

Predictions & Exchange Rate Dynamics

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Abstract

The purpose of this study is to explore the behavior of exchange rates in five SARRC economies; namely Pakistan, India, Nepal, Bangladesh and Sri Lanka. Link between macroeconomic fundamentals and exchange rates has been investigated using ordinary least square method to test the explanation power of predictors, to explore the integration Johansen's co-integration test has been implied and granger causality test has been used to test the casual relationship.

However, regression analysis proves that economic variables are not senseless, whereas Johansen co-integration technique affirm the existence of long run relationship between exchange rate and macro-economic variables. Vector Error Correction Mechanism has been applied to gauge the speed of adjustment in relationship between exchange rate and macroeconomic fundamentals.

Thus Pakistan and Sri Lanka aid the transmission channel of portfolio balance approach in the short run, while India supports the transmission channel of traditional approach toward relationship between macroeconomic variables and currency market. Though, in macroeconomic variables and currency exchange rates a feedback relationship has been measured, while analyzing Nepal and Bangladesh. This empirical research specifies that in scheming of exchange rate policies, causation must be a compulsory constituent. Then the relation of macroeconomic variables and exchange rates should also be considered by risk management process. The result of this research suggests that in long run these macroeconomic variables are controlled by the policy recommendations given by the regulators, but the instability of exchange rate is hard to be restricted or controlled by these macroeconomic variables policies.

Introduction

Contemporary trends of emergence of new capital and financial markets, adoption of flexible exchange rates approaches, the relaxation of foreign capital and concentration of foreign investors grasp the intension of practitioners and academician researchers to study the Dynamic of foreign exchange rates and fundamental economic variables. The gradual eradication of foreign exchange controls in under developing economies has extended the opportunities for portfolio diversifications in international financial and capital markets. At the same time, under developed economies opted for flexible exchange rates approaches in late 1990's and in early 20th century boosted the volatility in foreign exchange rates and the risk associated with foreign exchange markets. Currency denomination preferences have added the crucial facet to the overall portfolio decisions. This study investigates the dynamic of currency exchange rates and macroeconomic variables, underpinning economic determinants of nominal exchange rates while predictive capacity of exchange rate models in five SAARC economies. These are Pakistan, Bangladesh, India, Sri-Lanka and Nepal.

Are economic fundamental concepts based styles of currency trading costs strong enough to defeat a simple and naïve autoregressive exclusive shift design or not? A variety of studies have shown that risky activities in average

currency trading costs are apparently confusing by macroeconomic factors alone. Models according to macroeconomic fundamental concepts, have almost never forecast come back quantity and now experts are moving towards exclusive shift styles. "Whether fundamentalists or chartist can better describe come back quantity movement" is a question, which is still unresponded to in the materials of worldwide finance. In this study, in the sample forecasting overall performance of four different styles has been compared to that of traditional standard exclusive shift design (RWM) of comeback quantity. These styles contain three economical models; namely Purchasing power parity (PPP), Interest rate parity (IRP), adhoc design and one additional design i.e. autoregressive included going frequent (ARIMA) design.

The objectives of this study are: -

Practical Objectives:

- Understanding the dynamic linkages between currency exchange rates and macroeconomic variables, this understanding will also facilitates the national as well as multinational organizations to manage their foreign exchange exposure?
 - Portfolio investors can use this information in to order hedge or speculate their returns on foreign investments.
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- Regulatory authorities can ensure the pre-cautionary measures to save their markets from financial crises.

Theoretical Objectives:

- To determine the nature of casual relationship between macroeconomic variables and currency markets exchange rates of SAARC Economies.
- To find the common determinants of nominal exchange rates of sample economies.
- To determine the predictive capacity of different exchange rate models based on economic fundamentals and their comparison with Chartism based models.

Problem Statement

The dilemma is that whether currency exchange rates and macroeconomic variables are linked or not? This association succeeded to grasp the substantial attention subsequent to East Asian Financial Crises. Throughout the crises phase, affected countries saw precariousness in macroeconomic variables and currency markets. If there is any association between currency exchange rates and economic variables and if currency exchange rates cause economic variables then regulatory authorities can prevent or control the crises in macroeconomic variables by controlling the exchange rates. Furthermore, developing economies can take advantage of this association to attract the foreign portfolio investments into their home countries. On the other hand, if the economic variables cause the currency exchange rates, it will be a sign of why the regularity authorities should have to focus on the domestic policies to stabilize the economic variables. If the association between currency exchange rates and economic variables is documented, it will facilitate the investors to use such information to predict the performance of one market on the basis of information regarding the other market.

Research Question

This research study makes an effort to answer the following research questions.

- Is there any long-run association between foreign currency exchange rates and economic variables in sample economies?
- Has this association changed in the current era following the opening of macroeconomic variables to foreign investors?
- Is there any effect of Asian currency financial crisis of 1997 on this association between the currency markets and macro-economic variables?
- What is direction of causality between this relationship and what are the consequences and modes of transmission of shocks?

Answers to these questions have policy implications for the implementation of exchange rate and foreign exchange control policies.

Significance of Study

This research study contains the aspects of uniqueness in its nature because; **Firstly**, this study will explain the dynamic association between currency exchange rate markets and macroeconomic variables in short and long-run. **Secondly**, this study will elaborate the conventional factors which

determine the Nominal Exchange Rates (NER) in sample economies i.e. Pakistan, Bangladesh, India, Sri-Lanka and Nepal. **Thirdly**, we will try to draw a comparison between the estimated economic performances against the autoregressive exchange rate models. **Fourthly**, the span of this research study is not restricted to one country; this study will facilitate the policy makers and regulatory authorities as well as the top level management of the SAARC economies for designing their policies and decision making for the wealth maximization of stakeholders at the regional and at the country level. **Fifthly**, the study will make a comparison between predictive capacity of economic models against the random walk model and autoregressive integrated moving average model.

Literature Review

In literature, Franck and Young (1972) were the first, who documented the empirical study and tried to determine the relationship between currency exchange rates and fundamental macroeconomic variables. On the basis of their analysis of six different nominal exchange rates, they concluded and documented arguments in the favor of asset approach or reject the portfolio and traditional approach because their study rejects or neglects that there might be any association between currency exchange rate and macroeconomic variable.

