The Political Economy of Exchange Rate Policy in Pakistan

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CERTIFICATE

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Declaration

I hereby declare that this thesis, neither as a whole nor as a part thereof, has been copied out from any source. It is further declared t I have carried out this research by myself and have completed this thesis on the basis of my personal efforts under the guidance and with the help of my supervisor. If this thesis is proven to be copied out or earlier submitted, I shall stand by the consequences. No portion of work presented in this thesis has been submitted in support of any application for any other degree or qualification in Pakistan Institute of Development Economics or any other university or institute of learning.

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Dedication

It is dedicated to my beloved parents, teachers & to everyone, who supported me all along the way

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In the name of Allah, the most gracious, the most merciful

Allah Almighty is gracious, who bestowed me with patience and energy to complete this uphill task. His blessings on me are numerous and countless.

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Abstract

The study provides the political economy analysis of the exchange rate policy of Pakistan. It maintains that exchange rate level, and the resulting misalignment, is mainly a political decision. Framing it exclusively in the context of economic factors, as standard practice in existing literature, can produce erroneous estimates and inefficient policy recommendations. We have extended Behavioral Equilibrium Exchange Rate (BEER) Model in two fold to assess exchange rate misalignment. First, we introduce political economy variables including central bank independence, election effect. Second, we use estimated value of economic fundamentals as the realized value of these fundamentals may not reflect the true state of respective economy. In our BEER model, we use estimated foreign reserves level to show that forex level build through public borrowing may underestimate the misalignment as it gives a higher equilibrium value of exchange rate. Results from BEER show that political economy factors are most significant predictors of exchange rate misalignment and associated misalignment of Real Effective Exchange Rate (REER) in Pakistan. We also find that election-day effect is evident in Pakistan and democratic regimes keep the rupee overvalued and resist devaluation especially prior to elections. We also provide evidence on persistence of alternative exchange rate regimes, overvaluation and undervaluation, in alternative political regimes, democratic and autocratic, using Markov Switching Model (MSM). Results from transition probabilities show that democratic regimes prefer overvaluation more as compared to autocratic regimes. Overvaluation has higher probability of persistence. In other words, transition from overvaluation to undervaluation regime is resisted atleast before elections.

Keywords: Political Economy; Exchange Rate; Overvaluation; Monetary Policy; Rupee Misalignment; Equilibrium Exchange Rate; Pakistan.

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Acronyms

BEER	Behavior Effective Exchange Rate
FEER	Fundamental Equilibrium Exchange Rate
CPI	Consumer Price Index
ER	Exchange Rate
FOREX	Foreign Exchange
ECM	Error Correction Model
GDP	Gross Domestic Product
IMF	International Monetary Funds
UIP	Uncovered Interest Parity
PKR	Pakistan Rupee
OLS	Ordinary Least Square
PPP	Purchasing Power Parity
LOOP	Law of One Price
RER	Real Exchange Rate
ULC	Unit Labor Cost
SBC	Schwarz Bayesian Criterion
AIC	Akaike Information Criterion
MSM	Markov Switching Model
TVTP	Time Varying Transition Probabilities
MLE	Maximum Likelihood Estimation
TOTD	Terms of Trade Differential
POL-D	Political Dummy
HP	Hodrick Prescott
EMIS	Exchange rate Misalignment
WIR	World Interest Rate
NFA	Net Foreign Assets
AREER	Actual Real Effective Exchange Rate

The Political Economy of Exchange Rate Policy in Pakistan

1. Introduction:

The political economy refers to relationship amongst the political power, economy and society. It corroborates policies of the state and macroeconomic situation, which ultimately decides destination of a nation and economic wellbeing of the masses. It defines the political and economic processes in a society; distribution of power and wealth in various segments of the society. Political economy is dynamic phenomena, bound to transform, and evolve over the period of time (Collinson, 2003).

The internal side of the political economy entails about the modus operandi/ framework for collection of revenues and subsequent allocation / consumption of the piled up resources by the state. On the external front, it defines the status and place of a nation in international trade arena. The exchange rate and trade policies play a vital role in sovereignty of a country in the world as they are by way margin critical in external linkage in addition to foreign policies. The state of industry and services, legal framework and its practical implementation are also subject matter of political economy (Shahid Ahmed, 2016)

The exchange rate policy lies at the heart of economic policy as it directly and indirectly affects the macro indicators e.g. Export growth, resource allocation, consumption pattern, foreign investment, employment etc., (Edwards, 1989 and Clements & Lan, 2007). The global trends and trading patterns on the external side, while ruling regimes and centrals banks play a pivotal role in devising the exchange rate policy of Pakistan like most of the countries of the world. Ideally, the level of exchange rate should be decided by the market forces and it should be the actual

exchange rate prevailing in the economy. However, it is not always the case, all the time and everywhere as it is a complex phenomenon dependent on the number of inherent factors (Bah & Amusa, 2003).

The central banks keep influencing exchange rate policy at the whims of ruling regimes even if the declared exchange rate policy is the flexible exchange rate regime. The political motives i.e. ultimate desire of having absolute power and the extension of ruling regimes, are the dominant reasons behind the interference. Depending on the policy objectives, central bank may deviate from the announced regime opening up for the ruling regimes to follow their agenda (Von Hagon & Zhou, 2005 and Alesina & Wagner, 2016). Pakistan has followed different kind of exchange rate regimes and most of the time exchange rate has been remain deviated from the equilibrium level and it had also hurt the economic growth.

It is evident from the foregoing discussion that ruling regimes and exchange rate policy has a strong correlation; especially in the economies where the institutional setups are not mature. Whatever the intensions of the ruling regimes may be but the disruption in natural forces of demand and supply leads to disequilibrium in the exchange rate, which further triggers untoward issues in the economy. In this backdrop, there is a dire need to explore and provide the political economy explanation of the exchange rate policy of Pakistan.

This study is fundamentally different from the existing literature on exchange rate misalignment including, but not limited to, Hussain & Riazuddin, (2008); Ahmed, (2009); Zakaria, (2010); Jaffri & Ahmed, (2010); Debowicz & Saeed, (2014) and Bhatti , Ahmed & Hussain, (2018) . It deviates multifold and at many fronts. First, we offer political economy explanation of exchange

rate movements, which is not offered by any of the available studies. The available literature frames equilibrium exchange rate, and resulting misalignment, as an outcome of economic fundamentals exclusively (Javed et al. 2016).

We argue that exchange rate policy is predominately a political decision and estimation of exchange rate misalignment, therefore, must considers these political economy factors. Estimates of misalignment based on economic fundamentals, therefore may be inefficient. And the interpretation of exchange rate movements devoid of political economy factors may be misleading (Javed & Ahmed, 2016).

Second, we depart in modeling of exchange rate misalignment in at least two major aspects. While the existing literature models exchange rate as economic decision based on economic fundamentals, we populate BEER model with political economy factors including central bank independence, election effect and public borrowing to build foreign reserves in order to maintain rupee strong artificially.

Further, we argue that the literature on estimating equilibrium exchange rate value of REER of rupee seems to assume that economic fundamentals correctly reflect the state of economy. This may not be true. For example, the governments in Pakistan have standard practice of public borrowing to build reserves artificially in order to keep the rupee strong. The level of forex, in this situation, does not reflect actual state of the economy.

Using the given forex level, without understanding the composition of these reserves, in Behavioral Equilibrium Exchange Rate (BEER) or Fundamental Equilibrium Exchange Rate

(FEER) models therefore may produce erroneous results. We use estimated forex level in our BEER modeling, rather than realized forex levels used in existing studies. Future research may extend the argument to other economic fundamentals.

Third, we provide evidence on transition from overvalued regimes to undervalued regimes through Markov Regime Switching Model. None of the existing studies touch upon transition probabilities of rupee rate from one regime to another regime. It is in this context that findings of this study are not directly comparable to existing literature. Rather, we extend the scope of debate on exchange rate movements in particular and exchange rate policy in Pakistan in general.

A better-informed debate is important as exchange rate level and associated misalignment have serious socioeconomic implications ranging from trade deficits, current account deficits to product diversification, wages in labour market and income inequality. A better understanding of the factors shaping exchange rate choices may help better and efficient policy decisions and actions (Javed & Ahmed, 2016).

It is widely believed that the exchange rate is one of the most significant prices in an economy as it affects other domestic prices and economic transactions with rest of the world (Frieden, 2008). Study on maintaining of exchange rate at stable and competitive level, therefore, has drawn the attention of academia, researchers and politicians in the recent times (Rodick, 2008; Razmi 2012; Damill 2012; Sokolova, 2015 and Stiglitz, 2018).

Exchange rate equilibrium reflects supply vis-à-vis demand of currency. From the core concept of exchange rate, stems out its variants e.g. real effective exchange rate, real exchange rate etc.,

each is slightly different in its connotation, basis of computation, explanation and interpretation. However, at the heart of every conception lies the exchange rate. It is adjusted for variation in inflation and other pitfalls of the economies across the borders. Brining the data at same grid or ensuring compatibility is no doubt an essential requirement of the analysis. But when once exchange rate and relevant data such as consumer price index, statistics about tradables and nontradables, volume and detail of trading partners etc., is there, it can be handled and extended further for any kind of analysis. It this study however the exchange rate and real exchange rate have been used interchangeably.

Deviation of the Exchange Rate (ER) or Real Effective Exchange Rate (REER)[1] from the appropriate or equilibrium level on the either side, commonly known as exchange rate misalignment, has serious consequences for the economies. It is generally believed that overvaluation hurts economic growth while undervaluation leads to export diversifications, and may spur economic growth (Rodrick, 2008; Bhalla, 2012; Dubas, 2009 and Elbadaawi, 2012).

It helps shift production factors from non-tradable to tradable sectors, which lead to higher productivity and thereby improved growth rates (Cottani,1990). However, excessive undervaluation may also affect economic growth adversely as it moves economy towards internal imbalance and higher inflation (Williamson, 1990; Sallenave & Couharde,2013 and Chen & Zhang, 2014). Devaluation also increases debt of a country as it has to be pay more in terms of local currency (Rehman, 2012 and Javed & Ahmed, 2016).

1 REER is an excellent measure of competitiveness of an economy with respect to its trading partners, which is calculated by the average of bilateral real exchange rates weighted with annual values of trade. It is a desirable state of internal and external equilibrium, where internal equilibrium is a situation, which clears the non-tradable goods market i.e. Intertemporal equilibrium in goods market. While, the external equilibrium refers to a position, where current account is sustainable and is also compatible with sustainable capital flows

On the other hand, it is argued that sustained overvaluations over a long period of time leads to currency crisis (Krugman, 1979; Rose & Frankel, 1996 and Kamissky & Reinhart, 1999). Evidence suggests that overvaluation is often linked with macroeconomic instability, deficit of current accounts and retarded economic growth. Persistent overvaluation is considered more damaging for the economic health of a country in the longer run (Rodrik, 2008).

It is in this context that the issue has earned as serious consideration in economic and political literature broadly assessing i) impact of exchange rate misalignment on socioeconomic outcomes (Aghevli, Khan & Monteil, 1991; Eichengreen, 2008; Lane & Ferreti, 2002 and Algieri, 2011) and ii) factors affecting the choice of exchange rate level for any particular currency. This thesis extends the later branch of inquiry.

Evidence suggests that level of exchange rate[2], hence exchange rate misalignment, is strongly influenced by the political economy factors in addition to economic factors, especially in the countries where institutional setups are weak (Cohen, 1997; Sindel & Saroch, 2008 and Broz & Frieden, 2006). In Pakistan, however, explanations of changes in exchange rate policy are mainly limited to economic factors (Javed et al. 2016).

Deviating from the existing literature on the issue, this study argues that policy choice on exchange rate are mainly guided by political economy factors including, but not limited to, i) political choices rooted in strong rupee, strong economy narrative ii) indigenous growth model,

(Hyder and Mahmoob, 2005). REER captures competitiveness and influence behavior of export sector (Corbo and Caballero, 1989). The role and importance of REER in international trade is undisputed (Bhatti, Ahmed & Hussain, 2018).

2 If nominal rigidities are prevailing in an economy, the nominal exchange rate changes affect its real values. This help exchange rate policies to be influenced by the political decisions/ factors. Though there is limit to this policy option. If the set RER is producing large imbalances in the balance of payments, such level should not be sustainable in the long run keeping in view the limited economic variables. However, in the short run it can be affected/ adjusted by the political economy factors (Bonomo and Terra, 1999).

and iii) particular composition of economic growth and misplaced discussion on impacts of devaluation. And that limiting the study of exchange rate movements to economic fundamentals exclusively may produce erroneous results (Javed et al., 2016).

Exchange rate policies are also affected by the number of factors such as institutional setups, election timings and kind of regime (Bonomo & Terra, 2005). It is due to its ability to affect macro indicators like demand, inflation and growth rate, which are very much relevant to masses and elections as well. Further, a weak rupee near elections may leave the voters perceiving a weak economy and thereby may consider it a flopped ruling regime.

This may translate into lower vote for the government, particularly for democratic regime. Democratic governments, therefore, try to keep the exchange rate appreciated before the elections and delay the depreciation/devaluation till the time after elections (Klein & Marion, 1997; Frieden & Stein, 2001 and Lablang, 2002).

Governments all around the world try to utilize the economic policy instruments such as fiscal policy, monetary policy and exchange rate as a tool, especially around the elections, to tilt the voters in their favor, and influence investors, pressure groups to get re-elected (Rogoff & Sibert, 1988 and Nordhaus, 1989). For example, consumption spending is generally given preference prior to elections and mega investment projects for instant relief wins sympathies of the general public (Rogoff, 1990).

