DYNAMICS OF NOMINAL EXCHANGE RATE WITH PRICE LEVELS: WHAT HAPPENS IN INTERNATIONAL MARKETS?

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Abstract

Since inception exchange rate determination in Pakistan has been studied extensively but under various approaches. Current study explores empirically the relationship of the domestic price level & foreign price level with nominal exchange rate in Pakistan, using a daily data set for 13 years (July 2000- June 2013) as provided by State Bank of Pakistan. Variables are analyzed for stochastic properties and existence of unit root, for this purpose ADF is used. Along with regression analysis the co-integration is tested to detect long term co-movement between variables. It has been found that domestic price level has positive relationship with nominal exchange rate, whereas, foreign price level has a negative relationship with nominal exchange rate in the long run.

Keywords: Exchange rate determination, domestic price level, foreign price level, nominal exchange rate

Introduction

Globalization has increased importance of exchange rates and hence, international business a risky venture. International financial systems comprises of a set of agreed principles, rules, conventions and financial institutions, which assist international trade, multilateral investment transactions and reallocations of capital among various countries (Abbas, 2010). Exchange rate is one of the most extensively explored economic

measures (Khan and Qayyum2007) as it has both direct and indirect effects on the economy.

Modern era has established standard where countries now determine their exchange rates independently instead of taking the decisions from the market forces. Major currencies fixed their values in terms of gold before World War 1, but after World War 2, the currencies were fixed in terms of U.S. dollar (Rogoff, 2009)..

Changes in Exchange rate have persistent effect on economy, especially on prices, wages, interest rates, production levels and employment opportunities (Abbas, 2010). Collapse of Bretton Woods System has a very significant effect on the values of currencies (Abdalla et al. 1997). Especially short term variability has increased with the shift from fixed exchange rate to flexible exchange rate in 1970's and thereafter. High instability and unexpected fluctuations in exchange rate is one of the obstacles for the accomplishment of macroeconomic policies. Forecasting nominal exchange rates is a problematic task especially in a floating exchange rate arrangement (Rogoff, 2009).

The nominal exchange rate is simply the price of one currency in terms of the number of units of some other currency (investopedia).

Literature argues that there are two main schools of thought for discussing exchange rate determination and forecasting. One school of thought explicitly states that the exchange rate determination settles through demand and supply of a country's currency and balance of payment is used for checking the equilibrium level of a country imports with its exports. The point of view stated by other school of thought is, for exchange rate the relative stock of financial assets is used. Increase or decrease in the stocks of financial assets is the reason for change in the values of exchange rate (Rogoff, 2009).

Before 1971, Pakistani Rupee was allied with Pound Sterling. In 1971, Pakistani government decided to de-link Rupee from Pound and allied it with US Dollar. Pakistan moved towards managed floating exchange rate system in 1982 because it was believed by the government that Rupee allied rate with US Dollar was significantly moved away from the essentials. This managed floating exchange rate system helped to reduce the gap between market and official rates.

Three different rates were introduced, Official rate (rate in which Rupee was pegged with US Dollar at a fixed rate) Floating Inter Bank Rate (through which first time commercial banks were allowed to quote their rate) and composite rate (that was calculated by combining official rate with Floating Inter Bank Rate rate). Since then there is floating exchange rate system in Pakistan. All banks quote their own rates. State Bank of Pakistan is responsible for regulation of the international trade in Pakistan.

At the time of end of World War I, United States of America refused the plea of nations for cancellation of all war debts due to that unfortunate event, United Kingdom become heavily indebted to the United States. In 1928, famous Great Depression started showing its effects on United States economy. It propagated in 1930, when more than 1300 U.S banks collapsed just in one year. After World War II, some 44 countries sat togethor in Bretton Woods in an international level conference. One of the huge outcomes of this meeting was that International Monetary Fund (IMF) and World Bank were created. Hence a new exchange rate called Bretton Woods System was established. In this system, price of every currency was fixed with United States Dollar, which in turn was pegged with gold. Initially price of Dollar was pegged to 1/35 ounces of gold. In this system, 1% change was permitted below and above early set rates of exchange. So US Dollar became an international currency. As it was used for international purchases in case of import and export its demand was found much more than its supply in international markets. Statistically speaking, exchange rate was found rising from 1982 to 2001 and started decreasing in late 2001till mid-2005. Since 2005, it has been rising up till now.