The phenomenon of globalization increases the speed of association and interaction or interconnectedness of financial institutions and world financial markets with domestic markets. Thus the share of foreign investors dramatically has been increased in local markets. While share of foreign investors in domestic markets has increased the susceptibility of impulsive capital outflow from local markets, it also put downward pressure on the home currency. Gazioglu (2005) documented that the notion of globalization has created the problem of Balance of Payment (BOP) and international debt for developing countries i.e. Turkey, Indonesia and Malaysia. Görmü (2001) conducted an empirical study on economic variables and currency exchange rates. On the basis of this conclusion, he documented that causation did not run from currency exchange rates to economic variables while contemporaneous association exists between currency exchange rates and macroeconomic variables.

Inter-connectedness of capital markets and financial institutions makes it more feasible for the foreign investors to enjoy the benefits of international diversification. Literature has documented that it is only possible if there is an inverse relationship among the macroeconomic variables. Currency exchange rate that gains on international investment may counterbalance. Theoretically, international diversification can only provide opportunities to international investors if the exchange rate risk is successfully hedged through joining the same currency zone (i.e. Euro) or by pegging. However it is only possible if there is an inverse relationship among economic variables. Aggarwal and Schirm (1992) studied the association between Dollar exchange rates and economic variable over the sample period 1974-1978, and results revealed that there is positive correlation between macroeconomic variables and Dollar exchange rates in the course of application of simple regression model, they documented that this

relationship is stronger in short-run as compared to that in the long-run. Observe that the deviation in Dollar exchange rate transforms the statement of financial position of MNCs by transforming the value of their assets and liabilities, therefore the value of firm's equity changes in proportion to Dollar exchange rates. He concluded and documented arguments in favor of the traditional approach.

In developing countries many researchers have studied the association between currency exchange rates and economic variables however their results concluded that there is no association between the two series. Therefore they documented the arguments in the favor of asset approach. Ratner (1996) studied the nature of relationship between U.S Dollar exchange rate and U.S economic variables through the co-integration technique. His studies failed to reject null hypothesis of co-integration and results revealed that there is no relationship between these two markets, so his results also supported the assets based approach. Ajayi and Mougoue (1996) studied the association between two financial markets on 6 industrialized economies, including Japan, Germany, Italy, France, Canada and Netherlands and supported the feedback relationship because their results revealed that there is a bi-directional relationship between two financial markets in short as well as over the long-run. They use the error correction mechanism as a tool for analysis. Nieh and Lee (2002) employed the Johansen's co-integration and Engle-Granger techniques and on the basis, of results they documented the arguments in favor of asset based approach, they did not succeed in establishing any significant relationship between macroeconomic variables and exchange rates over the long-run while they documented short-run significant relationship in G-7 economies.

Since the initiation of the Euro as a common mode of payment in 1999 by EEC, Multinational corporations enjoy the advantage of complete abolition of exchange rate risk hedging, although now international diversification was no longer possible because markets have direct relation (Kashefi 2006). Nshom (2007) studied the relationship between economic variables and currency exchange rates through the linear regression model on the macroeconomic variables. His study revealed that causation runs from economic variables to currency exchange rates for the sample countries. He expanded his study to explore if a few particular currencies might cause more risk to certain organizations as compared to others. With the application of lagged values tests, study explores that economic variables are undervalued and positively related to last day prices. In an empirical study that examines Turkish data from 1980-2006, Feridun (2007) investigated the determinants of currency crisis. This study fails to provide adequate explanation of current currency crisis in Turkey; however the symptoms of current currency crisis are different from traditional ones. Results of studies revealed the significant divergence from the literature of international finance. He justified his findings by stating that it was the period of financial liberalization of Turkey and globalization, which rendered the economies vulnerable against the changes global factors. Convergence of currency exchange rates is provision for configuration of great big economic unions like (European Union) EU. (Becker and Hall 2009) used the similar common factors approach to measure the convergence of exchange rate over monthly data in

European Monetary Union from 1970-2001. U.S Dollar was considered as reference currency during the study. Their study covered the different phases, breakdown of Bretton Woods System (BWS) 1971, establishment of European Monetary System (EMS) 1979 and crisis of 1992, which escorts towards the collapse of the European Monetary System (EMS). They fixed conversion model of local currency against the Euro 1991. Convergence of two series is only possible if these are exactly together. If Y and Z series are non-stationary in nature, then they might be tested by using the concept of co-integration. This is only feasible when both series are non-stationary. They predicted that absolute convergence is not possible for 12 member countries either for real or nominal exchange rates.

Research Methodology

To investigate the linkage between exchange rates and macro-economic variables of 5 SAARC economies namely Pakistan, India, Nepal, Bangladesh and Sri-Lanka, study use the monthly observations of exchange rate collected from the International Financial Statistics (IFS), International Monetary Fund (IMF), The period of analysis consist on the monthly observations started from January 1997 to December 2010 total number of observations considered in study is 168 in case of each sample economy. To investigation the determinants of nominal exchange of the sample economies, data of macroeconomic variables has been collected from the International Financial Statistics (IFS), International Monetary Fund (IMF). To measure the Relative Interest Rate (RIR) government bond yield has been employed. 10 years bond rate has been considered as proxy for United State Interest Rate. Relative Inflation Level (RIL) has been measured by using the Consumer Price Index (CPI) for the sample economies while the CPI of U.S is used as the base, because United States is consider as foreign country with respect to all the sample economies. However, foreign Term of Trade (TOT) is same for all the sample countries. The value of TOT is measured through dividing Total exports by Total imports prices, however the value of imports and exports are free on board (FOB). In addition to this, Values of Imports and Exports (Free on Board) has been used for the proxy trade restrictions. Investigation of dynamic linkage between Exchange Rate (ER) and macroeconomic variables; a case of five SAARC economies, two variables has been employed to test the relationship namely, Nominal Exchange Rate (NER) and Stock Indices of the sample economies. Macroeconomic variables has been measured in following manners

$$E_t = \text{Ln} (E. R_t) \text{-----} (3.1)$$

Whereas;

(E. R_t) is nominal exchange rate at the time **t**

$$RIR_t = \frac{i_t^f}{i_t^h} \text{-----} (3.2)$$

Whereas;

RIR_t is relative interest rate, while "**i_t^f**" is foreign interest rate or "**i_t^h**" is home interest rate for the time **t**.