Expansionary monetary and fiscal policies are adopted prior to elections to enhance the expectations and opposite path are followed just after the elections. The said policies are

reversed after the elections and are molded to contractionary trend to overcome the instabilities created during the expansionary policies (MacRae, 1977). Public spending with less tax and delaying devaluation reveal the opportunist behavior of the governments but it is helpful in their re-election (Dornbusch, 1987; Rogoff & Sibert, 1988; Stein & Streb, 2004 and Tayyar, 2017).

The literature on exchange rate in Pakistan however remains exclusively limited to economic explanations and ignores the political choices behind exchange rate policy and misalignment. Against this backdrop, the study of said intricacies of Exchange rate or REER misalignments and the contributions of the political choices in such decisions is main motivation behind the study. Based on the above backdrop, our objectives in this research are three-fold.

First, a political economy explanation of exchange rate misalignment in Pakistan is provided. We argue that literature on exchange rate policy needs to go beyond economic fundamentals. This is particularly true for the strand of literature modeling the equilibrium exchange rate level to assess the nature and magnitude of misalignment. Secondly, we provide evidence that estimates of exchange rate misalignment are sensitive to political choices. In BEER, Johansen Cointegration approach is used to introduce political economy variable such as Central Bank Independence Index (CBI), Adjusted Reserves and Public Debt to corroborate the main arguments of study.

Adjusted reserves, here, refers to estimated level of reserves based on economic fundamentals of the economy. We argue that foreign reserves, accumulated through public debt to maintain strong rupee, do not portray actual state of economy and mislead estimation of exchange rate

misalignment. This may hold true for many other variables, but we limit our self to only forex level. Future research on the issue may extend the inquiry.

Third, we provide analysis of factors shaping preferences for the overvalued rupee. Finally, we apply Markov Regime Switching Model to show that the shifts in exchange rate regime, from overvaluation to undervaluation and vice versa, are influenced by political economy factors incorporating time varying transition probabilities. For this purpose, first the exchange rate regime is statistically characterized as overvalued and undervalued by employing Univariate Markov Regime Switching Model. In the second stage, the impact of political economy variables on exchange rate regime shifts has been tested.

The results validate that political factors predominantly affect the exchange rate policy choices. Weak institutional structure and lack of understanding of the complexities of the exchange rate are the few dominant factors, which provide ruling regimes a playing field. Apparently, it seems a simple decision; however, it has far reaching effects as it puts the economy on wrong track for many years to come.

1.1. Objectives*:*

Against this backdrop, the study has the following three main objectives:

i. To provide political economy explanations of exchange rate movements in Pakistan.

ii. To estimate the misalignment of REER, adjusted for political economy factors, going beyond economic fundamentals

iii. To assess the extent up to which these factors explain the exchange rate policy of Pakistan.

iv. To determine whether the transition of exchange rate from one regime to another, from overvaluation to devaluation and vice versa, is influenced by the political economy variables or not?

1.2. Significance and Scope of Study:

The economy of Pakistan is facing serious balance of payment crises. It is generally attributed to wrong currency policies and perceptions of the every previous government, along with other factors. Existing literature on explaining exchange rate movements in Pakistan, however, is limited to economic factors exclusively. An attempt has been made in the study to provide an broad picture of various exchange rate regimes through the lens of political economy.

The study has touched political economy of the exchange rate and has summed up that political economy factors have dominant role in deciding the prevailing exchange rate, which is crucial for stability and economic growth of the economy. This study analyzes the exchange rate policies from 1980 to 2017. Cointegration and Markov's Regime analysis have been used in the study to validate the hypothesis.

The major contributions of the thesis include i) extension of the Behavioral Equilibrium Exchange Rate model by introducing the political economy factors, ii) providing political economy explanation of exchange rate movements, ii) placing the exchange rate misalignment

beyond economic fundamentals and iv) providing evidence from Markov Regime Switching model on transition probabilities of undervaluation and overvaluation regimes.

1.3. Summary and Structure of the Study:

Impetus of the study is that exchange rate prevailing in the economy is a mixture of economic and political factors. The short sighted and self-centered ruling regimes or political factors use exchange rate for showing artificial strengthened economy by keeping it overvalued. It is devastating for the economy in the long run. Music is faced by the government, takes over the hot seat and proceeds with. The exchange rate policy and institutions should be independent and free from political interference. Exchange rate should portray actual state of the economy leading towards stability and economic growth.

Ensuing paragraphs structures the study as follows: chapter 2 provides a review of the existing studies on the issue. Data and methodology have been discussed in chapter 3. The political economy view of exchange rate misalignment in Pakistan is presented in chapter 4, with key focus on factors pushing for i) choice of overvaluation and resistance to devaluation. Chapter 5 provides estimates for regime switching analysis and discussion. Chapter 6 closes the study with conclusion and policy recommendations.

2. Literature Review:

The political economy analysis has been developed by the economic giants like Adam Smith, John Locke, Karl Marx, Thomas Malthus and David Ricardo. The 'Political Economy' was segregated as a separate branch of 'Political Science' and 'Economics' during the late nineteenth century. Today, it can be regarded as amalgamation of politics and economics. Literature on the political economy is available in abundance, as it covers a very broad spectrum. However, the scope of this study is limited only to political economy of exchange rate movements with reference to Pakistan.

Voluminous theoretical and empirical literature on both political economy and exchange rate is available separately. Specific literature on political economy with reference to exchange rate is comparatively scant and is at the rudimentary stage. However, keeping in view the importance and relevance of the topic in modern day global and knitted world, it is drawing the attention of prolific writers, researchers and economists round the globe.

Some studies are available on the subject matter of political economy and provide a niche. (Leblang & Pepinsky, 2008) explains the precautionary and mercantilist behavior of china with reference to reserves. Bonomo & Terra, (1999) studied tradeoff between the balance of payment and inflation under democratic and autocratic regimes for Brazil. Tayyar, (2017) finds that monetary policies having expansionary base in Turkey are adopted before the elections with hidden agenda and opportunistic objectives.

Literature on misalignment of exchange rate with reference to Pakistan is available in quantum. However, specific studies on political economy of exchange rate misalignment are hard to find in the local literature. Javed & Ahmed (2016) is the first of its kind and furnishes a comprehensive analysis on exchange rate misalignment with reference to political economy of Pakistan. But the seminal work of Javed & Ahmed (2016) remains limited to highlighting the issue. No analysis has been undertaken to provide evidence from the data.

2.1. Empirical Literature:

The deviations of exchange rate from its equilibrium level, overvaluation or undervaluation is known as the exchange rate misalignment (Collin & Razin, 1997). A number of studies are available, which try to explain the exchange rate misalignment. It is utmost essential to find the extent of exchange rate misalignment and the study of underlying economic and non-economic variables responsible for the misalignment.

Johenson (2006) pointed out that exchange rate policy is important for growth of developing economies. Though, weak institutional infrastructure is one of the main reasons in putting the economy on right track. Collin & Razin (1997) concluded that an inverse relationship exists between the overvaluation and economic development. According to the author, an overvalued REER affects growth negatively, while undervalued exchange rate stimulates growth.

Edwards, 1989; Rodrik, 2008; Wong, 2013; Elbadawi, 2012; and Grekou, 2015 reinforced the results of Collins & Razin (1997). In a very famous study by Rodrik (2008), where he used the sample of 184 countries and annual data for 1950–2004 and studies the effect of REER

misalignment on economic growth. He applied dynamic panel estimation and found that the countries with more undervalued REERs achieved higher growth rates and also pointed out that an overvalued REER effects growth negatively, while an undervaluation insert an impetus for economic growth.

Williamson (1990), on the other hand, concluded that undervaluation leads to high inflation. In addition to that, it may reduce the funds availability for domestic capital formation and may hinder capacity of growth. Krugman (1978) had earlier noted that production can face problems on the basis that imported inputs become costly after real devaluation. Zhang & Chen (2014) and Couharde & Sallenave (2013) also concluded that the exceptional undervaluation beyond the threshold level may retard economic growth.

Elbadawi (2012) developed a large panel data covering many countries and analyzed the relationship between the misalignment of REER and economic growth for the period from 1980 to 2004. It explored the possible relationship between REER misalignment with foreign funding and economic growth. The empirical findings were that overvaluation hurts growth, while undervaluation favors growth and export differentiation/ development.

Wong (2013) performed the time series analysis and examined the effects of REER misalignment for the Malaysian economy by utilizing the ARDL approach. The result suggested that heavy REER misalignment adversely affected the growth process in Malaysia. Moreover, REER devaluation promoted economic growth and overvaluation or appreciation suppress economic growth.

Di Nino (2011) argued that undervaluation facilitates export sectors and help increased production of related sectors. It is beneficial to maintain the relative prices of traded goods higher as it attracts resources to their production. Mcleod & Mileva (2011), Aizenman & Lee (2010) and Bnigno (2015) advocated that firms engaged in manufacturing of goods learn by their experience and have incentive of maintaining the undervalued exchange rate. Habib (2017) found positive relationship between the slightly devalued real exchange rate and economic performance.

Literature is available in economics, which establish relationship between exchange rate misalignment and political economy considerations. Tabellini & Persson (1991) examined the unemployment during the election days. Rogoff (1990) and Rogoff & Sibert (1998) analyzed expenditures because of increase in taxes during the election eras. Streb & Stein (1998) explained that the exchange rate valuation/ devaluation cycles, during election periods. They pointed out that inflation rate prevailing in the economy is equal exchange rate devaluation and inflation tax is one of the sources of financing for government and preference will be to devalue less before election to increase the chances of being reelected.

2.2. Literature on Exchange Rate Misalignment in Pakistan:

Literature on exchange rate misalignment is available in case of Pakistan. However, specific literature on the political economy of exchange misalignment is scant. Most of the studies have been limited to identify the significant drivers of exchange rate misalignment, economic factors affecting the exchange rate, extent and direction of misalignment. Consideration of political

economy factors are entirely ignored in devising the exchange rate policy and from subsequent discussion/ computation. This study will be highlighting and catering for such factors.

The extant studies signify various drivers like terms of trade, trade openness, net capital inflow, relative productivity differential, government consumption, workers remittances', interest rate differential, net foreign assets, fiscal deficits, net foreign assets, capital inflows, foreign exchange reserves and domestic credit crucial (Debowicz & Saeed, 2014; Hussain, 2008; Janjua, 2007; Hyder & Mehboob 2005; Zakaria, 2010).

Apart from the determination of critical drivers and economic factors, discussion on the deviation from the equilibrium exchange rate is also available tough contradictory to certain extent. Hyder & Mehboob, 2005 put forward that exchange rate was undervalued during 1978 and overvalued in 2005 while Janjua, 2007 observed that PKR was undervalued in 1978. Qayyum, 2004 and Janjua, 2007 reported Rupee overvalued in 2006. Zakaria, 2010 found the PKR undervalued in 2010. However, as per Debowicz & Saeed, 2014 it was rather overvalued in 2010. It was observed by Hussain, 2008 that the exchange rate was overvalued during the period from 1970 to 1978, comparatively closed to equilibrium during 1978 to 1988 and again spells of overvaluation from 1989 to 1999 and from 2000 to 2007.

Explanation of variations are also different like Hyder & Mehboob, 2005 opined that the reason of undervaluation was fall in the value of dollar against the other major currencies, while overvaluation was due to excess liquidity of foreign exchange. Janjua, 2007 pointed out the appreciation of real effective exchange rate and adjustment of the prices as the reason behind the misalignment. Zakaria, 2010 explained that the undervaluation was the result of economic

sanctions imposed after the nuclear test. As per findings of Hussain 2008, deteriorated terms of trade and inflation were responsible overvaluation from 2000 to 2007.

Different methods and econometric techniques have been used in the aforementioned studies, which almost parallel to international studies. Johansen cointegration has been preferred as it determines more than one cointegrating vectors among the variables and a stable long run relationship is provided for a set of variables (Qayyum et al, 2004; Hussain, 2008;Zakaria, 2010, Debowicz & Saeed, 2012). Engle-Granger two step technique has been utilized by the Hyder & Mehboob, 2005 and Janjua, 2007, which rely on one cointegrating vector amongst the variables. These methods ignore issues like endogenity, which may seriously harm the results (Khan, 2008). The Autoregressive Distributed Lag (ARDL) bound testing has been used by the Bhatti et al, 2018, which has its own pros and cons.

The variation in results is due to use of different variable and testing methods. One of the reasons is that certain macro indicators used in the analysis are the outcome of the misalignment of the Rupee e.g. trade deficit. Correct model of exchange rate in a dynamic economy like Pakistan may be volatile due to unstable political governments, poor law and order situation, multiple compulsions e.g. inelastic imports and defense expenditure etc. It transpires that model estimating exchange rates and misalignment should incorporate institutional and political factors in addition to economic factors for a broader and better analysis.

A few attempts are also available to explain the misalignment of Pakistani rupee. Rehana Siddiqui (1996) examined exchange rate misalignment of rupee by applying 2SLS in simultaneous equations framework. Impact of misalignment of exchange rate on current account

deficit was examined. It was concluded in the paper that controlling domestic prices instead of repeated devaluations and policies facilitating the efficient use of resources help maintain a stable and competitive exchange rate. A policy facilitating the efficient use of resources in developing countries, which is facing multifaceted challenges, is a difficult task.

Qayyum (2004) examined that whether PPP theory for determination of exchange rate is a valid criterion for misalignment in Pakistan. The study concluded that the real exchange rate has remained overvalued as compared to dollar while its management at proper level is essential for international competitiveness. Law of PPP has its own limitations e.g. existence of non-tradable goods, consumer preferences and product differentiation, which can be included in the limitation so this study may only be good for understanding purpose.

Hyder & Mahboob (2006) studied exchange rate misalignment using the explanatory variables terms of trade, trade openness, relative productivity differentials, worker's remittances, Capital inflows, and government consumption. This study opined that equilibrium REER changes with economic fundamentals, prudent monetary policy is essential for stabilization of exchange rate in Pakistan. High price differential may cause upward movement of REER and misalignment of exchange rate, consequently. It was an excellent study and usually referred as standard work although institutional and political factors were missing from the study.

