an increasingly important role over the sample period.

Siok Kun Sek, Cheau Pian Ooi and Mohd. Tahir Ismail (2012) conducted investigation on the relationship between exchange rate and inflation targeting regime in the three developed and three emerging Asian economies i.e. Korea, Philippines, Thailand, Norway, Sweden and UK for the period 1960 to 2010 that have adopted inflation targeting (IT) regime. Using a multivariate GARCH model under bivariate specification, they investigated if exchange rate affect the performance of IT and the performance of IT is compared between Asian and European economies. The comparison is made in terms of changes in economic structure and the disinflation cost. The results showed significant correlation between exchange rate movements and inflation and output movements. IT also has significant impacts on the movements of inflation, output and exchange rate. IT leads to higher volatility in exchange rate movement in majority economies. Comparing the performance of IT across economies, they observed that the volatility in exchange rate has increased dramatically and is very volatile in Asian compared to the developed economies. The decline in inflation impulse is larger in Asia than in developed economies.

The studies taken for review for the impact of exchange rate on inflation rate gives the mixed opinion. Hemant Berument and Mehmet Pasaogullari
found in his study that real exchange rate depreciation is inflationary. Jean-
Claude Maswana found that there is bidirectional granger causality between
inflation and exchange rate in short-run but in the long-run only exchange rate
causes inflation without a feedback effect. Noer Azam Achsani and et. al.
studied this relationship for Asia and found that there is a significant one-way
causal relationship. Pahran Adrangi and et. al found that there is non-linear relationship between exchange rate and inflation rate.
Adetiloye, Kehinde Adekunle and Ramiz ur Rehman and et. al. in their
respective studies found significant positive relationship between exchange rate
and inflation rate.

SECTION 2.3

2.3 EXCHANGE RATE AND TRADE OPENNESS:
Prabirjit Sarkar (1995) examined the behavior of trade, prices and exchange
rate based on time series data between 1991- 1994 for Indian economy. By
taking monthly data he fitted a log-linear regression through ordinary least
square (OLS). To check any higher order serial correlation in the residuals he
considered on autoregressive errors process up to second order i.e. Auto-
Regressive of order 2. By taking June 1988 as base year and using intercept
and slope dummies in log linear trend equation he checked any trend break in
new economic period. The first difference (multiple) regression equation is
fitted to examine the relation between different exchange rate series, export,
import and BOP. The study concluded that trend growth in exports and imports
in the current liberalization is actually a continuation of that of earlier period.
There is no direct influence of exchange rate on dollar value of trade. This
study questions the effectiveness of exchange rate policy as an instrument of
trade policy.
A. C. Arize (1995) obtained and interpreted new estimates of the short- and
long-run influence of exchange-rate volatility (or risk) on the import flows of
the United States, in the generalized floating exchange-rate period. The major
finding is that there is a significant long-run negative effect of exchange-rate
volatility on the volume of imports, as well as, a significant short-run negative effect. Therefore, it can be argued that exchange-rate volatility will have significant effects on the allocation of resources by market participants and that policy-makers can no longer rely on an import demand with only conventional variables for long-term international trade planning, forecasting and policy formulation.

Prabirjit Sarkar (1997) examined the exchange rate behaviour on the basis of time series data of Indian rupee and trade during 1991-96. Using simple regression analysis he showed that the depreciation of rupee had no favourable effect on exports while imports accelerated. Due to exchange rate failure to control inflation vis-à-vis India’s trading partners, the real (effective) exchange rate of the rupee vis-à-vis dollar appreciated inspite of substantial depreciation of normal effective exchange rate.

Tilak Abeysinghe and Tanlin Yeok (1998) showed empirically, the significance of exchange rate depreciation and productivity improvement in affecting the competitiveness of Singapore’s exports. Specifically, they showed that in the presence of high import content, exports are not adversely affected by currency appreciation because the lower import prices due to appreciation reduce the cost of export production. In the case of Singapore, this cushioning effect outweighs that of the effect of productivity gains on export competitiveness. The service exports, however, with a very low import content tend to suffer from currency appreciation.