Cassel (1916) documented the theory of purchasing power parity (PPP), if foreign and local price levels are given in real exchange rates, and the nominal exchange rate (S_t) are given then real exchange rate (RER) of economy can be calculated as:-

$$RER_t = S_t \left(\frac{I_t^f}{I_t^h} \right) \text{-----} (3.3)$$

By obtaining the natural log of the both sides of equation (3.3), the new equation can be written as:-

$$\ln(RER) = \ln(S_t) + \ln(I_t^f) - \ln(I_t^h) \text{-----} (3.4)$$

$$TOT_t^f = \frac{X_t^f}{I_t^f} \text{-----} (3.5)$$

Whereas; TOT_t^f , is representing foreign terms of trade, X_t^f foreign exports and I_t^f foreign imports.

This diverse of business limitations is constructed as follows

$$TR_t = \frac{Nominal\ GDP_t}{(Imports+Exports)_t} \text{-----} (3.6)$$

Whereas; TR_t is a trade restriction

$$T.B_t = \frac{(Exports-Imports)_t}{GDP_t} \text{-----} (3.7)$$

Whereas; $T.B_t$ is business stability and has been calculated as amount of moderate GDP. In regression situation, first change of above situation has been used. In this paper, sum

Results & Analysis

INSERT TABLE 1 HERE

Time series line graph illustrates the presence of unit root in the series over the analysis period from January 1997 to December 2010. If the figure is showing a continues tendency in rise or fall over the analysis time period, if there is consist increasing or decreasing trend then time series might be unit root in series. All figures representing the five economies illustrate that there is an increasing and deceasing trend in each case which gives an indication about the existence of unit root.

INSERT Graphical 1 & Table 2 HERE

ADF analysis opinions that stock robots of all sample countries contain level stationarity in them at level, as ADF analysis does not exceed 1% as well as 5% essential concepts. The same is strengthened by results of Phillips Perron evaluate on stock robots of all the five countries.

Results of Johansen's Co-Integration

Co-integration has been used to determine the economics of the sample, both the medium and long-term relationship between stock and money market. Granger causality test drive to see short term factors and Johansen co integration technique is used to measure the long-term relationships (Lee and Real, 2007). Johansen co-integration technique has been applied to equity indices at time delay of 1 to 4 with test data assuming a linear deterministic trend in the four economies of the exchange rate. But repeatedly Johansen co-integration tests and other assumptions found similar results.

INSERT Table 3 HERE

As likelihood ratio has not overtaken the 5% essential value or 1% essential value, therefore, Johansen co-integration reduces any co-integrating regards between currency trading interacting robots and currency trading interacting expenses

of capital account and financial account as percentage of Nominal GDP has been used as proxy of capital inflows.

$$N.K.I_t = \frac{KAB_t+FAB_t}{Nominal\ GDP_t} \text{-----} (3.8)$$

Whereas; $N.K.I_t$ is net capital inflow

$$K.A.B_t = \frac{Net\ Capital\ Account_t}{Nominal\ GDP_t} \text{-----} (3.9)$$

Whereas; $K.A.B_t$ is capital account balance

$$FAB_t = \frac{Net\ Financial\ Account_t}{Nominal\ GDP_t} \text{-----} (3.10)$$

Whereas; FAB_t is financial account balance.

Regression equation

$$E.R_t = \alpha_0 + \beta_1 * RIR_t + \beta_2 * RIL_{t-1} + \beta_3 * TOT_t + \beta_4 * TR_t + \beta_5 * d(TB_t) + \beta_6 * NKI_t + \epsilon_t \text{-----} (3.11)$$

Whereas; $E.R_t$ is exchange rate, measured as natural log of nominal exchange rate in direct quotation at time t , RIR_t is relative interest rate at time t , RIL_{t-1} is lagged period relative inflation level, TOT_t is terms of trade in period t , $D(TB_t)$ is the first difference in trade balance ratio, NKI_t is net capital inflows and ϵ_t is error term

of sample reasonable techniques except Bangladesh where two co-integration equations has been found at the 5% essential value. Results reports that in four sample economies macroeconomic variables and exchange rates do not move together in the long time. Our findings are in line with those of Lee and Boon (2007), who found short run linear causality between stock market and exchange rate but no long run relationship between them.

Results of Johansen's Co-integration and Vector Error Correction

As formal analysis of aspects has indicated that all economical series used in this analysis contain system primary at levels i.e. they are non-stationary and become invitations in first modify kind, therefore, long run relationship among aspects has been investigated by using Johansen's co-integration technique. Table 4 to table 5 evaluations the results of Johansen's co-integration evaluate for Pakistan, Native Indian, Nepal, Bangladesh and Sri Lanka respectively. Table 6 indicates that at 5% significance level, there are four co-integrating equations in Pakistan. Possibilities amount opinions three co-integrating equations in scenario of Native Indian unveiled in table 7. Table 8 opinions the results of Johansen's co-integration evaluate in Nepal. LR evaluate indicates that there is one co-integrating equations in scenario of Nepal. Table 8 reviews the outcomes of Johansen's co-integration in situation of Bangladesh. In this table, LR indicates the everyday living of two co-integrating equations. In this table LR indicates the everyday living of four co-integrating equations among factors.

Vector Error correction mechanism has been tested on the dynamic behavior of exchange rates in the sample countries to capture the short-run disequilibrium in the long-run relationship at every Co-integration level. The speed of adjustment has been represented by the coefficients of co-integrating equations in the case of short run disequilibrium.

In the case of Pakistan, Coefficients of four (Co-integrating) equations revealed significant results which indicates that short-run disequilibrium will be adjusted due to first, second, third error correction term respectively. Column 1 indicates, in case of Pakistan coefficients of error correction terms are insignificant indicating that error corrections terms fail to make adjustments significantly.

INSERT Table 14 HERE

In case of India, short run disequilibrium is adjusted by again all the three co-integrating equations. Coefficients of two error correction terms are significant. Coefficient of first error correction term indicates that almost 1.26% of disequilibrium is adjusted in one quarter and it takes almost 79 quarters to completely eliminate short run disequilibrium. However, error correction term 2 shows relatively slower adjustments. In case of Nepal, one co-integrating equations have significant negative coefficients indicating that almost 0.10 % of disequilibrium disappears in one quarter. Second correction term shows slower adjustment. However, in case of Bangladesh and Sri Lanka, coefficients of error correction terms are insignificant indicating that error corrections terms fail to make adjustments significantly.