Janjua (2007) determined the impact of misalignment of exchange rate on the external trade of Pakistan, by the means of Engle Granger cointegration technique, which is considered crucial for economic growth. The data from 1978 to 2006 was used in the study. It was established that both nominal and real variables affect exchange rate. The author notes that if there is a significant

deviation from the equilibrium then central bank should take corrective measures to keep the economy on right track. External trade is itself an outcome of economic development. No doubt misalignment of exchange rate affect external trade badly, however, there are many other factors affecting the external trade such as competition, state of technology and economy etc.

Recent literature on exchange rate misalignment of rupee, including, but not limited to, Hussain & Riazuddin, (2008); Ahmed, (2009); Zakaria, (2010); Jaffri & Ahmed, (2010), Debowicz & Saeed, (2014) and Bhatti, Ahmed & Hussain, (2018) have reached to mixed conclusions in context of REER overvaluation and undervaluation. The common point of view, however, is that the Pakistani rupee has remained overvalued predominately.

Zakaria, (2010) studied the impact of misalignment of REER on the economic growth of Pakistan during the flexible exchange rate regimes by using the GMM estimation. The study found that the REER in Pakistan remained undervalued over the sample period 1983 to 2005, which resulted in output growth in Pakistan. It is an established fact that overvaluation hurts the economy and slightly undervalued exchange rate is good for economic growth. One thing that must be kept in mind that economic growth is an outcome of number of factors and it cannot be achieved through mere undervaluation. Moreover, for the same period many other studies have also reported overvalued exchange rate at some stages. The difference may be due to change of estimation techniques.

Jaffri & Ahmed (2010) examined the role of FDI on the behaviour of REER in case of Pakistan. The authors utilized BEER approach accompanied by cointegration technique to estimate misalignment and determined relationship between macroeconomic fundamentals affecting the

exchange rate. It was concluded that huge inflow of foreign investment as well as workers' remittances have appreciated the domestic currency significantly. Dubas (2009) concluded that floating exchange rate plays a prominent in misalignment in developing countries. On the other hand, Mallick, (2012) found that the fixed regime induces more misalignment than the floating.

Debowicz and Wajiha (2014) studied the extent of misalignment of exchange rate and its effect on economic growth of Pakistan using VAR model. Again, it was concluded that the slight under valuation favors growth. It was further concluded that the realignment of the rupee to its equilibrium, defined by economic fundamentals, would lead to increase in size of tradable sector due to productivity increase. Again the political and institutional factors, which also play their crucial role in economic development, were entirely missing from the study.

In a more recent study, Bhatti, Ahmed & Hussain, 2018 examined the effects of real exchange rate misalignment on the economic growth of Pakistan by using data from 1980 to 2013. Famous hypothesis of Rodrik (2008) that the undervaluation spurs economic growth of Pakistan was tested in case of Pakistan by using the ARDL bound testing of Pesaran (2001). The results indicated that there was a long run relationship among the REER, Real GDP, terms of trade, trade foreign direct investment. Misalignment of various degrees was observed during the different eras. Moreover, interestingly, it was observed that famous principle of "*undervaluation support economic growth"* is not correct in case of Pakistan.

The variability amongst the outcome of the empirical studies might be due to usage of different econometric techniques and explanatory variables. The examination of existing literature on exchange rate misalignment reveals that the REER misalignment has adverse impact on

economic performance. The empirical studies indicate that the macroeconomic policy variables such as term of trade, interest rate differential, trade openness, production techniques, technological improvement and innovation, Government consumption, foreign investment are important drivers of REER misalignment. Similarly, prevailing exchange rate regime and institutional sets up also affect the exchange rate.

2.3. Measuring Exchange Rate Misalignment:

The exchange rate is vital for external linkage of an economy. Studies on exchange rates and its allied possible variants, notably exchange rate misalignment, have captured interest of scholars the world over. A good amount of literature is available on approaches/ methods[3] for determination of equilibrium exchange rate. These approaches and methods vary from one another on the basis of definitions, variables and computation techniques.

This study extends the Behavioral Equilibrium Exchange Rate (BEER). Traditionally, this equilibrium exchange rate is determined by utilizing the economic fundamentals. This concept was mainly brainchild of Mcdonald & Clark (1998). As already mentioned, we introduce political economy factors in BEER[4]. This approach defines equilibrium in the behavioral sense i.e. consistent with the observed economic fundamentals.

In this approach, movement of economic fundamentals defines the exchange rate. Behavior of the of the exchange rate is captured by the movements of its determinants such as output growth,

3 Purchasing Power Parity (PPP) theory, Interest Parity (IP), Portfolio- Balance Approach (PBA), Fundamental Equilibrium Exchange Rate (FEER), Permanent Equilibrium Exchange Rate (PEER), Behavioral Equilibrium Exchange Rate (BEER), Equilibrium Real Exchange Rate (ERER), Reduced form RER, IMF's External Balance Approach (EBA), PPP with Balassa- Samuelson Effect approach,

net foreign assets, terms of trade, trade openness, government consumption, productivity differential etc. Misalignment is the variation in the econometrically estimated exchange rate on the basis of observed/ sustainable economic fundamentals and the actual exchange rate prevailing in the economy.

Different measures of exchange rate and REER are used to capture the various aspects of the global price and the cost competitiveness. Cost and price deflators are used to construct the REER, which is most commonly referred measure of price competitiveness against trading partners in international trade (Christodoulopou & Tkacevs, 2014). The deflators used to construct the REER include mainly Consumer Price Index (CPI), Export Price Index (EPI) or Export Unit Value (EUV) and Unit labour cost (ULC). Each of them has its own advantages and disadvantages. CPI is used commonly due to its ease of availability and comparative advantages.

2.4. Literature Gaps:

Exchange rate policy provides us a closer look at nation's political economy and strongly portrays government intensions. Over the surface, it looks that governments have to make a relatively simple decision such as to adopt fix or flexible exchange rate and keep the currency overvalued or devalued. However, this is not the case. The decision reflects the interaction of extraordinary complicated structures, articulation of political motives, and a number of tradeoffs.

Exchange rate policy has both benefits and costs. Those who make the policy must evaluate the tradeoffs in terms of costs and benefits. So, the exchange rate policy summarizes many features

Natural Real Exchange Rate Approach (NATREX) Macro balance (MB) approach etc., are few approaches/ methods to measure

of a national political economy and its maker must take into account the impact and every aspect of their decisions on each sector of the economy in particular and the society in general. Studies on misalignment of the exchange rate in Pakistan have been remained focused on economic fundamental to explain the exchange rate movements, ignoring the political economy factors and institutional setups. Political economy factors like kind of ruling regime, shift in ruling regimes and Election Day effect have not been discussed or examined with reference to Pakistan. This study fills the void.

2.5. How this Study Fulfill the Research Gap?

This study is an effort to introduce political economy factors in addition to economic factors in order to explain the exchange rate misalignment. Efforts are made to explain that how the political factors, for example borrowing to maintain foreign reserves above and beyond a certain threshold required to keep the rupee strong, are used to keep the exchange rate artificially overvalued. Here, we take borrowing as barometer of political decisions.

This study introduces other political factors including, Centralbank Independence Index, estimated forex level[5], Public Debt, pre and post-election years dummy and regime dummy into BEER to estimate exchange rate misalignment adjusted for political choices. Also, this work provides political economy explanation of exchange rate policy in Pakistan. Explanations in this regard range from vote perspective to structure and composition of growth and Pakistan's

equilibrium level/ rate. However, this discussion / comparison of these approaches goes are beyond the scope of this study.
4 Details are provided in chapter on data and methodology
5 The level of FOREX that Pakistan should have based on its economic fundamentals. This shall help us estimate exchange rate misalignment adjusted for artificially accumulated FOREX backed on public borrowing.

external trade strategy. Finally, we provide regime analysis of exchange rate policy of Pakistan and assess the associated costs, in terms of tradeoffs.

3. Political Economy Explanation of Pakistan's Exchange Rate Policy

3.1 Introduction:

A well-established phenomenon of macro-economics is that exchange rate is the most influential price in the economy as it affects all other prices. The policy approach towards local currency is essentially prominent yet controversial in many economies. So pronounced and central are exchange rates to economic arena of the world that economic epochs are often synonymous to prevalent exchange rate systems e.g. the Gold Standard, The Bretton Wood era. In contemporary economics there is an absolute consensus concerning the centrality of the exchange rates in shaping the economies.

Exchange rate impact economies by exercising influence on macro stability and size of country's external sector. Unfortunately, Pakistan's performance lagged on both the fronts (Ahmad 2009). The economy encountered plethora of problems during the decades of 70's, 80's and 90's. A predominant aspect of these issues was inappropriate and unrealistic policy actions related to exchange rate.

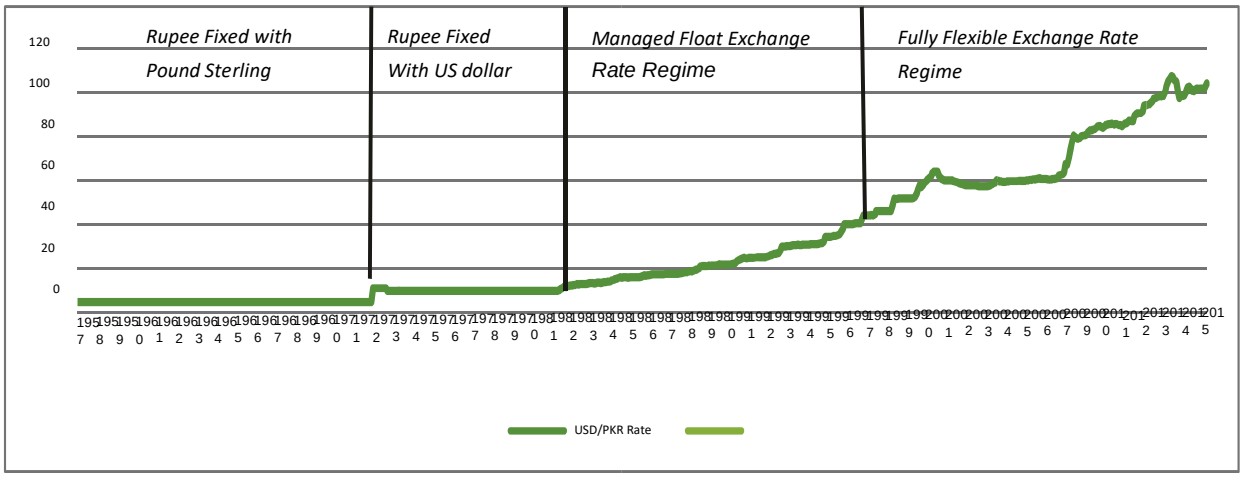
The government pursued fixed exchange rate system till 1981, which caused over valuation of Rupee by 17% (Khan and Qayyum, 2011). The Rupee remained over valued for the period of 1981-85. In January 1982, Pakistan moved to managed floating exchange rate system from the outdated fixed exchange rate system. Pak Rupee remained under-valued for the period thereafter (1986-94).

In the subsequent years, 1995 onwards, multiple episodes of depreciation and appreciation of local currency occurred. Rupee remained over valued for the period 1995-2000, undervalued for the period 2001-2004, slightly overvalued again for 2005-2007 and then slightly under valued during 2008-2009. Since 2010, there has been a rising trend of over valuation (Bhatti, Ahmed & Hussain, 2018)

3.2. Exchange Rate Regimes in Pakistan- A Snapshot:

Exchange rate regimes from time to time prevailed in Pakistan has been shown in the Figure 3.1. Pakistan, after its independence linked its rupee with pound sterling at the rate of pound sterling 1 equal to PKR 11.43. This arrangement continued till 1972. Thereafter, PKR was pegged with dollar at US$ 1 was equal to PKR 9.90. It is evident from the figure that Pakistan followed managed floating exchange rate from 1982 ~ 1998. Flexible exchange rate system is the declared since then. It can be clearly observed that exchange rate fluctuations are much more pronounced under the flexible exchange rate regime.

Figure 3. 1 Exchange Rate Regimes in Pakistan (USD/PKR rate)



Source: State Bank of Pakistan Statistics

It may make one ponder that pegged exchange rate ensures and it may be a more appropriate exchange rate system for country. However, it does not portray competitiveness of country. In the era of seventies reforms were introduced to segregate the financial and industrial sectors, to boost the efficiency of manufacturing sector.

The reforms were mainly focused towards the export rice and cotton. PKR was devalued to increase the exports and subsidies were also eliminated to enhance the revenues. These steps worked and terms of trade improved, however, the contribution of manufacturing sector to GDP dipped down as private saving and thereby investment did not supplement the public sector investment.

From 1970 to 1978, the real exchange rate of Pakistan observed an appreciation of 8.71 per cent on average (Hussain, 2009). The overvaluation of exchange rate was mainly due to war between India and Pakistan, which ultimately resulted into Bangladesh Tragedy. Higher rate of inflation, negative oil price shock on domestic prices and capital inflows because these indicators were giving adverse signs (Hussain, 2009).