Augustine C. Arize, Thomas Osang and Daniel J. Slottje (2000) investigated empirically the impact of real exchange rate volatility on the export flows of thirteen less developed countries (LDC's) over the quarterly period 1973-1996. Estimates of the cointegrating relations are obtained using Johansen's multivariate procedure. Estimates of the short-run dynamics are obtained for each country using the error-correction technique. The major results showed that increases in the volatility of the real effective exchange rate, approximating exchange-rate uncertainty, exert a significant negative
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effect on export demand in both the short-run and the long-run in each of the thirteen LDC's.

Sharma Kishore (2000) used annual data for 1970-98 and investigated the determinants of exports performance in India in a simultaneous equation framework. Results suggested that demand for Indian exports increases when its export prices fall in relation to world prices. Furthermore, the real appreciation of the rupee adversely affected India's exports. Export supply is positively related to the domestic relative price of exports and higher domestic demand reduces export supply.

Dr. Hasan Vergil (2001) investigated the impact of real exchange rate volatility on the export flows of Turkey to the United States and its three major trading partners in the European Union for the period 1990-2000. The standard deviation of the percentage change in the real exchange rate is applied to measure the exchange rate volatility. Cointegration and error-correction models are used to obtain the estimates of the cointegrating relations and the short-run dynamics, respectively. The results obtained by him, on the whole, provide evidence that the real exchange rate volatility has a significant negative effect on real exports.

Christopher F. Baum, Mustafa Caglayan and Neslihan Ozkan (2001) empirically investigated the impact of exchange rate volatility on real international trade flows utilizing a thirteen-country dataset of monthly bilateral real exports for 1980-1998 by using GARCH model. They computed one-month-ahead exchange rate volatility from the intra-monthly variations in the exchange rate to better quantify latent variable. They found that the effect of exchange rate volatility on trade flows is nonlinear, depending on its interaction with the importing country’s volatility of economic activity.

Gerardo Esquivel and Felipe Larrain B. (2002) described G-3 exchange rate volatility and evaluates its impact on developing countries. They presented empirical evidence by using regression analysis by taking data for 1973 to 1999
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showing that G-3 exchange rate volatility has a robust and significant negative impact on developing countries' exports. A one percentage point increase in G-3 exchange rate volatility decreases real exports of developing countries by about 2 percent, on average. G-3 exchange rate volatility also appears to have a negative influence on foreign direct investment to certain regions and increases the probability of occurrence of exchange rate crises in developing countries. These results implied that greater stability in the international exchange rate system would help improve trade and FDI prospects for developing countries and would help prevent currency crises.

Giancarlo Gandolfo and Givlio Nicoletti (2002) analysed whether trade openness is an endogenous or exogenous variable related to real exchange rate volatility for ten OECD countries for the period 1975-1998. They examined the causal relation between REER volatility and trade openness by using GARCH model that are more consistent and found that trade openness is an endogenous variable related to real exchange rate volatility.

Christian Broda and John Romalis (2003) developed a model of international trade in which international trade depresses real exchange rate volatility and exchange rate volatility impacts trade in products differently according to their degree of differentiation. In particular, commodities are less affected by exchange rate volatility than more high differentiated products. These insights allow them to simultaneously identify both channels of causation, thereby structurally addressing one of the main shortcomings of the existing empirical literature on the effects of exchange rate volatility on trade. Using disaggregate trade data for a large number of countries for the period 1970-1997 they found strong results supporting the prediction that trade dampens exchange rate volatility. In particular, the estimated effects of currency unions on trade are reduced from 300 percent to be between 10 and 25 percent.
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Augustine C. Arize, John Malindretos and Krishna M. Kasibhatla (2003) investigated the impact of exchange rate volatility on the export flows of ten developing countries over the quarterly period of 1973-78. The econometric analysis gives the theory of cointegration, relations are obtained using Johansen's multivariate procedures. Short-run dynamic modeling is accomplished using the error-correction technique. In conformity with the theoretical considerations, the results indicate that increase in the exchange rate volatility exert a significant negative effect upon export demand in both the short-run and long-run in most of the countries studied.