INSERT Table 9, 10,11,12,13 HERE

Results of Regression Equation

During the study investigation of unit root revealed that variables undertaken in this study contain the unit root at level and integrated of order 1. Johansen's Co-integration test revealed that explanatory variables are co-integrated; hence the OLS (regression) has been applied on the data at level. Table represents the results of regression equation which has been applied on the exchange rate which is regressed on the six repressor variables. These are *Net Capital Inflows* (NKI) (β_1), *Relative inflation level* (RIL) (β_2), *Relative Interest Rate* (RIR) (β_3), *Trade Balance Ratio* (TB) (β_4), *Trade Restrictions* (TR) (β_5), *Terms of Trade* (TOT) (β_6). Table 4.2.5 argues about the expected and found signs and direction of coefficients with subject to support of relevant theories. β_1 , β_2 and β_4 having the expected negative signs with subject to relevant theories i.e. Portfolio Balance Approach (PBA), Purchasing Power Parity (PPP) Approach, Currency Account (CA) Theory, however β_3 Relative Interest Rate having the positive expected sign with subject to Portfolio Balance Approach while β_5 and β_6 having the vague expected signs with subject to empirical investigation. R^2 reporting the explanatory power of adhoc model. 74.5% in case of Pakistan, 84.5%, 86.3%, 79.1%, 85.3% in case of India, Nepal, Bangladesh and Sri-Lanka variation in exchange rate growth has been explained by the set of six macroeconomic variables respectively. Jarque-Bera statistics test undertaken to investigate the normality in time series distribution, Null hypothesis of Jarque-Bera concluded that the Distribution is Normal. JB values has been reported under the table, at the same time as the values of t statistics has been reported in table which representing the significance of explanatory variables.

INSERT Table 15 HERE

Conclusion

The association of macroeconomic variables and exchange rates has been examined in current paper; both for the short run and long run. Granger Causality test is applied to discover the short run linear relationship, whereas Johansen Co-integration method has been employed to test the presence of long run relationship. The empirical exploration of macroeconomic variables and exchange rates, dated January 1997 to December 2010. Thus Pakistan and Sri Lanka aid the transmission channel of portfolio balance approach in the short run, while India supports the transmission channel of traditional approach toward relationship between macroeconomic variables and currency market.

Though, in macroeconomic variables and currency exchange rates a feedback relationship has been measured, while analyzing Nepal and Bangladesh. This result is coherent with study of Ajayi and Mougoue (1996). This empirical research specifies that in scheming of exchange rate policies, causation must be a compulsory constituent. Then the relation of macroeconomic variables and exchange rates should also be considered by risk management process. Additionally, there can be a possibility that investors may use this association between macroeconomic variables and foreign exchange market in being cautious about their disclosure which is taking place because of alterations and fluctuations in currency rates; this is one of the practical usages of these results. But in the research finding, neither traditional approach nor the portfolio approach helps defining the relationship and linkages of currency exchange rates and macroeconomic variables in long run. The possibility of association in macroeconomic variables and exchange rate market for the long run, the asset approach is examined. Johansen Co-integration test validates the logic prevailing in theory of asset market; it suggests that the discounted future prices decide the price of exchange rate, which acts as an asset. According to this strategy any aspect, which impacts return rate later on will be demonstrated in existing exchange rate.

The result of this research suggests that in long run these macroeconomic variables are controlled by the policy recommendations given by the regulators, but the instability of exchange rate is hard to be restricted or controlled by these macroeconomic variables policies. Nevertheless, in India, the shift of short run causality from exchange rate is examined, towards various macroeconomic variables. Investors can utilize these results in decision making about the investments. Adding more, development of exchange rate policy is given direction through this. In any of the subject economies, no long run association is favored by Johansen Co-integration. It shows that in the long run various economic factors influence the shifts and fluctuations of exchange rates in selected economies. In sample economies, relation between macroeconomic factors and exchange rate fluctuations is shown by regression model. The other side of the coin, the study of exchange rate and macroeconomic fundamentals shows that the movement of exchange rates is based on bundle of same factors in selected Asian economies. Our study also implies that in all the sample economies, there is a reverse association present in nominal amount and return amount behavior.