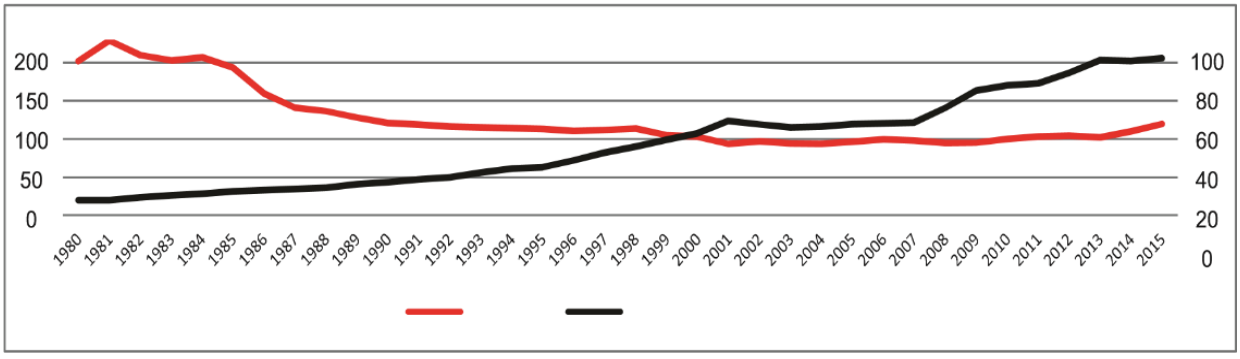
Ample evidence exist that flexible exchange rate regime affects economic performance of the country. SBP kept the policy rate up to 10 percent on the average and by selling the reserves, which fell to 3.10 percent of GDP in 1988 from 6.60 percent of GDP in 1980. During 80s US dollar appreciated considerably and it adversely affected exports of Pakistan during the late 80s.

US raised the interest rate during the 80s due to huge budget deficits and it attracted foreign capital. Resultantly, the Pakistani rupee dipped in value against the dollar. In response, SBP moved to managed float exchange rate to adjust the overvaluation of rupee in during 1982.

Pakistan tied the value of rupee with multiple major trading partners keeping in view the inflation associated with devaluation of rupee. Pakistan remained on managed floating regime from 1982 till 1999. After that the country adopted the flexible exchange rate and following it to date.

Figure 3.2, showcases the nominal bilateral against US$ and REER for rupee for the period from 1980 to 2015. It is evident that the REER appreciated soon after 2010 that reduced the export competitiveness of the country. State Bank of Pakistan has reported 23 percent increase in REER for PKR from 2010 to January 2016. The period also coincides with decline in exports i.e. approximately 3 per cent. Widening trade deficits also increased by approximately 2 percent as the percentage of GDP. It is clearly depicted by the figure that the REER for rupee appreciated soon after 2010 on the back of US dollar appreciation against PKR that reduced the export competitiveness of the country.

Figure 3. 2 Nominal Bilateral (right) and REER (left) of PKR (2010=100)



3.3. The Broader Picture of Monetary Policy:

Milton Friedman advocated the role of monetary policy in macroeconomic stabilization in his seminal work in 1960s. The famous dictum of Friedman captures all that "*inflation is everywhere and always a monetary phenomenon"*. Consequent studies improved understanding the role of monetary policy and importance of other auxiliary factors in this regard such as central bank's independence, role of expectations, balance between monetary and fiscal measures etc.

Central banks, brain behind and custodian of monetary policy, are public entities working in close coordination with other institution and have independence under constitutional arrangements to achieve its objectives. However, its independence and direction are compromised if they are ready to lend a friendly hand or ready to facilitate the ruling regimes in short term horizon (Stiglitz, 1998).

Long term economic stability of a country depends on multiple factors. However, free, fair and objective monetary policy is very critical as its wrong direction can spoil the labour of many other factors and sectors. Central bank should be independent and free from political interference. A plenty of empirical studies are available on independence of the centrals banks and their role in controlling inflation, promoting price stability and enhancing economic growth.

Turnover rate of heads of Central Banks in developing nations is a healthy indicator of the independence of the Central Banks (Sturm & De Haan, 2001). The higher the turnover is an indicator of lower autonomy of the central banks and it is sign of and leads to financial instability (Kooi and Hann, 2000) and vice versa. It is also envisaged that independent central banks can

repel political interference around the election days, which in the longer run promotes financial stability. The immature turnover rate of Governors of SBP is more than 52 %. It refers to governors, who could not complete their tenure, mostly due to interferences of the governments [Figure 3.3].

Figure 3. 3 Governors of SBP and their Tenure

No	Governor	Took office	Left office	Time in office
1	Zahid Hussain	10 June 1948	19 July 1953	5 years, 40 days
2	Abdul Qadir	20 July 1953	19 July 1960	7 years
3	Shujaat Ali Hasnie	20 July 1960	19 July 1967	7 years
4	Mahbubur Rashid	20 July 1967	1 July 1971	3 years, 347 days
5	Shahkurullah Durrani	1 July 1971	22 December 1971	174 days
6	Ghulam Ishaq Khan	22 December 1971	30 November	3 years, 344 days
7	S. Osman Ali	1 December 1975	1 July 1978	2 years, 213 days
8	Aftab Ghulam Nabi	15 July 1978	9 July 1986	7 years, 359 days
9	Vasim Aon Jafarey	10 July 1986	16 August 1988	2 years, 38 days
10	Imtiaz Alam Hanfi	17 August 1988	2 September 1989	381 days (first
11	Kassim Parekh	5 September 1989	30 August 1990	359 days
12	Imtiaz Alam Hanfi	1 September 1990	30 June 1993	2 years, 303 days
13	Muhammad Yaqub	25 July 1993	25 November	6 years, 124 days
14	Ishrat Husain	2 December 1999	1 December 2005	6 years
15	Shamshad Akhtar	2 December 2006	1 January 2009	2 years, 31 days

16	Salim Raza	1 February 2009	2 June 2010	1 year, 121 days
17	Shahid Hafeez Kardar	8 September 2010	13 July 2011	309 days
18	Yaseen Anwar	19 October 2011	31 January 2014	2 years, 104 days
19	Ashraf Mahmood	29 April 2014	28 April 2017	3 years
20	Tariq Bajwa[2]	7 July 2017	3 May 2019	1 year 10 months
21	Reza Baqir[3]	4 May 2019	Incumbent	

Source: State bank's websites.

Research shows that developing countries particularly through monetary policies pursue multiple objectives such price stability, balance of payment support, effective utilization of available resource, exchange rate stability etc., (Fry, 1997)6. The central banks all around the world closely observe the behavior of monetary aggregates. Money supply is endogenous in the policy framework, while many other variables such as exchange rate, fiscal position, interest rate, capital inflow and output gap are important factors to put under vigilance.

State Bank of Pakistan (SBP) has two main policy objectives of monetary policy, i.e. control of inflation and promotion of economic growth. Government defines inflation and growth targets and SBP as per its statutory role try to achieve the set targets. Most of the countries have stopped perusing this kind of framework a nineties; however, Pakistan is still stick to its worn out policy framework.

[6] Output growth in the longer run can be achieved by having independent central banks, critic to wrongdoing/ shortsighted agendas of the prevailing governments. Rather than taking direction from the governments and following/ fulfilling the political motives of the governments it should act as watchdog.

Recent studies have pointed out the central banks, who try to target the real growth in the longer run ends up with resultant higher inflation with having much increase in output (Kydland & Prescott, 1977 and Gartner, 2000). Second school of thought believes in "*neutrality of the money in the longer run"*, which mean it ignites only inflation and cannot promote economic growth in the longer run. (Apostolos & Koustas, 1998; Lucas, 1995; Weber, 1994 and Bullard, 1999).

Hayat (2017) through his studies proved that money is neutral in case of Pakistan too. He used data from 1961 to 2010 in his empirical study. As per his policy recommendations the dual objective of targeting inflation and promoting economic growth in modern times may not be wise decision and does not seem appropriate.

Figure 3. 4 Central Bank Laws and Practices: Policy Types

Country	Government Officials on Board	Final Authority	Term of Members	Term of Governor/ Chairman	Proportion of Policy Board Appointed by Govern-ment	Statutory Accountability of the Board/ Committee for Inflation Targets/ Price Stability	Governor/ Chairman/and Deputy Governors (PhDs or not)
(See note below)	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Australia	1	g	5	7	1	Yes	Yes
Belgium	0	g	6	5	1	Yes	Yes
Canada	0	b(1967-) g(1967+)	3	7	12/14	Yes	Yes
France	0	g	6	U	12/13	Yes	Yes
Italy	0	g	3	3	1	Yes	Yes
Netherlands	0	g	7	7	1	Yes	Yes
Sweden	0	g	3	3	1	Yes	Yes
United Kingdom	0	g	4	5	1	Yes	Yes
Japan	0	b	4	4	1	Yes	Yes
United States	0	b	14 (N)	4	10/21	Yes	Yes
Germany	0	b	8	8	1/5	Yes	Yes
Switzerland	0	b	4	8	1	Yes	Yes
New Zealand	0	g	5	5	1	Yes	Yes
India	1	g	4	4	1	Yes	Yes
Pakistan	1	g	3	3	1	No	No

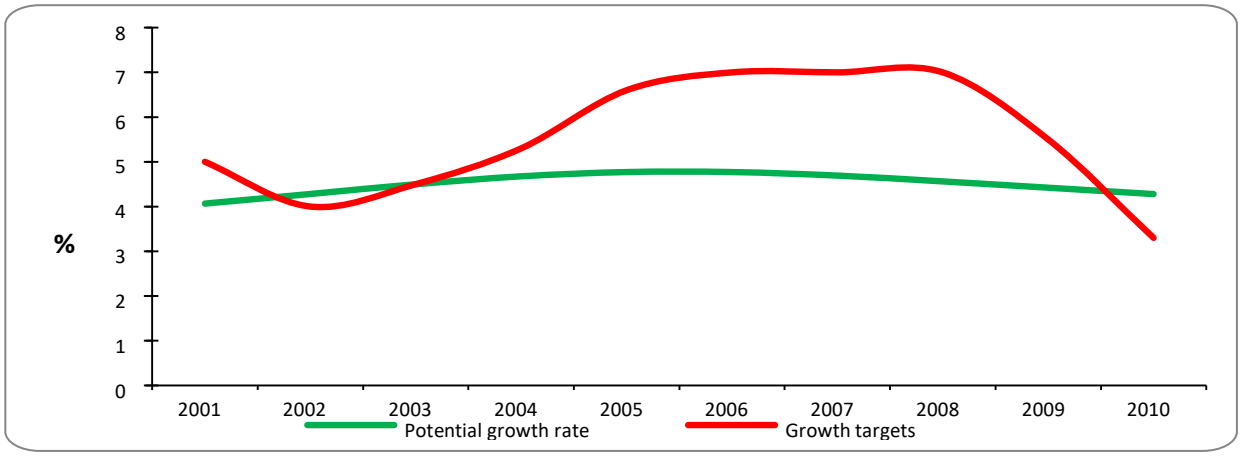
Source: Bade and Parkin (1988) and Zafar Hayat's search from central bank's websites.

Notes: (a) number of (or their representatives) who sit on bank board.
(b)b = bank; g = government.
(c)years (N = not eligible for re-election).
(d)u = unlimited term.
(e)number represents proportion of members appointed directly or indirectly by the government .

During latter half of Nineties, it was pointed out that real growth is adversely affected by the inflation (Ireland, 1999 and Barro, 1995). Focus of the central banks in developed countries has been transformed to price stability in the light of modern research. Attainable real growth goals are achieved without putting interest of society at stake. It indicates that central banks admit that targeting real growth is beyond their scope, as it depends on many other factors such as level of education, capital accumulation, research and development, which are beyond the control of central banks (Barro, 1996 and Levine & Renelt, 1992).

It clearly indicates that by following the instructions from the government may be a big hurdle in the way of devising and independent monetary policy with fair objectives, in line with modern knowledge and research. The Government of Pakistan, in the struggle of their survival and gaining popularity sets politically motivated targets more than the potential of the economy may end with undesirable inflation in the economy.

Figure 3. 5 Annual Growth Targets and Natural Rate of the Economy



Source: Hayat,Z. 's estimation and SBP Annual Reports.

SBP adopts tight monetary policy to discourage government borrowing from banking and non-banking financial institutions. Even the higher interest rate could not have checked the federal government's borrowing. It is due to friendly attitude of the SBP, as it always tries to facilitate and support the government, which creates problems in the longer run and cause inflation.

Controlling the foreign exchange markets does not fall in the purview of the central banks, as *"exchange rate is not used as a policy tool for non-exchange rate targeting countries"*, however, keeping in view its important linkage with interest rate and impact on domestic liquidity, it is considered as an important tool in the arsenal. Pakistan, fall in the category of small open economy and central bank try to control the exchange rate market with deft hand considering it as important channel of monetary transmission."

The economic literature looks at exchange rate from two angles. One that evaluates the cost and benefits associated with fixed exchange rate (Flood & Rose, 1953 and Friedman,1953) and the other, which puts the exchange rate in the basket of monetary policy by considering the Tylor rule for currency depreciation.

Movements in the exchange rate, inflation, interest rate and output gap are kept under close surveillance under the second approach. De Paoli, 2009 devised rule for optimal monetary policy through a DSGE model advocated that central banks can consider real exchange rate as tool and it can be helpful in improving social welfare. The exchange rate i.e. REER based on its fundamentals should converge towards its equilibrium value in the longer run for price stability and economic growth of the country.

Pakistan like many other developing countries of the world is liberalizing the exchange rate policy as a part of its financial rehabilitation plan to have price stability. It is essential as most of the developing countries have mere undeveloped equities, bonds and real estates. In such a scenario exchange rate in an important asset price, this can be affected by the monetary authorities.

Monetary policy is tightened by increasing interest rate and it leads to increase in demand of domestic assets and in the short run it increases real exchange rate. Relative price effect decreases demand of local goods as they become more expensive as compared to imported goods. So, afterwards it increases the aggregate demand. The channel of flexible exchange rate is important in small open economies as it also affects aggregate supply in addition to aggregate demand.

In a nutshell, monetary policy in Pakistan plays its role and has played its role in stabilizing the exchange rate though not to the extent to which it should be due to political influence and institutional pressures. SBP monitors exchange rate market through effective utilization of financial instruments and adopts proactive approach against the speculative activities. Financial instruments like discount rate and reserve requirement are used to neutralize the undue pressure on the exchange rate market. Excessive liquidity is squeezed by buying from the forex market and vice versa.