Khalid Mustafa and Mohammad Nishat (2004) investigated the effect of exchange rate volatility on exports growth between Pakistan and leading trade partners. The selected countries determine the bilateral relationship between Pakistan and the other countries under various regional economic blocks such as SAARC, ASEAN, European and Asia-Pacific regions. They used cointegration and Error correction techniques to establish the relationship between exchange rate volatility and exports growth, using quarterly data from 1991 Q3 to 2004 Q2. Their results indicate that the volatility of exchange rate has negative and significant effects both in the long run and short run with major trade partners namely UK and US. The relationship between exports growth and exchange rate volatility for India and Pakistan is observed only in long run perspective. However, of countries like New Zealand and Malaysia no relationship is observed between export growth and exchange rate volatility.

Silvana Tenreyro (2007) analyzed the impact of nominal exchange rate variability on trade flows. He proposed a novel approach that simultaneously addresses all of the systematic biases, and present new estimates from a broad sample of countries from 1970 to 1997. The study uses Poisson regression. The estimates indicate that nominal exchange rate variability has no significant impact on trade flows.
Dua Pami and Sen Partha (2007) examined the relationship between the real exchange rate and level of capital flows, volatility of the flows, fiscal and monetary policy indicators and the current account surplus for the Indian economy for the period 1993 Q2 to 2004 Q1. The estimations indicated that the variables are cointegrated and each granger causes the real exchange rate, in descending order of importance include net capital inflows and their volatility (jointly), Govt. expenditure, current account surplus and the money supply.

M. Sabuhi-Sabouni and M. Piri (2008) studied the effects of short and long run fluctuations of exchange rate on saffron export price by using Auto regressive Distributed Lag Model (ARDL) on Iran for the period. Their results showed that the fluctuations of exchange rate have affected Saffron export price more than other variables under study. The effect of exchange rate and quantity of export, on saffron export price was positive and significant in long run. Furthermore there was not significant relationship between export price and domestic production of saffron.

Dr. Shri Prakash and Ms. Rekha Sharma (2009) studied that exchange rate has fluctuated a lot from 1990-91 to 2007-08, though the fluctuations lied outside the range of stability for four years of the study period. Indian rupee has depreciated by nearly two thirds of its value in the base year. Fall in the value of rupee has induced exports to rise ahead of income. But import bills have not been affected significantly by depreciating value of rupee, indicating positively sloped demand curve for imports. Results of decomposition model of export earnings and import bills show the pivotal role of change in exchange rate, though the quantitative dimension is relatively more important in imports than exports.

Alicia Garcia – Herrero and Tuuli Koivu (2009) showed that China's trade balance is sensitive to fluctuations in the real effective exchange rate of the renminbi by taking data from 1994 to 2005. However, the current size of the trade surplus is such that exchange rate policy alone will probably not be able
to address the imbalance. The potential reduction in the trade surplus resulting from an increase in the renminbi exchange rate is limited mainly because Chinese imports do not react as expected to a renminbi appreciation – they tend to fall rather than increase. By estimating bilateral import equations for China and its major trade partners, they found that the reaction for imports is generally confirmed for China’s trade with Southeast Asian countries. That result might be attributable to Asia’s vertical integration, as a large share of Chinese imports from Southeast Asia is re-exported. They also found that total exports from a number of Asian countries react negatively to a renminbi appreciation, which points to a dependence of Asian countries exports on those of China.

Refayet Alam (2010) aimed to see whether there is any contribution of real exchange rate depreciation of Taka to export earning of Bangladesh for the period 1977-2005. All the macroeconomic series used are non-stationary, integrated at order one but not cointegrated. This is why the Granger Causality has been tested by Vector autoregressive (VAR) model using the first difference forms of the series as suggested by Granger (1980, 1986, 2000) and Ben-Zion et.al. (1996). The finding shows no causality runs from real depreciation of Taka to export earning of Bangladesh. This finding substantiates among others the necessity of sub-sector-wise analysis of depreciation – export relation, comparing the effectiveness of various incentives policies for various sub-sector of export, increasing the share of local commodities in exportable sector.