References

- i. Abdalla, I.S.A and V. Murinde (1997). Exchange Rate and Stock Price Interactions in Emerging Financial Markets: Evidence on India, Korea, Pakistan, and Philippines. *Applied Financial Economics*, 7:25-35
- ii. Aggarwal, R (1981). Exchange Rates and Stock Prices: A Study of U.S Capital Market Under Floating Exchange Rates. *Journal of Financial Research*, 19:193- 207
- iii. Ajayi, A.R., M. Mougoue (1996). On the Dynamic Relation Between Stock Prices and Exchange Rates. *Journal of Financial Research*, 19:193-207
- iv. Allsopp Louise (2003). Currency Attacks, Information Externalities and Search. *Journal of Economic Studies*, 30 (2):109-124
- v. Amare and Mohsin (2000). Stock Prices and Exchange Rates in Leading Asian Economies: Short versus Long Run Dynamics. *Singapore Economic Review*, 45:165-181
- vi. Baille, R.T and P.C. McMahon (1989). *The Foreign Exchange Market: Theory and Econometric Evidence*. New York: Cambridge University Press
- vii. Balke, N.S and T.B Fomby (1994). Large Shocks, Small Shocks And Economic Fluctuations: Outliers in Macroeconomic Time Series. *Journal of Applied Econometrics*, 9:181-200
- viii. Bask, M (2009). Announcement Effects on Exchange Rates. *International Journal of Finance and Economics*, 14:64-84
- ix. Becker, B and H.G. Stephen (2009). A New Look at Economic Convergence in Europe: A Common Factor Approach. *International Journal of Finance and Economics*, 14:85-97
- x. Bhatt, R. H (1996). A Correct Test of PPP: The Case of Pak Rupee Exchange Rates. *Pakistan Development Review*, 35 (4):671-682
- xi. Bhatti, R.H (1997). Do Expectations Play Any Role in Determining Pak Rupee Exchange Rates. *Pakistan Development Review*, 36(3):263-73
- xii. Bonomo, M and C. Terra (2005). Elections and Exchange Rate Cycles. *Economics and Politics*, 17:151-176
- xiii. Boyer, R (1977). Devaluation and Portfolio Balance. *American Economic Review*, 67:54-63
- xiv. Branson, W. H. (1983). Macroeconomic Determinants of Real Exchange Risk. In R.J. Herring (ed.) *Managing Foreign Exchange Risk*. Chapter 1. Cambridge: Cambridge University Press.
- xv. Branson, W. H and H. Haltunen (1979). Asset Market Determination of Exchange Rates: Initial Empirical and Policy Results. In J. P. Martin and A. Smith (eds.) *Trade and Payments under Flexible Exchange Rates*. 55–85. London: Macmillan
- xvi. Brooks, C (1997). Linear and Non Linear (Non-Forecastability) of High Frequency Exchange Rates. *Journal of Forecasting*, 16:125-145
- xvii. Cassel, G (1916). The Present Situation of Foreign Exchange. *Economic Journal*, 26:62-65
- xviii. Chowdhury, M.B (2000). The Dynamics of Real Exchange Rate Behavior in India. In A. Ghosh And R. Raman (Eds). *Exchange Rate Behavior in Developing Countries* (New Delhi Deep and Deep Publications)
- xix. Clark, T.E. and M.W. McCracken (2005). The Power of Test of Predictive Ability in the Presence of Structural Breaks. *Journal of Econometrics*, 124:1-31
- xx. Cordoso, E (1991). From Inertia to Megainflation: Brazil in the 1980s. *Lessons of Economic Stabilization and Its Aftermath*. Cambridge: MIT Press
- xxi. Cooper, R (1971). *Currency Devaluations in Developing Countries*. Essays in International Finance, 86. Princeton University
- xxii. Dickey, D.A and W.A. Fuller (1981). Likelihood ratios statistics for autoregressive time series with a unit root. *Econometrica*, 49:1057-1072.
- xxiii. Diebold, F.X and J. Nason (1990). Non Parametric Exchange Rate Prediction. *Journal of International Economics*, 28:315-332
- xxiv. Diebold, F.X and R.S Mariano (1995). Comparing Predictive Accuracy. *Journal of Business and Economic Statistics*, 13:253-265
- xxv. Ding Liang (2009). Bid-Ask Spread and Order Size in Foreign Exchange Market: An Empirical Investigation. *International Journal of Finance and Economics*, 14:98-105
- xxvi. Dornbusch, R (1975). A Portfolio Balance Model of Open Economy. *Journal of Monetary Economics*, Vol 1:3-20
- xxvii. Dornbusch, R (1976). The Theory of Flexible Exchange Rate Regimes and Macroeconomic Policy. *Scandinavian Journal of Economics*, 78:225-279
- xxviii. Edwards, S (1994). The Political Economy of Inflation and Stabilization in Developing Countries. *Economic Development and Cultural change*, 42:235-266
- xxix. Edwards, S (1988). The Real and Monetary Determinants of Real Exchange Rate Behavior: Theory and Evidence from Developing Countries. *Journal of Development Economics*, 29: 311-341
- xxx. Engle, C (1994). Can the Markov Switching Model Forecast the Exchange Rate?. *Journal Of International Economics*, 36:151-165
- xxxi. Engle, C and J.D. Hamilton (1990). Long Swings in the Dollar: Are they in the Data and does the Market Know it. *American Economic Review*, 80: 689-713
- xxxii. Feridun Mete (2007). Financial Liberalization and Currency Crises: The Case of Turkey. *Banks and Bank System*, 2:44-69
- xxxiii. Fleming, J. M. (1962). Domestic Financial Policies under Fixed and Floating Exchange Rates, *IMF Staff Papers* 9: 369–377
- xxxiv. Frank and Young (1972). Stock Price Reaction of Multinational Firms to Exchange Realignment. *Financial Management* 1:66-73
- xxxv. Frankel, J.A (1979). On the Mark: A theory of Floating Exchange Rates Based on Real Interest Differentials. *American Economic Review*, 69:610-622