The nominal exchange rate has been kept at the controversial level from independent monetary point of view. IMF program influenced the authorities to open up the exchange rate, which resulted into much volatility, uncertainty and sudden rise in nominal exchange rate. It should

have been much earlier and gradual to avoid the feeling of heat as it has continuously deteriorated the external trade of Pakistan and inflated current account deficit.

It can be concluded that artificial appreciation of the Pakistani rupee has accentuated the economic problems of the Pakistan i.e. low exports and exaggerated imports and recent sudden plunging of the Pakistani rupee is the host of grave economic situation of Pakistan. The monetary policy simply should help exchange rate stabilization close to the equilibrium level based on its economic fundamentals.

3.4. Decomposing Exchange Rate Thinking:

It is difficult to determine precise level of exchange rate for any economy as it is dependent on a number of complex and contradictory factors. While appreciated currency is considered uncompetitive in the international trade and harmful for the industry and growth of an economy in the longer run. Depreciation is considered comparatively advantageous, as it stimulates the domestic production of tradable goods, shift resources to tradable sectors from non-tradable, which help import substitution (Afzal, 2011).

Depreciation promotes exports, facilitates in reduction of deficit in current account balance, accelerates inflow of foreign capital so in this regard, it is considered as an important policy instrument in international trade. (Oskooee & Kara ,2003). However, the depreciation as some flaws too such as increased inflation may harm growth via various channels like interest rate, investment and external debt. External debts climb up due to depreciation as they are paid in foreign currency (Cooper, 1971 and Gylfason & Risager, 1984). Depreciation also increases cost

of production, as it increases cost of imported materials required for further production of certain goods (Edwards,1986; Bruno, 1979 and Taylor & Krugman, 1978).

In spite of all the highlighted issues, the exchange rate is considered as major tool used by the most developing economies to overcome the deficit in current accounts as due to depreciation imports are reduced and it improve exports. Nevertheless, success of depreciation much depends on import and export demand as if the imports are inelastic, the higher price resulting from depreciation cannot check imports.

The depreciation is itself a debatable issue as under flexible exchange rate system it can be adjusted or controlled completely through interference in the markets, rather it a self-adjusting through the unbridled the market forces of the demand and supply of the foreign exchange. Currency appreciation may harm industries making goods for exports or competing imports, while it facilitates industries producing domestically oriented non-tradable (Frieden, 1991).

However, the decades a downside of Pakistan's exchange rate policy is the *undue and overpowering of fear of depreciation*, which dominated and steered exchange rate regimes in literally all the eras. The depreciation of Rupee against dollar over the periods of time mirrors macro-economic imbalances giving way for instability fear in the face of higher growth rates. Always stated as the *market driven measure* but there is little doubt that actually State Bank's intervention caused it.

At multiple times, our monitory policy failed because of the looming fear of depreciation; *which under an illusionary trend raised the interest rate in vain to justify for the presumed inflation*

caused by depreciation. Only the increase of interest-rate, translates into inflation. The public then confounds that inflation is actually increasing because of depreciation despite the fact that in Pakistan, depreciation does not effectively reflect into inflation due to a weak and delayed pass through mechanism (Khan & Qayyum, 2011 and 2012) of exchange rate change to prices. This displaced confounders by the public has actually pushed and motivated SBP to keep Rupee strong and over valued under the guise of inflation.

3.4.1. The Growth Composition Effect:

There is an increasing apprehension that decision of the ruling elite incorporates tradeoffs, which has domestic implications related to distribution and that favors political economy in determining exchange rate where the main political economy tradeoff is between purchasing power and competitiveness.

Exchange rate affects demand of indigenously traded commodities in internal and external market. It impacts the buying capacity of the earning hand in the economy. An appreciation enhances the purchasing power of the locals by decreasing in relative price of foreign goods. However, local commodities become costlier as compared to imported goods, thus having an adverse impact on the competitiveness of domestic tradable manufacturers. On the contrary, depreciation has favorable impact, decreasing the buying capacity but increasing competitiveness due to reduction in the price of indigenously manufactured commodities.

We can analyze the *growth composition effect* of Pakistan in the light of this concept. The composition of GDP of Pakistan can be attributed to three main sectors and their shares are as follows (estimates- 2017):-

a. Agriculture & farming: 24.7%
b. Industry & manufacturing: 19.1%
c. Services and financial activities: 56.3%

For Pakistan the 94.8% growth originates from consumption out of which 86% pertains essentially to household while the contribution of investment is only 3.5%. For maintaining high growth rates there a dire need to *fuel consumption* by a deliberate design of political economy. For the objective of artificially fueling consumption, one channel that is employed is *exchange rate over valuation*. Exchange rate over evaluation serves the means of re-allocating resources between the two sectors. Excessive appreciation of currency negatively impacts the profitability of the manufacturing sector. The resources get channelized to non-tradable activities and consumer commodities production, where decreasing returns prevail. The objective of fueling consumption is attained at the cost of negatively affecting the productivity dynamics (Gala & Labanio, 2010)

3.4.2. Consumption Foundation of Growth:

As discussed earlier, depreciation boost exports and enhance consumption of local goods. It promotes increase in saving and private consumption, which stimulates growth of investments. The whole spiral leads to growth of domestic output in the longer run. If the monetary policy and fiscal policies is kept tight, it helps to reduce trade deficits, building reserves. Most of the

economists believe that soon after the episode of the undervaluation economic growth is observed due to increased consumption, investment and increase in aggregate demand. However, the issue is not so simple as if depreciation facilitates exporters; it hurts consumers, who depend on imported goods for consumption and production. Due to political reasons, when a country is facing inflation and there is not much room to export increase then deprecation is considered as wrong policy by the many.

Pakistan has adopted flexible exchange rate policy officially; however, when external balance becomes problematic, reduction in the rate of the rupee is then essential then. Economy of Pakistan was leaning at 'consumption led' growth for a while, which had been financed by short term debts and lack of private investment. Consumption rose up to 95 % of GDP in 2018 from 92 % of GDP in FY 2014. While the investment was only 16 percent of GDP in FY 2018. The reason behind it was inappropriate policies of the government including appreciated exchange rate, which promoted consumption of imported goods due to low price. The resources of a country should be diverted towards savings, investments and industrialization.

The economic fundamentals of Pakistan have been declined in the recent times, which clearly indicate that increase in output was incorrectly consumption based. We were relying on borrowed resources in simple words were promoting on non-feasible bubble economy. Government during the FY- 2018 alone financed its expenditure of Rs. 1,300 Billion by printing money and debt monetization. It clearly indicates that government promoted consumption stemming out from fiscal dominance, which increased the fiscal deficit up to Rs.2,300 Billion indicating excess government spending over the income.

The real exchange rate was appreciated by 28 %, while trade deficit could not be reduced, which deteriorated the economic fundamentals. The export sector was not competitive in the international market, which led to shut down of many export-oriented factories. On the other hand, consumption was being promoted through subsidies and appreciated exchange rate. It is evident from the fact that Current Account deficit rose from US $ 2.5 Billion in 2013, to a soaring figure of US $ 19 Billion in 2018.

3.4.4. Indigenous Growth Policy:

Appreciated RER affects growth adversely and its undervaluation promotes economic growth (Rodrik, 2008). Many economists have demonstrated that undervalued currencies are good for economies. It is argued that trading sectors are more vulnerable to bad governance and weak institutional arrangements being smaller and suboptimal in size, under such circumstances undervalued currency help small growing industry to overcome these problems. Studies on the east Asian economies and China support this point of view.

It is counter argued that policy of depreciated exchange rate on be good only at papers, developing countries may not have capacity, or industrial niche to increase export by following the referred policy. Exports of Pakistan are mainly comprised of agri based products and raw materials and imports contain crude oil, heavy machinery, defense related security equipment and hi-tech items. Under such circumstances depreciated exchange rate do not help much. The finished goods of Pakistan do not meet international standards and are not very competitive. However, it does not mean that we must try to compete or elevate our industry. As in the longer

run it is the only way out, so have to take steps sooner or later to put the things in right order and make a start.

3.4.5. The Import Led Growth Hypothesis:

Whether a country is better off fixed or floating is dependent upon accruing cost and benefits of the choices and their distribution resultantly. The impact of distribution is most significantly pronounced at the level of *interest groups* (Frieden, 1991). Communities engaged in the investment decisions and involved in the foreign trade (Multinational banks, exporters and foreign investors) support the stability of exchange rate as it minimizes the risks of international trades while groups with economic activity restricted to domestic economy (Import substituting sectors, non-tradable) prefers *floating regime* that gives room to government to improve internal economic conditions. There is no particular guide line to appropriate exchange rate, which has *distributional impact* domestically. Currency depreciation promotes import and export competing sectors at the cost of local consumers and non-tradable industries.

The exchange rate level is more likely to fall victim of politics in *developing economies* as compared to developed one, as former normally produces primary commodities and standard goods, for which there is higher pass through. Moreover, the extent of relying on imported raw inputs by industries also determines the political economy intervention level. Industries with great reliance on imported inputs as compared to exports may face more difficulties in the wake of depreciation (Compa & Goldberg, 1997)

For Pakistan, the economy is *consumption led* implying that when there is consumption boom, the demand for machinery/technology does not increases proportionally as increase in demand for consumption and non-tradable good and that increases the deficit. Moreover, the services sector has a growth contribution of 60% but services sector draws its production from manufacturing sector, since manufacturing sector is week so service is low production based.

So, in the context of consumption-based economy. In any high growth period, import of services increases more than import for goods. *This again drives the political economy to keep the Rupee strong*. Thus, when the prime focus of economy is on consumption, on imports, not the exports then it necessitates to keep the currency strong. In such a scenario discouraging exports and investments does not seem important thereby the debate sides with appreciation not depreciation.

3.5. The Debt Burden Argument:

A fall in currency value may increase debt of an economy, which is called debt burden of depreciation. Fear of debt accumulation may serve as a barrier for the debt-ridden countries and not let the currency to depreciate (Javed & Ahmed, 2016). A higher debt discourages at one hand and increases inflation on the other (Nguyen, 2005).

Higher debt signals poor economic performance (Westphal & Rother, 2010), which may serve as disincentive for the investors as they expect lower returns from investment from the particular country. The expected increase in inflation further squeezes investments as the cost of production for foreign investors goes up. A government facing large debts needs money to pay back the loans. The options left with the government are to take more loans or to print money, both are

adhoc solutions and each one has its own pros and cons. With foreign debts already piling up further availability of the loans shrinks and the government has to opt for printing of money, which brings inflation with it.

Artificially overvalued rupee promotes imports and cut exports. e.g., recently it facilitated imports towering around US$ 57 Bn and exports falling to 18 Bn. Country like Pakistan, facing acute balance of payment crisis may face problems with repayment plan. It calls for understanding of exchange rate and reach to a point where impact of debt burden, is minimal.

3.6. Choice of Exchange Rate Regime: A Question of Political Economy Trade Offs:

The decision about the "*type of exchange rate regime is heavily dependent upon tradeoffs"* among potential national goals, whose costs and benefits can have uneven impact on multiple actors within the economy.

The fixed exchange rate has two main advantages; it encourages investment, trade and stabilizes internal monetary conditions though monetary policy rule that binds the policy makers to continue on a time-consistent path. *If the monetary policy is subordinated to peg then fixing may be the rule*; without such rule, these are always incentives and temptations for policy makers to renege or opt for suboptimal inflation policy (Cavnavan & Tommasi, 1997 and Giavazzi & Paagano, 1988), like in 19th century, fixing with the gold standard, evaporated the discretion.

However, the fixed rates operate at the expense of independent monetary policy; where interest rate in the domestic market cannot vary from the world market, monetary freedom is gained

through floating exchange rate system or by setting barrier on flow of foreign capital, definitely it also involves policy choice/ tradeoffs. However, economists agree that even under floating exchange regime, the monetary independence does not mean that Central bank acts in a fully discretionary manner, implementation of certain rule is essential and acting oblivious to *rules* will have adverse consequences.

3.7. Discretionary Monetary Policy & Dynamic Inconsistency: Why Missing Out on The Rule?

The rule based monetary policy reveals governments moves, priorities and intentions where the built in target acts as a communication tool with the public and informs whether a policy change – like the change of interest rate, intervening in forex market is required - to an extent that the public understands the potential change and target and establishes expectations accordingly.

On the contrary, the discretionary monetary policy lacks this *transparency* phenomenon, lacks the constraint upon policy makers to renege. A hallmark of discretionary monetary policy is *Dynamic inconsistency*; *where policy makers; unrestricted by rules have incentive and motivation to trigger inflation for short term gains of output*. It is actually the differential between the optimal policy announced by the Central bank and policy that would be carried out by the Central bank, after the public established decisions upon its expectations.

In recent times, the policy makers of the world have gravitated towards rule based rather than discretionary monetary policy. The exchange rate in majority of the countries is driven by certain rules. Around 82 countries out of 192 countries have adopted *exchange rate anchor* for steering

the exchange rate policy while 62 countries adhered to *monetary aggregates* and *inflation* as targets. Only 27 countries have a monetary framework oblivious of any stated anchor or exchange rate, classified as *other* by international monetary authorities. *Pakistan lands in the top ten of the last list!*

Under this bewildered framework, Pakistan cultivated an unusual culture of exchange rate policies, the only one in south east Asia, who does not expose the basis of its exchange rate policies juxtaposed to others, which are *floating in India* or have soft peg (Srilanka, Bangladesh). Adding to complexity is the fact that Pakistan never made public the targets, rules and objectives (Hamid & Mir, 2017) that steered the exchange rate policy in different time periods. This approach even had ample room for element of *dynamic inconsistency*, guiding principal to change any time without a deliberation or consensus within the government. Due to the temporal nature of exchange rate management policies, IMF classifies *de-facto exchange rate system of Pakistan as "other-managed"* and *de-jure exchange rate system of Pakistan as "managed float without pre-determined path*" (IMF, 2015).