Results of relationship between exchange rate and trade openness are also mixed. There is no unanimity in the results of various studies undertaken. Sarkar found that there is no direct influence of exchange rate on dollar value of trade. Contrary to his study A.C Arize found significant long-run negative effect of exchange rate volatility on the volume of imports and short-run negative effect. Christopher F. Baum et. al. found effect of exchange rate volatility on trade flows is non-linear. Stable exchange rate improves trade as
found by Gerardo Esquivel and B. Felipe Larrain. Christian Broda and John Romalis found that trade dampens exchange rate volatility. Some researchers are of the view that only real exchange rate volatility impacts trade but nominal exchange rate variability has no significant impact on trade flows.

SECTION 2.4

2.4 EXCHANGE RATE AND FOREIGN DIRECT INVESTMENT:

Sharma Kishore (2000) found increasing inflows of FDI in 1970-98 by using Simultaneous equation framework. There has not been any attempt to assess its contribution to India's export performance one of the channels through which FDI influences growth. Foreign investment appears to have statistically no significant impact on export performance although the coefficient of FDI has a positive sign.

Holger Görg and Katharine Wakelin (2001) examined the impact of the level of the exchange rate, volatility in the exchange rate and exchange rate expectations on outward US FDI in twelve developed countries and inward FDI to the US from those countries for the period from 1983 to 1995 by using OLS method. In their empirical analysis they found no evidence for an effect of exchange rate variation on either US outward investment or inward investment in the US. This result is robust to the two measures of FDI used – financial flows from the parent and Multinational Enterprises (MNE) sales abroad – the choice of either outward or inward FDI, and a number of different estimation procedures. As regards the level of the exchange rate they find a positive relationship between US outward investment and appreciation in the host country currency while there is a negative relationship between US inward investment and appreciation in the dollar.

Matteo Iannizzotto and Nigel J. Miller (2002) assessed the impact of the level and variability of the exchange rate on the flow of foreign direct
investment into the United Kingdom from 1997 to 2000 by using Poisson Regression. They used an original database consisting of firm level announcements of investment recorded and compiled by Ernst & Young, focusing on the case of the manufacturing and energy sectors. It is shown that appreciation of sterling is strongly related to decline in FDI flows into the UK. According to their study no conclusive evidence is found for the effect of exchange rate volatility on FDI.

**Elijah Udoh and Festus O. Egwaikhide (2008)** examined the effect of exchange rate volatility and inflation uncertainty on Foreign Direct Investment in Nigeria. The investigation covers the period between 1970 and 2005. Exchange rate volatility and inflation uncertainty were estimated using the GARCH model. Estimation results indicated that exchange rate volatility and inflation uncertainty exerted significant negative effect on Foreign Direct Investment during the period. The results showed that infrastructural development, appropriate size of the government sector and international competitiveness are crucial determinants of FDI inflow to the country. This enquiry supports the commitment of policymakers to exchange rate and macroeconomic stability as key to FDI boom in Nigeria.

**Dr Paz Estrella Tolentino (2008)** examined the relationships between several home country-specific macroeconomic factors and the level of the outward FDI of China and India using multiple time-series data from 1982 to 2006 and from 1980 to 2006, respectively. With the use of a vector autoregressive model assessing the causal relationships of the endogenous variables, the empirical research proves that Chinese national characteristics associated with income per capita, openness of the economy to international trade, interest rate, human capital, technological capability and exchange rate volatility do not Granger cause the level of outward FDI of China. By contrast, the national technological capability of India Granger causes their level of outward FDI. The level of outward FDI of China does not Granger causes any of the home
country-specific macroeconomic factors considered, while the level of outward FDI of India Granger causes their national interest rate.

Abdur Chowdhury and Mark Wheeler (2008) examined the impact of shocks to exchange rate uncertainty (volatility) on Foreign Direct Investment (FDI) in Canada, Japan, the United Kingdom, and the United States for the period 1971 Q1 to 1991 Q1. The analysis is conducted using vector autoregressive models that contain the price level, real output, the real exchange rate, the volatility of the real exchange rate, the interest rate, and FDI. The results from variance decompositions yield public policy implications. In Canada, Japan, and the United States, innovations to exchange rate uncertainty explain significant portions of the forecast error variance in FDI at longer time horizons. The impulse response functions indicate that, to the extent that shocks to exchange rate volatility have an impact on FDI, the impact is positive and takes place with a lag.