Effect of exchange rate on Nigeria economy was studied with the variables, foreign price level, domestic price level and nominal exchange rate (Stephen and sanmi, 2011). They conducted the tests of ordinary least square (OLS) method, augmented dickey fuller (ADF) test and co-integration test on these variables and found that there is a positive relationship of price level with nominal exchange rate whereas price level have a negative relationship with nominal exchange rate in Nigeria.
The objective of current study is to find the relationship between foreign price level, domestic price level with nominal exchange rate and to empirically analyze the existence of nominal exchange rate adjustment with changes in domestic price level & foreign price level.

Significance and contribution

This study is helpful for importers and exporters of Pakistan. It will be also helpful for government in making future policies about exchange rates. The outcomes of the study will be useful in improving the understanding of investors regarding day to day transactions in international market.

Literature review

The importance of exchange rate and its impact (direct and indirect) on macroeconomic variables such as Imports, Exports, Wages and Inflation cannot be overlooked in growth of any economy. Thus considering the significance of the topic, it is studied throughout the world by many

researchers. Such as Stockman (1980), Johansen and Juselius (1990), Pesaran*et al.*, (2001) and Parveen et al (2012) just to name a few. In this regard, following is a brief review of some of the studies:

Saeed and Sher (2012) attempted to analyze the determinants of foreign exchange for US dollar in term of Pakistani rupee. They used data from year 1982 to 2010 to analyze the long run and short run behavior of PKR/USD. They attempted to measure the relationship with monetary variables. They used variables: stock of money, foreign exchange reserve and total debt of Pakistan. They collected data from the site of IFS, State bank of Pakistan and government of Pakistan. Descriptive statistics and ADF technique were used to test the stationarity of variables. This study discovered long run relationship between nominal PKR/USD exchange rate and the explanatory variables. They discovered that there was positive relationship between stock of money with the exchange rate while it expressed the negative relationship with the foreign exchange reserve. The variable debt was also positively linked with the variable of exchange rate while negatively with the variable of foreign exchange reserve. It was also found out that GDP, interest rate and political instability effect the exchange rates in the economy.

Gosh and Rajan (2007) investigated the exchange rate-pass-through in Thailand and Korea. They used consumer import price at aggregate level for the period of 1991 to 2000. This study examined how exchange rate passes through changed over the time especially during the currency crisis. The ADF and Phillip Peron test were used to examine stationary in the ERPT in Korea and Thailand. Macro and micro economic variables were used to examine the exchange rate volatility. The study concluded that CPI has more indirect effect on the exchange rate changes as compared to the import prices and exchange rate-pass-through rose during the currency crisis.

Macdonald et al(2012) attempted to analyze the determinants of exchange rates in Australia. They made this analysis by studying economic and non-economic factors. They made a comparison between quarterly and annual data over a time period of 1975 to 2003. Data collected from the Reserve bank of Australia and Australian bureau statistics. Orthodox Elimination process was used in this study for the model selection. The study revealed that macro-economic variables like output and liquidity relative to United States play considerable role in determination of exchange rates in Australia. While inflation and interest rates were not found significantly important in this scenario. The results also expressed that there were some unobservable factors such as political and external shocks which were influencing the exchange rates. These unobservable factors were contributing to a level of 33 percent of total variation in exchange rates in Australia.

Kathryn and Desar(2001) investigated the exchange rate exposure and examined the relationship between exchange rate changes, value of firms and industries from 1988 to 1999.Exchange rate matter for the significant fraction of the industries and firms. Eight countries firms were used as sample to check the effect of the exchange rate on the profitability and financial position of the firms. The data source is feenstra(2000) and Campa and Goldberg(1997)   L.DESAR et al also investigated why some firms exposed to changes in exchange rates and some are not. Through exchange rates and excess return it can measure the co movement of exchange rates. The test based on the ODEC data. The explanatory variables namely international asset and foreign sale in the mid of 1990 were used. It was discovered that exposure was greater at the country level This study revealed that there were significant amount of exposure to a range of different exchange rates. Some regression tests also confirm that exposure is more prevalent in small sized firms.

Omankhanlen (2001) investigated the importance of FDI for the less developed countries and discussed the difference between desired gross domestic investment and domestic savings   in Nigeria. They stated that there is bidirectional relationship between foreign direct investment and economic growth. He used an econometric model to examine the relationship between Nigeria economy and foreign direct investments. The data contained the time series data of 30 years for determining the relationship between economic growth, exchange rate, inflation and FDI.GDP, FDI, government expenditure were used as variables. This study used regression analysis for the results. FDI, INFL, EXR test used in this study. Study resulted that regression analysis can determine the relationship between FDI, gross fixed capital and government expenditure. Many models can be used to analyze the effect of inflation and exchange rate on FDI of Nigeria.