Figure 6: IMF Classification of Exchange Rate Arrangement and Monetary Policy Framework

Exchange rate Arrangements	Monetary Policy Framework			Total
	Exchange rate Anchor[1]	Target Monetary Aggregates and Inflation	Other[2]	
Hard Peg				
No Separate legal tender	14	-	-	14
Currency board	11	-	-	11
Soft Peg				
Conventional Peg	42 *(Nepal[3])*	-	2	44
Stabilized arrangements	7	8 *(Bangladesh[4])*	3	18
Crawling peg	3	-	-	3
Crawl-like arrangements	2	3	5 *(Sri Lanka[5])*	10
Pegged exchange rate with horizontal bands	-	-	1	1
Floating				
Floating	-	33 *(India[6])*	7	40
Free Floating	-	10	21	31
Residual				
Other managed arrangement	3	8	9 *(Pakistan[7])*	20
Total	82	62	48	192

Source: IMF Annual report on Exchange Rate Arrangements and Exchange Rate restrictions (AREAER) 2016.
[1]Exchange rate acts an anchor of monetary policies. There is buying and selling of foreign exchange by the monetary authorities to maintain the exchange rate within a range or predetermined level. US dollar, Euro, Composite and other are some of the exchange rate anchors used by countries according to IMF.
[2]Countries classified as others have no stated nominal anchor of exchange rate, rather they monitor different indicators for monetary policy implementation.
[3] The country's exchange rate flexibility is limited vis-à-vis another single currency.
[4] The country's exchange flexibility is limited vis-à-vis the U.S. dollar.
[5] The country's exchange flexibility is limited vis-à-vis the U.S. dollar.
[6] The country's monetary policy framework is such that it targets inflation.
[7] The country monetary policy framework is based on monitoring of various indicators as it does not have stated nominal anchor of exchange rate.

3.8. Monetary Aggregates Targeting in Pakistan? The Role of Political Economy & Actors:

Another critical aspect of Pakistan Exchange rate management framework is that SBP has followed, historically a *monetary aggregate targeting policy* and continues to do so till date. On the contrary, the world has converged to a formal and explicit *inflation targeting from the late nineties*. Working of inflation targeting regime needs prevalence of certain institutional, operational and macro-economic conditions where the complete commitment of monetary

authorities to price stability is foremost along with limited intervention in exchange rate market. Another important consideration is *Instrument independence* of the central bank in formulating the monetary policy where *instrument independence* requires complete absence of *fiscal dominance*.

For effective monetary targeting, there must be a predictable and consistent relationship between the aggregates and inflation rate otherwise policy makers face the risk of persistently meeting monetary aggregate target, yet missing out on inflation rate, thereby making the whole exercise a futile one; and Pakistan experienced a number of futile exercises in recent decades and in the era of 90's when the attempts of meeting monetary aggregates missed out on the inflation rate.

So, for Pakistan, the choice of targeting monetary aggregates is sub-optional but it was adopted due to a very imposing *political economy* and *main actors* playing the decisive role. It got chosen as *monetary aggregates are difficult to understand by public as information available to them is quite lower than the inflation rate*. Due to this aspect it can be conveniently aligned with *discretionary monetary policy* and *dynamic inconsistency*, where all trilemmas reinforce each other.

Another important reason for this type of selection was the decisive role of IMF as the main actor on Pakistan's economic stage. The monetary aggregate targeting approach believes that money demand is a constant function of certain explicit variables as close association exists between the money supply and growth *of credit along with ultimate objectives of inflation,*

foreign reserves and growth. A series of IMF programs[7] were implemented where the IMF program gives credit a pre-dominant role.

As per IMF's approach, in fixed exchange rate systems and its variants, the supply of money is endogenous, outside the direct control of Central bank; the Central bank holds the position to exercise control on volume of credit (a source of monetary expansion). In this construct, the distinction between credit control and money supply is critical. The increase in money demand and the proportionate increase of money supply can be realized through an enhancement of domestic credit, however, when the credit creation rate is different from the money requirement rate, the difference is filled by the proportional movements in the foreign assets originating from B.O.P deficit or surplus. In IMF programs for Pakistan the changes in domestic credit are translated in *credit ceilings* that essentially monitor performance of the country under the program.

3.9. Fiscal Dominance: The Veto-Gate of Political Economy Model:

As per literature the government opts among monetary institutions that include an independent Central bank, exchange rate regime (fixed/semi fixed), neither or both (Bernhard, Broz and Clark 2003). The choice depends upon the magnitude of electoral and partisan pressures and fiscal policy is used as an alternative to monetary policy. Indigenous *Veto-gates (checks & balances)*

[7] Pakistan has multiple IMF programs and standby arrangements during the past decade. During the nineties infact too had IMP plan every year, which have its own pros and cons.

play a vital role decision making process. The *veto players* can be sub-governments in federalism or political parties under multi-party system.

This power play shapes *Fiscal dominance, a situation where the financial requirements of the government governs the monetary policy and affects the Central banks' ability to attain inflation target*. In this scenario, the public sector relies substantially on the credit creation or on continual government bond issuances in narrow local financial markets. Under this environment, the Central bank; citing pressure from government, obliges the government by financing its fiscal deficit, resulting in creating excess liquidity or attempts to correct the gap of anticipated inflation from target due to possible impact on fiscal scenario. (Lower borrowing cost of government and interest payment of debt servicing).

In Pakistan the SBP has remained under the shadow of fiscal dominance throughout history. Despite certain independence level since 1994, the government continued influencing the operations of SBP. The *crisis of 2008*[8], that forced Pakistan to approach IMF for a program was technically a crisis triggered by *fiscal dominance.*

[8] In the start of 2007, international oil prices rose steadily, the Musharraf government disregarded the oil pricing formula due to political reasons, resulting in prices not passed on to public. The drop scene was a ballooned subsidy bill causing fiscal deficit of 7.3% of GDP in 2008 compared to 4% in 2007. SBP financed this fiscal deficit upon the dictates of government by an amount of Rs. *650 billion ($ 10 billion)*. It culminated in the shape of massive seigniorage, inflation hike and depletion of foreign reserves. Inflation actually jumped over 20% in 2008 (already high due to food prices increase); three times the inflation of 2007. Pakistan lost *$ 6 billion* of international reserves between fiscal year 2007-2008.
Very reluctantly, the government approached IMF for a program, ironically, the IMF agreed for a program upon one the main conditionality of *"elimination of SBP financing for government"* which was met during the program period. Interestingly the method to madness was meeting this conditionality but not meeting the ceiling on fiscal deficit

3.10. The Exchange Market Pressure (EMP) Approach:

The studies for Pakistan show that due to adoption of easy monetary policy stance to propagate growth, there was excessive money supply, beyond the target levels for the years of millennium, 2002 onward (Qayyum, 2006). A scenario of *excess supply of money leads to excessive demand of foreign exchange.*

An expansion in domestic growth of credit exceeding the money demand growth (captured by income growth) either leads to depletion of foreign reserves or the domestic currency depreciation or both as exhibited by Exchange Market Pressure (EMP) model. The excessive demand of money is removed by the depreciation of exchange rate (mainly) or by increase of interest rate, otherwise drainage of foreign reserves and capital outflow takes place. Studies for Pakistan also show that the hypothesis that SBP's domestic growth of credit does not causes Exchange Market Pressure (EMP) is rejected for Pakistan.

Therefore, in Pakistan, there also exists dis-equilibrium in *foreign exchange market* due to disequilibrium in *domestic money market*. In order to address the dis-equilibrium, the SBP and government under the umbrella of *discretionary monetary policy* and *fiscal dominance* tried to peg the exchange rate, driven by political economy where *strong Rupee is synonymous with strong economy*. The SBP heavily relied on the other instrument of *interest rate* that government increased recurrently under the *"Veil of inflation"*. But despite all this, SBP has limited authority on domestic credit creation (Shabbir, 2013).

The efforts by the SBP and government to increase domestic credit, maintaining a fixed exchange rate resulted in equi-proportional depletion of international reserves (which the government tried to balance by injecting massive dollars in market) for a given world inflation rate and growth in real GDP. The attempts to sterilize the monetary impacts of loss of reserves remained largely in-effective. Overtime the interest rate hikes under the cover of *fear of inflation* proved to dismantle the problem, only partially. The studies showed that instead of engineered model of political economy, the EMP can only be relieved through exchange rate movements (Shabbir, 2013).

3.11. Misplaced Debate on Depreciation:

Exchange rate movements have far reaching socio-economic implications for an economy and have internal and external implications. It affects every sector from wage rate, income inequality, exports, imports, consumption pattern, and poverty amongst many others. Inspite of all the highlighted importance, it is neither considered seriously nor debated in the policy circles. A strong rupee is considered as good sign even by many well-educated breeds, which may not be the case in reality.

SBP should create awareness amongst the masses, politicians and policy makers. The policy circles should initiate a healthy debate to create awareness and help setting long term policy objectives having consideration for exchange rate too. Exchange rate should be reflective of actual performance of economic fundamental, which are itself depending on a number of internal and external factors.

3.11.1. Export Effect Accounting:

Exchange rate has strong effects on every segments of the economy, especially dealing with trade sector. Importer and exporters are direct exposed to heat and have priority expectations favoring them in the competition in the in domestic and international markets. In addition to them balance of payments, current account and trade balance are exposed and are very vulnerable to movements to of exchange rate as its upward and downward adjustment have significant of current accounts and debts.

In a particular study IMF highlighted that during the 2015, an increase of 17 % was observed with 2.1 Billion increase in trade deficit, 16.8 % decrease in exports and 0.3 % import growth. It clearly shows that how appreciation has caused movements in the economic indicators. These are called accounting effects of movement/ adjustments of the exchange rate. While appreciation of currency has drawbacks, then depreciation of currency is more advantageous in the longer run. However, fear of increase in debt devoid countries in depreciating the currencies. It may not be possible for debt ridden countries to depreciate currencies easily, as inflate debt burden/ figures without having any transaction.

3.11.2. Planned-vs- Forced Depreciation:

The recent decline in the value of the Pakistani Rupee clearly indicates that how serious the problem was. A comparison is being drawn amongst the Indian Rupee fall and fall in PKR comparing Turkish Lira with PKR. Fall in the value of PKR created panic as it was not based on supported by the economic fundamentals rather it was kept artificially overvalued with the

political motives. While in case of India it almost went unnoticed as it was gradual was an upward adjustment due to rise in oil prices. Dip of Lira can be devoted to trade war/ sanctions with America and consequent efforts of the Central bank Turkey to make upward adjustment of Turkish Lira, while the case of Pakistan was comparatively different.

Pakistani rupee had to fell as it was artificially overvalued. So, when it was depreciated forcefully, the result was utter panic in the financial markets. Gradual and planned depreciation may have created a different scenario. Indian Rupee fell 26 % as compared to dollar during the Dec, 2013 and it was almost equivalent to 30 % fall in the value of PKR during the same time, however, being the forced it created painful ripples.

3.11.3. Devaluation –vs- Move towards Equilibrium Value:

A question is raised in the policy circles do the currency devaluation have some real meat in enhancing the national welfare or just an overrated debate. IMF study suggests that 10 % depreciation of currency from 1980 to 2014 increased exports of only 1.5 % of GDP and even most of the rise was during the initial year of depreciation. It led to conclusion that the depreciation may not have the same degree of impact on the performance of GDP everywhere.

The factor which deprives from the benefits of depreciation include fall in prices everywhere in the global arena, capital inflow depressing the export sector to take advantages of fall in prices and dominance of global supply chains having advantages of economies of scale/ resource. These factors diminish the benefits of devaluations. Equilibrium exchange rate is defined as the level at which an economy is able to maintain a desirable level of surplus/ deficit in its external

accounts and if the inherent factors like free markets and desirable level of ease of business are maintained then it will lead equilibrium in the longer run (Williamson, 1994 and Cline, 2008)

3.11.4. The Inelastic Imports and Missing Exports Surplus Argument:

GDP growth depends on the labor productivity and availability of advantages of natural resource. This GDP growth is often restricted by the balance of payment crisis especially in countries, which specializes in low- tech goods. The countries with low income elasticity for exports and high-income elasticity for imports may face current accounts deficits with the increase of economic growth. This situation may not be sustainable in the longer run, so they have to make structural changes and adjust exchange rate to overcome the adverse position.

However, many economists, businessmen and policy makers do give much weightage to exchange rate due to the fact that performance of the manufacturing sector is not commendable due to constraints like power shortages, security issue and lack of skill level. On the other hand, the import comprises of highly inelastic goods like crude oil, heavy machinery and important raw materials, so there is no advantage of devaluing the currency. However, this argument is like surrendering without making an effort or competing. It can put national sovereignty at stake in the longer run and will miss the even start.

Overvaluation not only reduces exports, which negatively effects the production of tradable for the international market, but it also makes imports cheaper and thus it negatively effects the production of tradable for the domestic market. The only viable solution is to build a base supported by the favorable exchange rate policy. Devaluation is discarded as a policy tool as it

has not been fruitful in case of Pakistan in past. So, it is not considered seriously. The reasons of failures of devaluations can be categorized into two main categories. First one is that imports of Pakistan are highly inelastic and second one is that it brings inflation, which is against the political motives.

No doubt these arguments have some truth but it is valid for the short run horizon only as if the businessmen and industrialists feel the government commitments of maintaining a competitive and stable real exchange rate then positive sentiments and role of expectations come into play leading to a takeoff position. The consumption, investment and production decisions will find the demand of imports and supply of exports are both elastic in the longer run. The inflation can be curtailed by the effective fiscal and monetary policies. There must be a proper demand management too with hindering output growth e.g. restriction on imports of luxury items, subsidizing items essentially required by the low-income group etc., surely, all these measures can make devaluation much more effective.