Eric Chege (2009) argued that large exchange rate volatilities may negatively affect inward FDI in emerging market economies because of the costs inherent in the volatility risk. Using data of exchange rate volatilities of the G-3 currencies (Euro, USD and Yen) from the period 1988-2007 across 26 emerging market economies, the panel analysis estimates that the volatilities of Euro-USD and Yen-USD have negative relations to inward FDI in emerging market economies.

Joseph D. Alba, Donghyun Park, and Peiming Wang (2009) examined the impact of exchange rates on Foreign Direct Investment (FDI) inflows into the United States in the context of a model that allows for the interdependence of FDI over time. Interdependence is modeled as a two-state Markov Zero-inflated Poisson (MZIP) model where the two states can be interpreted as either a favorable or an unfavorable environment for FDI in an industry. Unbalanced industry-level panel data from period 1982 to 1993 from the US wholesale
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Trade sector are used in the analysis and yield two main results. First, FDI is interdependent over time. Second, under a favorable FDI environment, the exchange rate has a positive and significant effect on the average rate of FDI inflows.

Omankhanlen Alex Ehimare (2011) dealt with the effect of Foreign Direct Investment on the Nigerian economy over the period 1980-2009. It helped to examine if the growth determining variables in the economy i.e. Balance on current account (BOP), inflation and exchange rate have any effect on Foreign Direct Investment. OLS models were developed to investigate the relationships between the exchange rate, inflation rate and foreign direct investment. Based on the data analysis it was discovered that foreign direct investments have positive and significant impact on current account balance in Balance of Payment. While inflation was seen not to have significant impact on foreign direct investment inflows. The exchange rate has positive effect on foreign direct investment.

Most of the studies undertaken found that there exists significant positive relationship between exchange rate and Foreign Direct Investment. On the other hand some are of the view that there exists negative relationship between the exchange rate and FDI. Some researchers even found no relationship between exchange rate and FDI.

SECTION 2.5

2.5 EXCHANGE RATE REGIME:

Bacchetta Philippe and Wincoop Van Eric (1999) studied the effect of exchange rate system on trade and welfare for the European countries. The results of this study are:

1. Exchange rate stability is not necessarily associated with trade. It is consistent with most of the evidence that trade is unaffected by the exchange rate system.
2. Both trade and welfare can be higher under either of the exchange rate systems (fixed or floating), depending on preferences and on the monetary policy rules followed under each system.

Laura Alfaro (2002) tested Romer’s (1993) extension of Kydland and Prescott’s (1977) predictions on dynamic-inconsistency problems with regard to open economies. In a panel data set, he found that openness does not seem to play a role in the short run in restricting inflation, but a fixed exchange-rate regime plays a significant role. This result is robust to the use Reinhart and Rogoff’s (2002) exchange rate regime classification. If the openness-inflation relationship arises from the dynamic inconsistency of discretionary monetary policy, the relationship is weaker in countries with fixed exchange-rate regimes.

Haizhoh Huang and Priyanka Malhotra (2004) stated that the choice of exchange rate regime remains an important issue not only in international finance but also in development economics. The literature has attempted to identify the most appropriate regime by examining the effect of regime choice on various macroeconomic and financial variables, but neither has been able to provide a conclusive answer. The researchers paid special attention to effects of the level of development and use the new classification of de facto exchange rate regime by Reinhart and Rogoff (2004) to investigate the relationship between the choice of regime and the subsequent economic growth rate for developing Asian and advanced European countries. They discovered two interesting regularities. First, for advanced European countries, the choice of regime does not seem to affect the rate of economic growth or its variability, although more flexible exchange regimes are associated with slightly higher growth rates. Second, for developing and emerging Asian economies, the choice of regime does affect the economic growth rate non-linearly managed float outperforms other regimes – but do not affect the variability of growth. Their findings suggested that how the choice of exchange rate regime affects
economic growth critically depends on the level of development of that economy.