Morrissey and Udomkerdmongkal(2008)studied the relationship between US foreign direct investment and exchange rate. They investigated the reasons behind some countries using bilateral exchange rate and others using floating exchange rate. They also investigated the effect of local currency depreciation on inward and outward foreign direct investment and the way local currency affects the FDI and bilateral exchange rate. They used the data of 16 emerging markets from 1990 to 2002. Some models were used to determine influence on the exchange rate expectations and exchange rate volatility on the foreign direct investment. Bilateral exchange rate, real effective exchange rate and an increase and decrease in real effective exchange rate were used as variables. Chakrabarti and scholnick (2002) methodology they used in this study with some hypothesis. The sample consisted of 16 countries markets. Descriptive test and correlation matrix used as test to check the stationarity in the variables. They concluded that

there was positive relationship of currency's deprecation and FDI and there is negative relationship of FDI with the exchange rate volatility. The study concludedIf there will be great volatility in REER it would discourage the FDI.

Boykorayev and Madsen (2008) investigated the basic theory of exchange rate and determined the factors which are involved in the determination of exchange rate. They studied nominal exchange rate, floating exchange rate and real exchange rate from the year 1974 to 2003.They studied theory of exchange rate in detail and examined the essence of exchange rate, theory of purchasing power parity, best monetary policies and fixed exchange rate. The factors that can determined the exchange rate are notion of exchange rate, inflation and monitory policies. Natural real exchange rate approach was used in the paper. Nominal and real exchange rate both has different determinants for empirical data. Nominal exchange rate, real exchange rate, inflation, growth, term of trade, size of GDP, and openness were selected as sample was drawn from 82 countries of the world from the sites of IMF and World Bank. They used regression analysis and penal analysis statically methodology. The study concluded that there are few more variables other than the studied ones that determine and affect the exchange rate and the effect of purchasing power parity on nominal exchange rate.

Rehman et al investigated why Pakistani currency was more devalued in exchange relative to other currencies especially US dollar. They made an analysis on purchasing power parity and found it in the long run. They also investigated that nominal exchange rate plays a vital role in the deviations that occur from the purchasing power parity. The study showed that there was a strong relationship between the exchange rate changing and economic indicators. Exchange rate, inflation rate, current account and gross domestic product used as sample. Simple regression equation used with dependent and independent variables to analyze the stationarity of variables. They discovered that exchange rate fluctuations occurred due to economic and non economic indicators. If the value of home currency were changed regarding the US dollar it can change FDI return.They concluded that the gross domestic product was the most important indicator which can affect the exchange rate strongly with great coefficient correlation. Inflation rate and interest rate also affect the exchange rate. The indicator that had very low coefficient correlation was current account because it influences the exchange rate fluctuations very insignificantly.

Rodrik(2008) attempted to analyze the exchange rate relation with the economic growth. The main purpose of this study was to the effect of undervalued currency on the economic growth and how it effects on the economy. He discovered that Strong position of the tradable sector showed

the positive change in the exchange rate and high income level. He made an analysis why some countries showed poor condition towards the higher income level. He made a comparison between quarterly and annual data from the year 1954 to 2004 He discussed that developing countries can increase their income level with the growth of tradable sector. An index was used to measure the domestic price level with the variables of exchange rate, real exchange rate and purchasing power parity with Index for countries and index for duration. Regression analysis used in the study. They concluded that institutional weakness and market product failure were the main causes of poor economic growth and it effects the exchange rate level.

Muco, papapanagos&sanfey (1998) attempted to investigate the relationship between the official and free market exchange rates in Albania. The main purpose of this study was to investigate the main issues related with the efficiency, casualty and determinants of foreign exchange in Albania from the year 1992 to 1997. Daily base data used in the study. They made analysis by studying Albania exchange rate data on different currencies and econometric methodology used with high frequency data. The data for both official and free market rates collected from the bank of Albania and they found the free market rate in four currencies. They concluded that by using the high frequency data and econometric model it can measure that both rates show efficient position in the Albania.