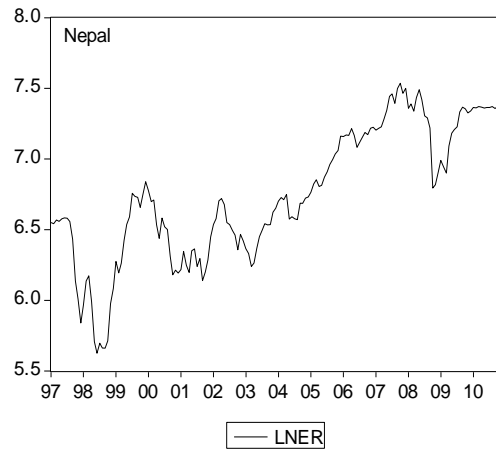
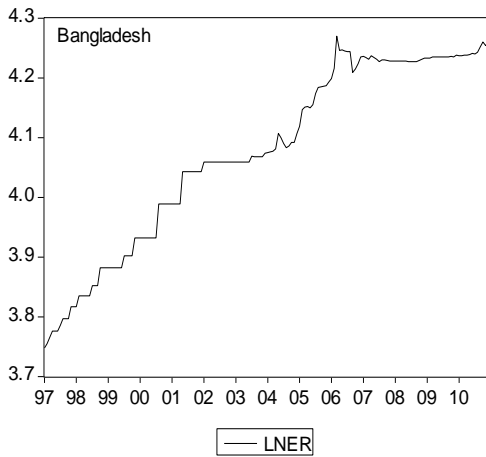
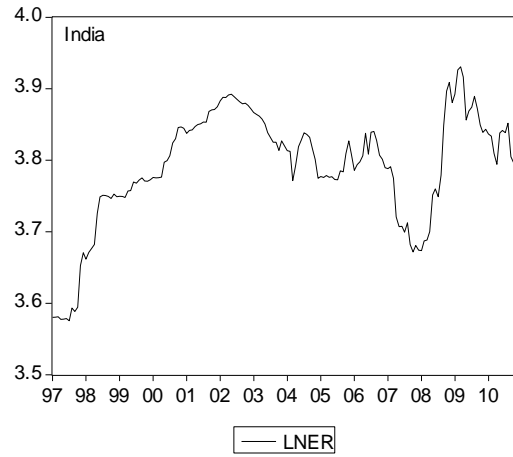
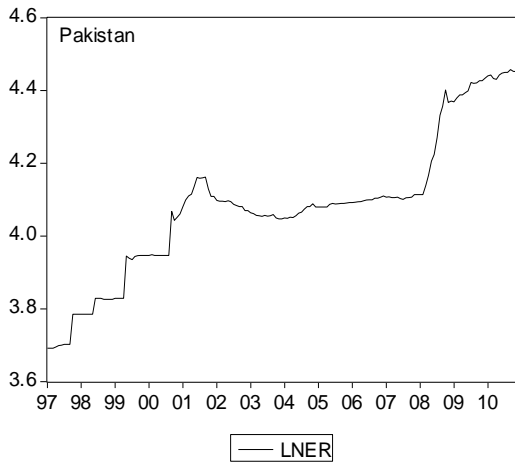
- xxxvi. Frankel, J. A. (1983) Monetary and Portfolio-Balance Models of Exchange Rate Determination. In J. S. Bhandari and B. H. Putnam (eds) Economic Interdependence and Flexible Exchange Rates. 84–115
- xxxvii. Frenkel, F (1976).A Monetary Approach to Exchange Rate: Doctrinal aspects and empirical evidence. Scandinavian Journal of Economics, 78:200-224
- xxxviii. Frieden (2001). Politics and Exchange rate, A Cross Country Study Approach to Latin America. Inter-American Development bank, Washington D..C 21-64.
- xxxix. Gavin, M (1989). The Stock Market and Exchange Rate Dynamics. Journal of International Money and Finance, 8:81-200
- xl. Gavin, M and R. Pretorri (1997). Fiscal policy in Latin America. NBER Macroeconomics Annual, 1997, MIT press Cambridge 11-60
- xli. Gazioglu, S (2000). Emerging Markets and Volatility of Real Exchange Rates: The Turkish Case. Unpublished
- xlii. Gormus, S (2001). Simultaneous Estimation of Stock Market and Currency Crisis. Unpublished
- xliii. Hatemi, J.A and M. Irandoust (2002). On The Causality between Stock Prices and Exchange Rate, A Note. Bulletin of Economic Research, 52 (2):197-203
- xliv. Hendry, D.F (1986). The Role of Prediction in Evaluating Econometric Models. In Manson. J.M, The Royal Society and British Academy, London:25-33
- xliv. Hong, Y and T.H Lee (2003). Inference on Predictability of Foreign Exchange Rates via Generalized Spectrum and Non Linear Time Series Models. Review of Economics and Statistics, 85:1048-1062
- xlvi. Hota, L.K (1993). The Effect of Additive Outliers on the Estimates from Aggregated and Disaggregated ARIMA Models. International Journal of Forecasting, 9:85-93
- xlvii. Hsieh, D.A (1989). Testing for Non Linear Dependence Foreign Exchange Rates. Journal of Business, 62:329-358
- xlviii. Johansen, S (1988). Statistical Analysis of Co-integrating Vectors. Journal of Economic Dynamics and Control, 12:231-254
- xliv. Kashefi, J (2006). The Effect of Euro on European Equity Markets and International Diversification. Journal of International Business Research, 10:1-21
- l. Kaun, C.M and H.Liu (1995). Forecasting Exchange Rate Using Feed Forward and Recurrent Neural Networks. Journal of Applied Econometrics, 10:347-364

Annexure

Table 1: Description Statistics of Exchange Rate

	Variable	Mean	Median	Maximum	Minimum	Std. Dev
Pakistan	Exchange Rate	0.47%	0.05%	12.08%	-3.80%	1.39%
India	Exchange Rate	0.13%	0.04%	6.95%	-6.02%	1.72%
Nepal	Exchange Rate	0.14%	0.20%	7.20%	-6.70%	1.64%
Bangladesh	Exchange Rate	0.57%	0.65%	39.80%	-31.50%	9.39%
Sri-Lanka	Exchange Rate	0.40%	0.20%	62.20%	-59.70%	6.81%

Graphical 1: representation of exchange of sample economies



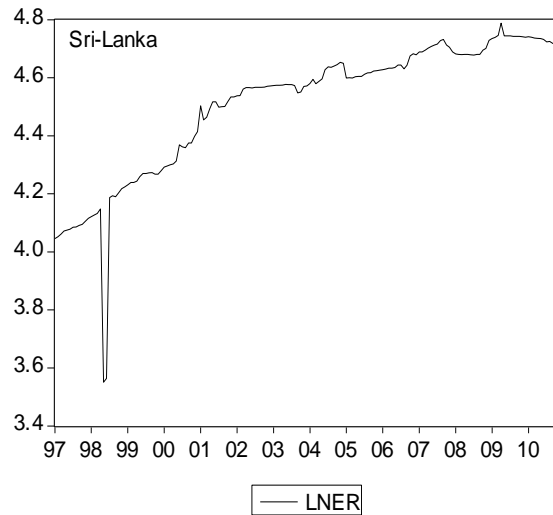


Table2: Unit Root Test

Sample Country	Variables	Unit Root Test		Test Stat	1% C. V	5% C.V
Pakistan	E.R	AD Test	Level	-1.071930	-3.4715	-2.8792
			1st Difference	-4.618181	-3.4717	-2.8793
		PP Test	Level	-0.837283	-3.4706	-2.8788
			1st Difference	-12.40065	-3.4708	-2.8789
India	E.R	ADF Test	Level	-3.087621	-3.4715	-2.8792
			1st Difference	-3.816720	-3.4717	-2.8793
		PP Test	Level	-2.711681	-3.4706	-2.8788
			1st Difference	-10.38715	-3.4708	-2.8789
Nepal	E.R	ADF Test	Level	-1.285854	-3.4715	-2.8792
			1st Difference	-5.177102	-3.4717	-2.8793
		PP Test	Level	-1.217198	-3.4706	-2.8788
			1st Difference	-9.940262	-3.4708	-2.8789
Bangladesh	E.R	ADF Test	Level	-2.470389	-3.4715	-2.8792
			1st Difference	-5.691545	-3.4717	-2.8793
		PP Test	Level	-2.570098	-3.4706	-2.8788
			1st Difference	-13.30499	-3.4708	-2.8789
Sri-Lanka	E.R	ADF Test	Level	-1.837484	-3.4715	-2.8792
			1st Difference	-7.897364	-3.4717	-2.8793
		PP Test	Level	-2.022801	-3.4706	-2.8788
			1st Difference	-14.14420	-3.4708	-2.8789

Table 3: Johansen co-integration of exchange rate

Pakistan

Eigen Values	L.R Statistics	5% Critical Values	1% Critical Values	Number of CEs
0.043480	9.645369	12.53	16.31	None
0.014612	2.399408	3.84	6.51	At most 1