3.12. Ignoring Factors Eating up Gains from Depreciation:

Depreciation lures economic agents and affect many macro variables. It stimulates domestic industry to produce exportable products and import substitutes (Afzal, 2011 and Oskooee & Kara, 2003). Depreciation has many advantages, which have already been discussed in detail in previous pages.

Depreciation has many economic benefits; however, at the same time it has certain drawbacks too, such as contribution to inflation. It may also hurt growth through channels like interest rate,

external debts and investment. It helps tradable sectors but have negative impact on non-tradable sector as most of the developing countries import raw material for their production in addition heavy machinery which also becomes costlier as the result of depreciation (Wijnbergen, 1986 and Branson, 1986).

It is pertinent to highlight over here the Marshal-learner condition, which states that absolute sum of elasticity of imports and exports must be more than unity. As in case of most of the developing countries imports are inelastic, so devaluation will not reduce imports so devaluation is less effective in such cases (Afzal, 2011)

The devaluation is an important practical policy instrument. However, in case of developing countries due to the existence of exorbitant tariffs, taxes, industrial promotion schemes and trade restrictions may drive the advantages of devaluation away. Any combination of above stated policies takes domestic prices away from international policies otherwise; devaluation can eliminate the market distortions. In order to devaluation to work many other auxiliary policies and factors also play a critical role.

3.12.1. Increased Real Effective Exchange Rate (When Nominal Falls):

Real Effective Exchange Rate (REER) is defined as an index of domestic prices of a country as compared to price index of its major trading partners multiplied by the nominal exchange rate of a country. Nominal interest rate increases as the result of depreciation, while the value of REER decreases as its result depending upon the differential of the price indices between the domestic and foreign countries. REER in this regard is a much more valuable as it takes into count the

price level prevailing in the economy and it matters the most. It is for this reason that the economists prefer to use REER in their analysis as it transpires comparative purchasing.

3.12.2. Taxation Policy:

Taxes are the most important source of revenue of a country, which depends on the volume of production and profit prevailing in the economy. Fall in the tax receipt may be observed due to shrinking of demand/ economic activity due to increase in the price of imported raw materials as the result of devaluation. Excise duties and sales tax etc. may also fall due to reduction of import volume due to cut down in industrial production. Fall in revenue may have other implications e.g. less resources will be available for compulsory imports, buying of defense equipment, further increase in foreign debt. However, it is argued that the fall in tax collection in only a short run phenomenon as in the longer run entire system will bounce back and demand/ economic activity will rise to enhance output, profitability and thereby revenue collection.

Currency devaluation is based on the assumption that economy of the respective trading partner is also flourishing, there will be rise export due to demand in outside world and price/ quality of the export is competitive in the international market. If the envisaged target of exports is not met then tax revenue may not rise. Economic growth cannot be achieved without constant increase in taxes. That is why it is emphasized that there is also a need to increase in tax to GDP ratio, widen tax net, control government wasteful expenditure, improve tax collection mechanism, encourage public private partnership, enhance direct taxation, introduce progressive taxation etc., to work other policies effectively.

3.12.3. Energy & Industrial Policies:

Exchange rate policy considers devaluation to enhance cost competitiveness with ultimate objective to boost the exports and manufacture goods for import substitution. The whole strategy is revolving around the industrial base and output. Industries need inputs like raw materials, skilled manpower and energy. These are regarded as main overheads. Any country facing shortage fall of energy and other inputs cannot compete in the international market, no matter how efficient are other policies.

Sufficient energy resources should be available for its consistent supply to citizens and industries. It is one of the basic requirements which is essentially required to keep the wheel running. There must be vivid energy policy covering all the aspects and meeting the demand. There must be proactive approach considering the cheap alternative energy resources for meeting energy requirement of every sector. In the recent past Pakistan was facing severe energy crisis, which made it impossible for the industry to compete in the international market.

At the same time industrial policy should promote industries and manufacturing sector. Governments should devise a comprehensive industrial policy covering all aspects such as labour laws, security measures, specialized zones, provision of infrastructure, feasible trade policies, availability of technology and credit, business facilities, cut excessive or undue competition, proper taxation policies etc., so industry should be protected and supported by the relevant laws and policies. Industrial policies should be protecting the winners and correcting the market failures.

Protecting form learning spillover, brain drain, monopolistic competition etc., are also considered part of the industrial policy. Investment in human capital, research, education and infrastructure should be done to improve the output. Then industrial policy must be supplemented by the appropriate exchange rate and other policies to promote stability and economic growth.

3.12.4. Monetary Policy:

A plethora of literature is available on the monetary policy of Pakistan, however, critical evaluation of monetary policy framework, decision making section process, conflict of interest, basis of decisions, targets setting etc., is altogether missing. Malik & Ahmed in 2011 carried out counterfactual analysis of the performance of the central bank by applying the simple Taylor rule and found the room for improvement. The similar sort of conclusion was reached by the Hayat (2017) in his empirical study for the period from 1960 to 2010. He found that excessive inflationary pressure in the economy harmed the real growth to 62 %, due to incorrect discretionary policy of the SBP.

Monetary policy should promote price, interest rate and exchange rate stability for development of the positive sentiments about the business environment. Improved outlook and expectations play their role in building confidence of the investors, which is one of the essential requirements for promotion of the investment in the economy[9]. It can be concluded that if the exchange rate policy and devaluation to work then, there must an appropriate monetary policy to work or

[9] Reference is an article on the news on Sunday dated 12 Jun, 2019 by Dr. Sajid Amin Javed. The article can be found/reached through http://tns.thenews.com.pk/reforming-monetary-policy-governance

facilitating to achieve the targets. Monetary policy and fiscal are to be well coordinated and aligned to gather to achieve the objective of competitiveness and thereby growth of an economy. Last but not the least monitory policy should not be politically motivated.

3.13. The Politics of Exchange Rate – The Voting Power of Median Voter:

Politicians or ruling regimes try to influence the central banks to adopt the alternative exchange rate policy (Leblang & Bernhard, 1999). Floating exchange rate system is overridden by the politicians/ rulers and monetary policy is utilized to acquire sympathies/ support prior to elections.

In countries where elections are not of decisive nature like equi-proportional representation system, fixed regimes are more of a priority due to negligible electoral cost of *fixing*. Importantly, the election timings are crucial, with *pre-determined timing of elections* the ruling parties seldom make a move to *surrender monetary policy by pegging the rate*, as it is a crucial tool for the election winning. On the contrary, if *timing of elections is endogenously determined* there is lesser need for flexibility in monetary policy, therefore pegging of rate may be priority choice.

It is actually extent of the democracy that matters instead of its form in determining the alternative type. While non-democratic governments prefer fixed exchange rate system for the purpose of credibility compared to democratic regimes (Broz 2002 and Leblang, 1999). Non democracies have the leverage for pegging because of insulation from domestic masses, actors

and nominal political price of anchoring economy to peg. Another reason for pegging in such closed political system is that there may be lack of alternatives like independent central.

3.14. Exchange Rate as Flagship:

Competitiveness of the economy is spelled out or expressed by the exchange rate which plays an important role in growth and stability of a country. However, it is also used as tool to show the strength of currency, especially when the ruling regime is democratic and they have to fall back to their constituencies for vote. Depending on the ability of government to exert the political influence and institutional arrangements, the exchange rate would fluctuate in the short run.

Therefore, accordingly expansionary or easy monetary policies are followed prior to election with the objective to influence the voters and tight or contractionary monetary policies are adopted after the election to correct the distortions created by the easy monetary policies. Non-autonomous central bank, flexible exchange rate system and lack of coordination/ balance between monetary and fiscal authorities make it possible to be utilized for political purposes Governments try to defer devaluation till the election are over with the opportunistic objective to win the elections (Dornbusch, 1987; Tayyar et al, 2017 and Nordhaus, 1989)

For Pakistan the analysts continued to cite political concerns in the run-up to general elections overtime as a critical factor is the management of rupee and economy. Exchange rate proved to be the *flagship* of political parties' electoral programs, where parties aligned their political manifestos to the preferences and priority of the median voters. S*trong currency is considered as a sign of strong economy by the median voter*.

To satisfy the median voter, to keep the median voter at bay, nearly all the regimes (interestingly, even the non-democratic regime of Musharraf adopted exchange rate as flagship) in Pakistan since 1990's preferred to keep rupee over valued compared to losing the valuable voter, by reducing his purchasing power by depreciation. Satirically by the end of the day, these median voters paid a heavy price of this engineered ballooning in the shape of higher inflation and taxes.

3.15. The Strong Currency Argument:

What so ever the institutional demeanor taken up by the partisan and interest groups-political pressure at the level and type exchange rate, the voting process and election is of peculiar importance. For the reason that exchange rate impacts macro indicators like growth rates, price level and purchasing power, which are extremely relevant to elections.

Strong currency is generally regarded by the laymen as a good sign and outcome of efficient economy policy of the government. Central banks across the globe sometimes at its own and sometime at the will of the rulers, keep interfering the forex markets to influence value of currency (Mussa, 1981). Developing countries misalign the currency towards upper side and prefer overvaluation.

An overvalued currency improves the purchasing power so initially it may sound good. It generates political benefits in the shorter run (Bonomo & Terra, 1999) and governments may take credit to increase the purchasing power of people as an outcome of its successful economic policy. However, it is only a short run phenomenon and there are the exports and development of the economy, which matters most in the longer run.

Voters are sensitive about inflation and their purchasing power, making it imperative for politicians to understand the electoral implications of exchange rate. For voting audiences, the strong currency is synonymous with strong economy; to maintain electoral foothold, the government tend to uphold currency appreciation prior to election and at all cost delay devaluation/depreciation till the election process is over (Leblang, 2000; Klien et al, 1997 and Frieden & Stein 2001). So unpopular is the depreciation induced reduction in purchasing power that governments are highly incentivized to avoid depreciation/devaluation around electoral times even at the cost of severe crisis that would emerge out of this situation.

For this reason, number of currency crisis can be explained in the context of election cycles in exchange policy (Corsetti, Pesenti and Roubini 1998). In Pakistan election motivated delay caused more drastic consequences than there would have otherwise been the case. The depreciation delays and over valuation stand offs were employed as political tools for voting audiences support. *All the political governments chanted and upheld the same mantra of overvalued Rupee despite knowing the instant karma looming around the corner*. The electoral cycles could have been muted in Pakistan, if State Bank exhibited sufficient insulation from political pressures of the government.

3.16. Conclusion:

From a holistic perspective, the exchange rate management frame-work of Pakistan is a larger construct where all the tiers of the policy are consciously designed to suite the political economy; A deliberate recipe for disaster, the politically motivated model of exchange rate comprises of non-communicative discretionary monetary policy which cradles the concealing monetary

aggregates targets from which stems out the controversial fiscal dominance; empowered with all the tools to override the monetary policy and making the exchange rate framework as political consideration rather than based on the economic fundamentals.

4. Empirical Estimations, Results and Discussions

4.1. Analytical Framework:

Extant literature offers multiple options for exchange misalignment measurement. Purchasing Power parity (PPP) remained most often used technique for measuring equilibrium exchange rate. But it has some serious theoretical and empirical flaws. Despite the fact that PPP and law of one price (LOOP) are closely related, still it is necessary that LOOP must hold for PPP to hold (Driver & Westaway, 2003). It has been observed that even if LOOP hold PPP may not hold always because (1) not all goods and services are tradable (2) consumer preferences vary across countries and (3) countries not always produce the similar goods (Goldberg & Verboven, 2005).

Besides, LOOP itself may not hold because of transport cost and trade barriers across countries, which also leads to the failure of PPP. Furthermore, any change in exchange rate may not be transmitted fully in situation where firms have any sort of market power. Where market power is associated with the probability of pricing-to-market situation, a situation which make profit destination specific and failure of LOOP. All such frictions are responsible for the failure of PPP and suggest alternative measures of equilibrium exchange rate (Sarno, & Taylor, 2002).

BEER is the most widely used among short run equilibrium exchange rate models. The BEER is a general approach to modeling equilibrium exchange rate and its implications based on the condition that at equilibrium there will be no marginal change in current account. According to Clark & MacDonald (1998), the BEER, on the basis of relevant economic variables, help to explain the behavior of actual real effective exchange rate. Hence, BEER is the systematic

relationship between actual real effective exchange rate (AREER) and the economic factors that determine AREER. Moreover, it postulates that it is due to real determining factors of AREER that causes slow mean reversion to PPP.

The BEER approach in this paper is based on the familiar uncovered interest parity (UIP) condition, in which the agent cares only about the yield of his funds and not about the risk (Alper, et al., 2009).

> "*The UIP condition is defined as a situation in which the interest rate differential between two countries is equal to the expected variation in the spot exchange rate or domestic interest rate is equal to foreign interest rate plus expected variation in the exchange rate*"

This is algebraically written as follows:

$$\mathrm{E}_t(\Delta s_{t+k}) = -(i_t - i_t^*) \qquad (1)$$

Where i_t is domestic interest rate and i_t^* is foreign trade weighted interest rate (world interest rate). The appreciation and depreciation are directly linked with the increase and decrease in s_t, E_t is operator of conditional expectations while $t + k$ is the agent funds maturity horizon. By subtracting the expected inflation differential $\mathrm{E}_t(\Delta p_{t+k} - \Delta p_{t+k}^*)$ from both sides of equation, the UIP condition in real terms can be written as follows:

$$\mathrm{q}_t = \mathrm{E}_t(q_{t+k}) + (r_t - r_t^*) + e_t \qquad (2)$$

Where the real interest rate and real exchange rate are given by $r_t = i_t - \mathrm{E}_t(\Delta p_{t+k})$ and $q_t = s_t - \mathrm{E}_t(\Delta p_{t+k})$ respectively. The term on the right-hand side of equation (2) is the current equilibrium exchange rate which is the sum of the real expected exchange rate and interest rate differential at period $t + k$.