Craigwell and Singh (2009) during their work on exchange rate determination in Jamaica established that by incorporating hybrid model along with micro-based and other economic fundamentals variables could be a better option for sustained relations in the economy of the country. In this regard, they applied co-integration analysis on 2000 cases which was in contrast to earlier studies in Jamaica. This study also concluded that micro-market variables are more important while determining US/Jamaica exchange rate fluctuation. The two-stage Engle-Granger Augmented Dickey-Fuller (ADF) procedure which applies the ADF tests to the OLS residuals from the exchange rate-fundamentals regressions was used. The Johansen (1988) technique was also employed, not only to detect if any linear combination of the variables in the models was stationary, but also to determine the number of long-run relationships. The DOLS method was also utilized to estimate the co-integrating vector. The variables used in this study were price variable, which were the Consumer Price Index, and the interest rate which is the rate of returns on three-month Treasury bill. The exchange rate was the end of period monthly nominal Jamaican/US exchange rate. The findings suggest that micro-market variables are important factors in explaining US/Jamaica exchange rate movements, and that their omission may explain some of the earlier failures of these empirical exchange rate equations.

Additionally, a recent study conducted by Parveen, et al (2012) focused on the factors which effect exchange rate variability in Pakistan. Thus inflation, Growth rate along with imports and exports were used as the main factors to investigate the issue by applying Simple Linear Regression model with ordinary least method (OLS). This study established inflation as a main deriver behind exchange rate variation in the country which is followed by economic growth, export and import. These findings indicate the harmonization of fiscal and monetary policies along with trade policy in the country. This study used annual data for the period 1975-2010. They concluded that Inflation has a negative effect on exchange rate as when inflation increases it reduce the value of currency. Furthermore economic growth was the next significant variable having impact on exchange rate while order of export and import in variation lies at third and fourth position.

Another study conducted on exchange rate determination in Pakistan by Khan and Qayyum, (2007) obtained that nominal exchange rates are significant to eliminate any variation from long run purchasing power parity.

This study implied monitory authorities to bring a consistency in money supply growth in order to bring stabilization in the system and to reduce the deficit in balance of payments. It used Johansen (1988) and Johansen and Juselius (1990) multivariate co-integration and bound testing approach to co-integration (Pesaranet al., 2001) to provide an empirical evidence on purchasing power parity for Pakistan rupee (PKR) in comparison to US-Dollar. They used Autoregressive distributed lag (ARDL) and Augmented Dickey Fuller (ADF) in those study. They concluded that monetary authorities should contain money supply growth in order to stabilize prices and reduce balance of payments deficits.

Saeed et al (2012) recently worked on exchange rate determinants in Pakistan. In this relation, econometric analysis was being used to investigate determinants of US dollar in terms of Pakistani rupee (PKR). The data considered for this research is ranged in the period of 1982-2010. This study also used few dummy variables such as foreign exchange reserves, stock of money along with total debt and political instability. Error correction model is applied in addition to ARDL approach for co-integration. The variables used in this study were debt, foreign exchange and stock of money which are significant determinants of exchange rate between PKR and USD. Augmented Dickey Fuller (ADF) test was used to test the stationarity of variables. error correction mechanism (ECM) has also been employed to estimate the short run dynamics relating to the macro economic variables and nominal exchange rate However, political instability has a substantial negative effect on the value of local currency. Their opinion was that exchange rate behavior significantly depends upon the macro or monetary fundamentals of the respective countries.

Gosh and Rajan (2008) in an attempt to investigate trends and determinants in exchange rate, a comparative study performed in Korea and Thailand through exchange rate pass through technique (ERPT). It found that ERPT for Thailand is higher than Korea. They considered ERPT for three exchange rates, bilateral nominal exchange rate per unit of the USD the Japanese yen, as well as for their Nominal effective exchange rate (NEER). Further they also focused on macroeconomic determinants and the reasons behind the movement of ERPT over period of time. They concluded that ERPT into Thailand is higher than in Korea in all cases under consideration. Second, it is apparent that ERPT is much larger into import prices than CPI for both countries.

Further, Atif et al (2012) in their study on the determinants of Australian exchange rate showed that output and liquidity (Australian trade components and macroeconomic indicator) plays a major to determine Australian dollar exchange rate in contrast to US dollar. The variables used in this study were share price index, net foreign assets, and political stability. Nevertheless the role of interest rate and inflation cannot be overlooked. Augmented Dickey-Fuller test (ADF) for Unit Root was conducted along with time series analysis. White's Hetero-skedasticity test was also applied in a part of the study. Interestingly, the impact of unobservable factors, for instance, external shocks and political events are also taken into account in this study with respect to exchange rate determinants.