L.R. rejects any co-integration at 5% significance level

India

Eigen Values	L.R Statistics	5% Critical Values	1% Critical Values	Number of CEs
0.043035	7.720887	12.53	16.31	None
0.003373	0.550774	3.84	6.51	At most 1

L.R. rejects any co-integration at 5% significance level

Nepal

Eigen Values	L.R Statistics	5% Critical Values	1% Critical Values	Number of CEs
0.033402	6.549774	12.53	16.31	None
0.006190	1.012164	3.84	6.51	At most 1

L.R. rejects any co-integration at 5% significance level

Bangladesh

Eigen Values	L.R Statistics	5% Critical Values	1% Critical Values	Number of CEs
0.116307	24.52441	12.53	16.31	None **
0.026455	4.370250	3.84	6.51	At most 1 *

L.R. test indicates 2 co-integrating equation(s) at 5% significance level

Sri-Lanka

Eigen Values	L.R Statistics	5% Critical Values	1% Critical Values	Number of CEs
0.048268	8.519984	12.53	16.31	None
0.002794	0.456004	3.84	6.51	At most 1

L.R. rejects any co-integration at 5% significance level

**Table 4: ADF/PP Test-Pakistan
E.R (LNER)**

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-1.463920	-5.062430	-1.064375	-9.122558
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

NKI (LN NKI)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.404559	-5.715584	-5.153300	-22.65284
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

RIL (LN RIL)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-5.054034	-8.359148	-12.09001	-30.42153
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

RIR (LN RIR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.475288	-5.354931	-2.230736	-9.784640
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TB (LN TB)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-1.738014	-6.352603	-3.160240	-16.78094
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TOT (LN TOT)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.763725	-3.437978	-1.967825	-12.50075
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TR (LN TR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.787347	-7.049670	-8.380553	-32.10722
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

**Table 5: ADF Test-India
E.R (LNER)**

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.563312	-5.032851	-2.423388	-8.858591
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

NKI (LN NKI)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-4.126911	-7.776110	-6.282786	-17.03717
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

RIL (LN RIL)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-3.683934	-7.820563	-10.63499	-27.88440
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

RIR (LN RIR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.676140	-6.454836	-2.752226	-11.77095
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TB (LN TB)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-0.841501	-6.196227	-2.881979	-18.80800
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TOT (LN TOT)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.552451	-3.308896	-12.27146	-2.164892
1% Critical Value	-3.4861	-3.4865	-3.4847	-3.4843
5% Critical Value	-2.8857	-2.8859	-2.8851	-2.8849
10% Critical Value	-2.5795	-2.5796	-2.5792	-2.5791

TR (LN TR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-0.282009	-5.804404	-0.341751	-13.22902
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

**Table 6: ADF Test-Nepal
E.R (LNER)**

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.187040	-4.239086	-1.946685	-10.56948
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

NKI (LN NKI)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-1.730540	-6.657560	-7.304710	-30.99347
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

RIL (LN RIL)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-4.857786	-8.266876	-10.71532	-26.16176
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

RIR (LN RIR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.484237	-5.869785	-4.614754	-18.87209
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TB (LN TB)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-1.812160	-5.506268	-2.500346	-13.08323
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TOT (LN TOT)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.425629	-3.250402	-2.326163	-12.28007
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TR (LN TR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-1.485203	-6.810359	-2.061314	-18.27834
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

**Table 7: ADF Test-Bangladesh
E.R (LNER)**

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.606448	-4.002422	-4.003690	-8.588156
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

NKI (LN NKI)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.693563	-7.940066	-8.660827	-23.96258
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

RIL (LN RIL)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-5.175102	-7.593923	-11.26805	-27.43904
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

RIR (LN RIR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.680958	-6.049765	-2.477285	-8.623833
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TB (LN TB)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.090942	-6.042193	-6.828169	-23.62012
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TOT (LN TOT)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.590998	-3.329100	-2.121335	-12.28633
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TR (LN TR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-0.348283	-7.143269	-1.294810	-24.04613
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

**Table 8: ADF Test-Sri-Lanka
E.R (LNER)**

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.048546	-6.666838	-1.786201	-20.85035
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

NKI (LN NKI)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.893767	-6.267714	-4.222534	-23.30904
1% Critical Value	-3.4890	-3.4900	-3.4852	-3.4861
5% Critical Value	-2.8870	-2.8874	-2.8853	-2.8857
10% Critical Value	-2.5802	-2.5804	-2.5793	-2.5795

RIL (LN RIL)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-5.360020	-7.668647	-11.84173	-30.13317
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

RIR (LN RIR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-1.560889	-6.309841	-2.075395	-6.990734
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TB (LN TB)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-4.355150	-6.773321	-8.039964	-28.99631
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TOT (LN TOT)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-2.552451	-3.308896	-2.164892	-12.27146
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

TR (LN TR)

	ADF		Phillip Peron	
	Level	1 st Difference	Level	1 st Difference
ADF Test Stat	-1.684008	-4.852128	-5.124128	-18.21623
1% Critical Value	-3.4861	-3.4865	-3.4843	-3.4847
5% Critical Value	-2.8857	-2.8859	-2.8849	-2.8851
10% Critical Value	-2.5795	-2.5796	-2.5791	-2.5792

Johansen's Co-integration

Table 9: Pakistan

Eigen Value	L.R Statistics	5% Critical Value	1% Critical Value	Number of CEs
0.398781	181.4952	109.99	119.80	None **
0.311642	120.9485	82.49	90.45	At most 1 **
0.236885	76.50843	59.46	66.52	At most 2 **
0.193592	44.33719	39.89	45.58	At most 3 *
0.109896	18.73253	24.31	29.75	At most 4
0.027140	4.878922	12.53	16.31	At most 5
0.013394	1.604636	3.84	6.51	At most 6

L.R. test indicates 4 co-integrating equation(s) at 5% significance level

Table 10: India

Eigen Value	L.R Statistics	5% Critical Value	1% Critical Value	Number of CEs
0.291841	148.6680	109.99	119.80	None **
0.268571	107.6026	82.49	90.45	At most 1 **
0.253767	70.38485	59.46	66.52	At most 2 **
0.150314	35.55149	39.89	45.58	At most 3
0.081490	16.16772	24.31	29.75	At most 4
0.049042	6.052462	12.53	16.31	At most 5
0.000575	0.068491	3.84	6.51	At most 6