Ila Patnaik and Ajay Shah (2008) found China and India have both sought control over the exchange rate in order to maintain export competitiveness, manage current account balance, and pursue independent monetary policy. They examined structural change in the Chinese and Indian de facto exchange rate regimes, focusing on the period from 1998 to 2007. With increasing capital account openness, exchange rate inflexibility has been associated with significant monetary policy distortions. In both countries, the short-term rate expressed in real terms dropped and achieved very low values, in the unprecedented business cycle expansion of the early 2000s.

Ramkishen S. Rajan (2010) discussed the de jure or official exchange rate regimes in various developing and emerging Asian economies. It then goes on to offer a simple empirical estimation of the degree of influence of the G3 currencies in selected Asian currencies over the past decade. He found some evidence of evolution of Asian exchange rate policies toward an apparent “fear of appreciation” rather than “fear of floating” per se. The broader point though is a general reluctance of many Asian economies to allow for a benign neglect of their currencies both in terms of managing volatility as well as in terms of leaning against the wind.

Besnik Fetai and Izet Zeqiri (2010) investigated the relative costs and benefits associated with introducing a more active monetary and a different exchange rate regime in the Republic of Macedonia. The econometrics result showed that introducing a more active monetary policy and a different strategy of the exchange rate targeting in order to promote rapid economic growth could easy disturb macroeconomic stability (after having achieved it at a substantial cost) without any significant economic benefits. Therefore, introducing a more active monetary policy and a different strategy of the exchange rate regime is likely to incur more costs than benefits, since changes of the monetary policy
and exchange rate regime type do not show a persistent effect on real GDP, while changes of money stock and exchange rate regime do show a strong and persistent effect on prices level.

From above, it is clear that the choice of exchange rate regime is still a debatable issue. Bacchetta Philippe and Wincoop Van Eric suggested that trade can be higher under either of the exchange rate systems depending on preferences and on the monetary policy rules followed under each system. On the other hand Haizhoh Huang and Priyanka Malhotra found in their study that choice of exchange rate regime affects economic growth critically depends on the level of economic development of that economy. Exchange rate regimes are often associated with the fear of instability especially for the Asian economies as found by Ramakishan S. Rajan. He found that Asian exchange rate policies have apparent “fear of appreciation” rather than “fear of floating”.

Concluding Observations:

The empirical studies under observation revealed that the debate on choice of exchange rate regime is inconclusive. There is no consensus in the studies mentioned above. Bacchetts Philippe and Wincoop Van Eric (1999) in their study found that trade can be higher under either of the exchange rate systems depending on preferences and on the monetary policy rules followed under each system. Some of them viewed that choice of exchange rate regime affects economic growth critically depends on the level of development of that economy. Therefore, in a nutshell, we cannot reach a final conclusion on the issue that which type of exchange rate regime is good for a country’s development.

Regarding the relationship between the exchange rate and economic growth the results are also inconclusive. Iqbal Mahmood and syed Zulfiqar Ali (2007) found that exchange rate volatility has positive effects on GDP on the other hand Thomas Munthali, Kisu Simwaka and Mac Donald Mwale (2010) found that there is negative impact of exchange rate volatility on economic
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growth. There is even no clear conclusion about whether the relationship between exchange rate and economic growth exist in short-run or long-run.

Lot of research has been done on the impact of exchange rate on trade openness. The results do not indicate a clear vision about the impact of exchange rate on trade openness. We cannot conclude that the relationship between exchange rate and trade openness is unidirectional, bidirectional or any relationship exists.

Many studies found that the relationship between exchange rate and foreign direct Investment (FDI) is positive but at the same time some studies also found negative and no relationship between exchange rate and FDI. Thus, there is quite varied opinion on the relationship between exchange rate and FDI.

Although there is lot of literature available on the impact of exchange rate on inflation rate yet there is lot much scope of research in India. Very few studies have been done on the relationship between exchange rate and inflation rate. The available literature on relationship between exchange rate and inflation rate is inconclusive.

The present study undertakes the impact of exchange rate on economic growth, trade openness, FDI and inflation rate. The present study examines all the variables and also throws light on the exchange rate regime in the pre-reform period. Keeping in view the gaps in various studies undertaken, present study aims to examine selected variables.