Mussa (1984) presented exchange rate as an "asset price" that depends on a discounted sum of economic factors that are expected to affect the foreign exchange market in present and future periods. This asset price model implies a convenient decomposition of exchange rate changes into their expected and unexpected components and it suggests a general explanation for the dominance of the random, unexpected component of exchange rate change in actual exchange rate movements. Asset price model of the exchange rate was also used in the study. He concluded that such work will ultimately turn him against the current system of flexible exchange rates in favor of a more orderly monetary system.

Kearns and Manners (2006) made their effort on determining the impact of monetary policy on exchange rate. They investigated the impact of monetary policy on the exchange rate using an event study with intraday data for four countries. Carefully selecting the sample periods ensures that the policy change is exogenous to the exchange rate. They concluded that the impact of monetary policy changes on the exchange rate is found to occur virtually instantaneously. If they use an event window that ends well after the monetary policy decision, the estimates do not change, indicating that the news is rapidly incorporated into exchange rates, although the standard

errors widen. Despite using a narrow event window in which no other identifiable events occurred, the monetary shock explains only 10–20 percent of the variation in the exchange rate in that short window. In general, the results suggest that monetary policy can account for only a small part of the observed volatility in the exchange rate. The small proportion explained by such high-profile news indicates that there is still much to learn in explaining exchange rate movements.

In a relative old study, Stockman (1980) developed an equilibrium model for exchange rates determination. He concluded that variation in demand and supply of goods causes fluctuation in exchange rates. Thus a correlation may be found between the exchange rate and terms of trade.

Problem statement

Economy has a volatile & unpaired (contra PPP) nominal exchange rate leading to devaluation of Pakistani rupee due to domestic price level and foreign price level specifically.

Hypothesis

H_0 There exists no relationship between DPL and NER
H_1 There exists a positive relationship between DPL and NER
H_0 There exists no relationship between FPL and NER
H_2 There exists positive relationship between FPL and NER
Where,
DPL= Domestic price level
FPL= Foreign price level
NER= Nominal exchange rate

Theoretical frame work

Foreign price level → Nominal exchange rate ← Domestic price level

Materials and Method

The paper aimed to investigate the relationship between nominal exchange rate, domestic price level and foreign price level.
NERc DPL FPL

Source of data and strategies

It investigates that the data which will allow the estimation of stochastic equations shows the empirical test of Purchasing Power Parity

option of exchange rate determination has to be collected. These cover the Nominal exchange rate, domestic price level and the foreign price level data.

In this study the time series secondary data was used. Data used was on the daily basis for 13 years from 03 July 2000 to 28 June 2013. Data was collected from the state bank of Pakistan. The model is estimated on daily data of Pakistani rupees per U.S dollar rate from June 2000- July2013.
For the analysis of data, E-views 7.1 software was used. Then unit root was applied to check stationarity of the data. This test was used for testing the reliability of the data because daily data may not give stable results.

Then OLS (ordinary least square test) test was used to study the relationship between the variables one by one. And at the end co-integration & error correction mechanism tests conducted for testing the regression of the variables in time series data. All of these tests were used because these are reliable, time efficient and fit for time series data analysis and it shows the relationship between short run dynamics with long term results.

Interpretation of Data and results
Results of Stationarity Test
To identify the existence of unit root, ADF (1979) and Phillips Perron (1988) tests are used (Schwert, 1989). ADF Test is based on the following equation:

$$\Delta X_t = \alpha + \beta T + (\rho - 1)X_{t-1} + \sum_{i=1}^{n} \Phi_i \ \Delta X_{t-1} + \varepsilon_t$$

x = the natural logarithm of the series under consideration,
T = a linear time trend term,
ρ, ϕ= the parameters to be estimated,
Δ= the first-difference operator, and
ε= is the error process with zero mean and constant variance.

Table 1: Results of ADF

Variables	ADF	Critical value @ 1%	Critical value @ 5%	Critical value @ 10%	Remarks
NER	-10.49240	-3.431935	-2.862125	-2.567125	Stationary
FPL	-10.43546	-3.431935	-2.862125	-2.567125	Stationary
DPL	-10.55094	-3.431935	-2.862125	-2.567125	Stationary

ADF unit root examines null hypothesis that given series is non-stationary and the hypothesis is either acceptable or rejected by comparing t-statistic with critical values. If t-value is more than critical value then null hypothesis is rejected. If the value of t-test is less than critical value then null hypothesis is accepted. Results of analysis are shown in Table I, ADF test

value is greater than all CV in their absolute form which means that the null hypothesis of unit root presence is rejected and it further shows that data is stationery.