L.R. test indicates 3 co-integrating equation(s) at 5% significance level

Table 11: Nepal

Eigen Value	L.R Statistics	5% Critical Value	1% Critical Value	Number of CEs
0.306861	121.8108	109.99	119.80	None **
0.219647	78.19436	82.49	90.45	At most 1
0.173798	48.68133	59.46	66.52	At most 2
0.108637	25.96239	39.89	45.58	At most 3
0.059801	12.27693	24.31	29.75	At most 4
0.037942	4.938908	12.53	16.31	At most 5
0.002819	0.335960	3.84	6.51	At most 6

L.R. test indicates 1 co-integrating equation(s) at 5% significance level

Table 12: Bangladesh

Eigen Value	L.R Statistics	5% Critical Value	1% Critical Value	Number of CEs
0.327343	132.6331	109.99	119.80	None **
0.248406	85.44726	82.49	90.45	At most 1 *
0.150155	51.46578	59.46	66.52	At most 2
0.103251	32.10434	39.89	45.58	At most 3
0.084264	19.13580	24.31	29.75	At most 4
0.069828	8.660552	12.53	16.31	At most 5
0.000392	0.046696	3.84	6.51	At most 6

L.R. test indicates 2 co-integrating equation(s) at 5% significance level

Table 13: Sri-Lanka

Eigen Value	L.R Statistics	5% Critical Value	1% Critical Value	Number of CEs
0.356072	169.2428	109.99	119.80	None **
0.305407	119.5038	82.49	90.45	At most 1 **
0.257973	78.32334	59.46	66.52	At most 2 **
0.220603	44.60760	39.89	45.58	At most 3 *
0.067855	16.44411	24.31	29.75	At most 4
0.054717	8.503989	12.53	16.31	At most 5
0.018806	2.145329	3.84	6.51	At most 6

L.R. test indicates 4 co-integrating equation(s) at 5% significance level

Table 14: Vector Error Correction Mechanism

Error Correction	D (LNERPAK)	D (LNERIND)	D (LNERNEP)	D (LNERBANG)	D (LNEERSRI)
CointEq1	-0.002830 (-0.72327)	-0.012648 (-4.61722)	0.001017 (2.33933)	-0.003207 (-1.19574)	-0.001279 (-0.35122)
CointEq2	-0.486017 (-0.81593)	1.076324 (0.99728)	-	-	-1.006435 (-0.90487)
CointEq3	-0.001310 (-0.37458)	0.010843 (3.27197)	-	-	0.004508 (0.71533)
CointEq4	0.002028 (0.14257)	-	-	-	0.028125 (3.42629)
D(LNER(-1))	0.137425 (1.37254)	0.065818 (0.69734)	0.122811 (1.27505)	0.361249 (3.81818)	0.021090 (0.44397)
D(NKI(-1))	0.537754 (0.77579)	-3.004188 (-3.16789)	0.257919 (0.97126)	0.383672 (0.53511)	0.527528 (0.56428)
D(RIL(-1))	-0.000423 (-0.15452)	-0.007062 (-2.51696)	-0.003330 (-2.45949)	-0.000263 (-0.22421)	-0.001460 (-0.27365)
D(RIR(-1))	-0.056931 (-2.70392)	-0.006066 (-0.41226)	0.020872 (0.82560)	-0.026021 (-0.92304)	-0.013553 (-0.44626)
D(TB(-1))	-0.958993 (-1.63448)	-1.543003 (-1.37506)	0.580448 (0.67613)	0.285010 (0.56934)	0.281987 (0.79660)
D(TOT(-1))	0.003505 (0.04701)	0.175369 (1.60870)	-0.086070 (-0.68406)	-0.054083 (-0.95473)	-0.065563 (-0.92960)
D(TR(-1))	0.002211 (0.80962)	0.003856 (1.82665)	-2.41E-05 (-0.00561)	0.000293 (0.22121)	0.005417 (1.75314)

Table 15: Result of Regression Analysis

	Pakistan		India		Nepal		Bangladesh		Sri-Lanka	
	Coefficients	t-Statistics	Coefficients	t-Statistics	Coefficients	t-Statistics	Coefficients	t-Statistics	Coefficients	t-Statistics
β_1	-23.0530	-4.6613	1.4015	0.3502	-0.7595	-0.5015	-0.6712	-0.2159	-27.229	-4.7015
β_2	0.0129	0.6908	-0.0215	-1.9941	-0.0065	-1.1007	0.0078	1.5585	-0.0230	-0.7001
β_3	-0.9808	-9.5017	-0.3602	-7.3162	-0.5452	-4.6089	-0.6100	-8.7416	-1.4007	-13.302
β_4	10.9652	3.02551	37.2292	9.8738	-0.1306	-0.0504	17.4144	6.7371	-3.6182	-1.6069
β_5	-0.0861	-3.5881	-0.6677	-3.325	-1.2063	-3.8052	-0.5775	-3.9176	-1.9179	-7.4975
β_6	-2.9294	-9.5816	-0.0628	-20.919	-0.1693	-15.209	-0.0612	-17.398	-0.0037	-0.2073
C	7.6421	20.584	5.7905	35.171	7.4334	30.0823	6.0932	54.2245	6.1152	28.2861

$$E. R_t = \beta_1 * NKI_t + \beta_2 * RIL_{t-1} + \beta_3 * RIR_t + \beta_4 * D(T.B)_t + \beta_5 * T.R_t + \beta_6 * TOT_t + \epsilon_t$$

$$R^2 = 0.745$$

$$R^2 = 0.845$$

$$R^2 = 0.863$$

$$R^2 = 0.791$$

$$R^2 = 0.853$$

$$J.B = 0.8389$$

$$J.B = 14.936$$

$$J.B = 15.960$$

$$J.B = 6.271$$

$$J.B = 8.787$$

Whereas:

$E. R_t$ is nominal exchange rate representing in direct quotation at the time period t, measured in natural log, NKI_t is natural log of Net Capital Inflows at the time period t, RIL_{t-1} is relative inflation level at the time period t, RIR_t is natural log relative interest rate at the time period t, $D(TB)_t$ is change in Trade Balance Ratio at the time period t, TR_t is natural log of Trade restriction at the time period t, TOT_t is natural log of terms of trade at the time period t, ϵ_t is error term at the time period t