Table 2: Regression analysis

Dependent Variable: NOMINAL
Method: Least Squares
Date: 09/16/13   Time: 23:43
Sample (adjusted): 1 3723
Included observations: 3723 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.637104	0.164019	3.884327	0.0001
DOMESTIC	0.996331	0.001112	4.813467	0.0000
FOREIGN	-18.50696	5.840708	-3.168615	0.0015
R-squared	0.999947	Mean dependent var		69.58814
Adjusted R-squared	0.999947	S.D. dependent var		13.51779
S.E. of regression	0.098398	Akaike info criterion		-1.798795
Sum squared resid	36.01736	Schwarz criterion		-1.793781
Log likelihood	3351.457	Hannan-Quinn criter.		-1.797011
F-statistic	35120935	Durbin-Watson stat		1.529917
Prob(F-statistic)	0.000000			

To find out relationship between dependent and independent variables, regression model is used.
C (NEXR) = dependent variable (nominal exchange rate)
DPL = domestic price level
FPL = foreign price level

In Table II Empirical analysis of the relationship has demonstrated that both independent variables (domestic price level and foreign price level) have a significant relationship with dependent variable (nominal exchange rate). Precisely speaking Domestic price level of US dollar has positive strong relationship with nominal exchange rate whereas foreign price level has a significant negative relationship with nominal exchange rate in Pakistani economy. Technically speaking an increase in DPL will increase exchange rate while and increase in FPL will decrease exchange rate. Results have strong evidence that DPL & FPL are efficient regressors for nominal exchange rate in context of Pakistan. Value of adjusted R-square is 0.999947 which is fairly high, so we can conclude that relationship under study has variable with no autocorrelation and hence a best fit is there between the variables of interest.

Analysis of co-integration test:

Co-integration test is conducted using Johansen Maximum Likelihood estimation approach for analyzing the long term relationship among the dependent and independent variables. This test also shows if there is any co integration equation then it means that there is a long term relationship among the variables. The tests results of co-integration test are shown below in the Table III

Table III

Date: 09/17/13   Time: 00:07
Sample (adjusted): 6 3723
Included observations: 3718 after adjustments
Trend assumption: Linear deterministic trend
Series: DOMESTIC FOREIGN NOMINAL
Lags interval (in first differences): 1 to 4

Unrestricted Co integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.112266	482.9254	29.79707	0.0001
At most 1 *	0.010661	40.17322	15.49471	0.0000
At most 2	8.73E-05	0.324474	3.841466	0.5689

Trace test indicates 2 co integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michel's (1999) p-values

The results of co-integration describe in Table III that there are two co-integration equations. It's means that there is a significant relationship between dependent (NEXR) and independent variables (FPR, DPR) in the long run.

Findings

Results of unit root test (Augmented Dickey Fuller) have showed that the data of all variables is stationary at 1st difference. Hence, there is no issue of stochastic properties of variables under study. Co-integration test in the above given Table III proves that domestic price level has a positive long term relationship with NER in context of Pakistan. If domestic price of dollar increases then nominal exchange rate of Pakistan will also increase by 0.99 units and nominal exchange rate will be increased by 0.64 units.

Parallel to above explained phenomenon other interesting facts revealed through current study demonstrated that foreign price level has a

negative relationship with nominal exchange rate. Therefore, if foreign price equivalence of Pakistani rupee decreases by 18.506 then nominal exchange rate of Pakistan for dollar will increase by 0.637. These results are in coherence with previously existing literature showing that there is a slight negative relationship with nominal exchange rate as it does not affects the nominal exchange rate in the economy too much.

Thus, it is proved that hypothesis H_1 was accepted while hypothesis H_0, H_2, H_3 and H_4 were rejected.

Conclusion

This study investigates a long run version of the purchasing power parity model of exchange rate determination in Pakistan. Empirical analysis was conducted by applying Augmented Dickey Fuller test, ordinary least square regression model and co-integration model on daily data of Pakistani economy from 2000 to 2013. The results of models were same as expected. Domestic price level has a strong positive relationship with nominal exchange rate while foreign price level has significant negative long run relationship with nominal exchange rate. The reason behind this negative relationship is that international trade of Pakistani rupee is not in practice.

The results recommended the need for the State Bank of Pakistan to abandon the floating exchange rate system and pick the purchasing power parity (PPP) system of determination of exchange rate in Pakistan. It also suggested that central bank should promote Pakistani rupee to international trading. This evidence should thus serve as a foundation for the future conduct of exchange rate policies in Pakistan and in all Less Developed Countries of the world.

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