Two strands of literature on the systematic and robust relationship between exchange rate and interest rate differential exist. Those who did not found robust and systematic relationship are (Campbell & Clarida, 1987; Meese & Rogoff, 1988; Froot, 1990 and Edison & Pauls, 1993). However, Meredith & Chinn (1998) found strong support for the UIP condition but within the longer time horizon (usually from 3 to 10 years) which is also confirm by the findings of Edison & Melick, (1999), MacDonald, (1997), and MacDonald & Nagayasu (2000).

Based on Clark & MacDonald (1998), the behavior of real effective exchange rate is explained with the help of reduced form equation associated with economic fundamentals and is written as follows:

$$q_t = \beta^{/} Z_t + \tau^{/} T_t + e_t \qquad (3)$$

Where Z_t and T_t are the vectors of economic and transitory factors. Next consider the transitory factors affecting real exchange rate respectively, with their respective vector of reduced form coefficients $\beta^{/}$ and$\tau^{/}$. Similarly, actual real effective exchange rate is given by q_t which is determined exhaustively by fundamental Z_t, transitory variables T_t and the disturbance term e_t.

What path is taken by the economy to a shock to exchange rate and fundamentals is explained by the transitory factors. To get information on the transmission mechanism the estimates of the transitory factors is necessary[10]. The medium and long run values of the fundamentals might not be affected by the monetary policy, but it may well direct the transition path back to equilibrium.

Exchange rate misalignment is the difference "between" the actual exchange rate q_t and the real exchange rate determined by the current value of the economic fundamentals specified as follows:

$$\text{Current\_mis}_t = q_t - q_t^{/} = \tau^{/} T_t + e_t \qquad (4)$$

It might be possible that the current value of fundamentals deviates from the long run sustainable level. In this case the total exchange rate misalignment is the difference between the actual exchange rate and the exchange rate determined by the long run values of the economic fundamentals (Clark & MacDonald, 1998). The exchange rate misalignment is specified as follows:

$$\text{per\_mis}_t = q_t - \beta^{/} Z_t \qquad (5)$$

Therefore, the total exchange rate misalignment is the sum of the current misalignment and the deviation of the current fundamentals from their sustainable value. This decomposition of the total exchange rate is written as:

10 As per Clark & MacDonald, 1998 *"Naturally this difference is a partial estimate of the transmission mechanism, concentrating on the impact of the rest of the economy on the exchange rate. An alternative strategy for understanding the transmission mechanism would be to use a complete model to capture the feedbacks from the exchange rate to the economy. This type of feedback is available when the method used to calculate equilibrium is based on model simulations".*

$$\text{per\_mis}_t = (q_t - q_t^{/}) + \beta^{/}(Z_t - \bar{Z}_t) \qquad (6)$$

Substituting from equation (4), equation (6) can be re-written as follows:

$$\text{per\_mis}_t = \tau^{/} T_t + e_t + \beta^{/}(Z_t - \bar{Z}_t) \qquad (7)$$

Equation (7) gives the impression that total exchange rate misalignment is the result of transitory factors, un-deterministic term and the deviation of the economic fundamentals from their long run sustainable level. In this study, the vector of Z_t or current equilibrium exchange rate is a function of four economic and two political variables given by:

4.2. Model for Measuring Misalignment:

Before dwelling into detail of modeling and estimations, it is worth mentioning here that as Objective 2 and Objective 3 of the study are very much interlinked and results of second objective will serve as input for the third objective, so both have been merged. Estimation have been combined and have been carried forward in unison. In the uninterrupted flow, results of the exchange rate misalignment will be considered for the regime analysis to substantiate the argument. The added advantage of the transmission channel will put the readers at ease for better comprehension.

4.2.1. The Political Economy Factors:

It has been highlighted abinitio that economic factors alone do not portray real picture of exchange rate and its misalignment as the political factors or forces are also playing their role

directly or indirectly. At the same time, it is an established fact that it is very difficult to quantify such political factors or vested interests. Holistic effort in this study has been made to observe the role of political economy factors in exchange rate misalignment. It is supported by the results of this study that kinds of ruling regimes, political factors and election's day effect have a strong role in setting the exchange rate and its consequent misalignment.

In order to examine the role of autocratic and democratic governments, dummies have been introduced as both the kind of ruling regimes has slightly different kind of powers and objectives. Vote is the weakness of the political governments so they are more concerned with the exchange rate and controlling the inflation in the short run horizon. No doubt dictators also need certain kind of political support to extend their ruling era; however, winning the sympathies of masses is not their major concern. By introducing the dummy for the kind of ruling regimes, its role in the exchange rate misalignment have been cross examined.

The role of institutional setup especially the independence of central bank has a prominent role in maintaining and devising the exchange rate policy. The mandate of stabilizing exchange rate through market forces of demand supply is quite different from the conferred freedom of maintaining the exchange rate at an artificial level. It leads to aggravation of economic turmoil in the longer run. Many governors of the State bank have either been fired or forced to resign in the past, when they refused to take the dictation from the government. So independence of central bank is an important factor and the same has been introduced in the study to examine its role in determination of the exchange rate.

It has been argued that the foreign reserves maintained through debt to keep the rupee artificially strong or to maintain the exchange rate at an inappropriate level did not depict the factual position. It may work for a while in the short run. However, in the longer run it leads to economic adversity. Public debt and reserves and their interaction term have been infused in the one of the model to examine their impacts on exchange rate misalignment.

Moreover, change in behavior of the exchange rate around the election days i.e. pre and post-election periods, during the autocratic and democratic regimes have been analyzed through the Markovs regime switching analysis. Most of the stated factors have shown the significant results and support the hypothesis that not only the economic factors but political factors also play a pivotal rather dominant role in setting the exchange rate.

4.2.2. Econometric Model:

Based on the elucidated analytical framework and fore mentioned political factors, the following model has been devised for the measuring the misalignment: -

$$\hat{q}_t = f(NFA, TOTD, OPEN, WIR, POL\_D, CBI, RESERVES\_ADJ, RESERVES\_ADJ * PD, PD)^{11} \quad (A)$$

Where NFA is net foreign assets as percentage of GDP, TOTD is terms of trade differential, OPEN is trade openness, WIR is real interest rate differential, CBI is central bank independence index, $RESERVES\_ADJ$ is equilibrium reserves, PD is public debt and $RESERVES\_ADJ * PD$ is

11 Net foreign assets is taken from World Development Indicators, Trade openness data at current prices and terms of trade are obtained from the Federal Reserve Bank of St. Louis and WDI respectively, WIR is world interest rate computed based on trade weight with different countries, POL_D is political dummy taking the value of one for autocratic regime and zero otherwise, *RESERVES_ADJ* is equilibrium reserves computed based on its fundamentals, Public debt as percentage of GDP is taken from economic survey of Pakistan various issues,

interaction of equilibrium reserves and public debt. The later captures the interrelationship between forex growth and public debt.

A political dummy (POL_D) variable is introduced in the model taking the value 1 for dictatorship (autocratic) and 0 for democratic period. The inclusion of this variable is based on the inference that election results is not a matter for autocrats and therefore they tend to maintain undervalue the real exchange rate as opposed to democracy. Conversely, democratic do not let the rupee depreciate as they may lose vote. This vote exchange perspective motivates democratic regimes to keep the rupee strong (Javed et al. 2016). We also include the central bank independence as independent variable by arguing that less misaligned exchange rate is associated with more autonomous central bank (Bodea, C. 2010).

4.2.3. Econometric Approach and Results:

Since the variables under consideration have unit root (non-stationary), therefore the long-run equilibrium real effective exchange rate is determined through co-integration analysis. A natural conceptual framework for stable long-run relationship between a set of time series economic variables is provided by co-integration.

Technically speaking a set of variables which is expected to be integrated of order N are said to be co-integrated if there exists at least one linear combination (co-integration vector) between stationary variables. In co-integration a set of variables may deviate in short-run but in the long run they must converge to long-run equilibrium systematically.

The Johanson, (1988) econometric method is used to estimate the model of equilibrium real exchange rate. This method tackles the problem of potential simultaneity among variables because this method is based on the Full Information Maximum Likelihood (FIML) algorithm. The vector autoregressive representation of the model is given as follows:

$$Y_t = \mu + \sum_{i=1}^{p} \prod Y_t + \varepsilon_t \qquad (8)$$

Where μ is $(n * 1)$ vector of deterministic variables, Y_t is a vector of dependent and independent variables which may be stationary at the level I(0) or at first difference, I(1) while ε_t is white noise term with zero mean and having vector of $(n * 1)$. The vector error correction mechanism representation of (8) is as follows:

$$\Delta y_t = \mu + \sum_{i=1}^{p-1} \Phi \Delta y_{t-1} - \prod y_{t-1} + \varepsilon_t \qquad (9)$$

Where Δ is the first difference operator and Φ is coefficient matrix respectively while Π is the $(n * n)$ matrix whose rank determines the number of cointegration vectors. The zero or full rank of Π prescribes that there is no stable long-run relationship among variables. In case of reduced rank i.e. $r < n$ there will exist matrices of α and β having order of $(n * r)$ such that $\Pi = \alpha\beta$.

The columns of the β matrix are the linearly independent co-integrating vectors while α is the adjustment matrix, indicating the speed with which the system converges to stable long-run equilibrium exchange rate. The hypotheses that there are at most r distinct co-integrating vectors are specified as follows:

$$TR = T\sum_{i=r+1}^{N} Ln(1-\hat{\lambda}_i) \quad (10)$$

It is assumed that all the variables in Δy_t are I(1) and that $\hat{\lambda}_i$ represents the $N-r$ smallest canonical correlations between x_{t-k} and Δx_t series. The method extracting the $\lambda' s$ are described in (Johanson & Juselius, 1990 and Johanson, 1988).

Estimation via Johansson technique involves first order of the VAR[12], next it determines the number of cointegrating vectors. Finally, the co-integrating vectors (long-run coefficients) are obtained. The order of VAR[13] is selected based on information criteria given in Table 4.1 below.

Table 4. 1 The Schwarz Bayesian Criterion and the Akaike Information Criterion

Model/ Specification	Order of VAR	AIC	SBC
	0	1.401246	1.625711
First Specification	1	-9.348312	-8.001524*
	2	-9.568034	-7.098922
	3	-10.39792*	-6.806481
	0	2.237201	2.461666
Second Specification	1	-6.375526*	-5.028738*
	2	-6.355282	-3.886169
	3	-5.981846	-2.390410
	0	1.901941	2.171298
Third Specification	1	-1.986671	-0.101167*
	2	-2.572147	0.929503
	3	-3.536340*	1.581457
	0	26.57150	26.83813

12 Because the method starts by a Vector Auto Regression (VAR)
13 The explanation of the three specifications are given below next to this paragraph.

	1	19.71812	21.58454*
Fourth Specification	2	19.43860	22.90480
	3	18.83518*	23.90117

- Indicates lag order selected by the criterion, AIC: Akaike Information Criterion and SBC: Schwarz Bayesian Criterion

From Table 4.1, we see that SBC suggest 1 lag for all the specifications while AIC suggests 3 lags for first and third specification and 1 lag for the second specification. So, it is decided to include 1 lag in further analysis as suggested by SBC and theory (Carrasco et al. 2009)

To determine the number of co-integrating vectors in the next step two test statistics are available namely Maximal Eigenvalue of the Stochastic Matrix (λ_{max}) and the Trace of the Stochastic Matrix (λ_{trace}). The former tests the null hypothesis that the rank of the co-integrating vector (r) is equal to the hypothesized rank (s) against the alternative that the r=s+1, while the latter tests the null r=s against the alternative r≥s+1. We reject the null if the value of the test statistic is greater than the critical value. We report the results obtained from trace statistic as it is more reliable if the residuals are non-normal (Harris & Sollis, (2003).

Using yearly data from 1980 to 2017, we estimated four specifications of BEER and the associated exchange rate misalignment. The equilibrium exchange rate in first specification is the function of only economic variables. In second specification we include political dummy variable. Third specification includes both political dummy as well as central bank independence index while in last specification we include estimated foreign exchange reserves, public debt and its interaction term as well. The process was adopted purposefully. It helped us understand how

inclusion of political economy factors affect equilibrium exchange rate and associated misalignment.

We argue that, because of its redistributive effects, the decisions about the exchange rate regime and level remains a political priority predominantly. Domestic political and institutional structures influence the choice of monetary policy by changing the policymaker's preferences in favor of political motives[14] and incentives. It is in this context that it is biased to ignore the role of political and institutional factors in determining the value of the domestic currency (Bernhard & Leblang, 1999).

Evidence suggests that autocratic regimes prefer a stable exchange rate regime because they have small "selectorate" (Broz, 2002 & Hall, 2008) and that democracy and exchange rate stability are negatively related. An examination of exchange rate policy of Pakistan implies this connection. Historical observation of exchange rate of PKR with US dollar highlights that PKR was most stable during Musharraf's autocratic regime (2000-2007) with average growth[15] rate of 2.2 percent. This is in contrast to average growth in exchange rate of 9.69 percent during the democratic regime of Nawaz's and Benazir's (1989 to 1998). It is important however to note here that a stable exchange rate is not necessarily a fair exchange rate.

It is in this context that we also estimate REER misalignment using political factors corrected BEER model. Beside conventional fundamentals of REER, we introduce two additional economic fundamentals which we believe is heavily influenced by political decisions in

14 The institutional factors, for example, central bank independence is very crucial in exercising the influence on the conduct of monetary policy.
15 Higher growth in exchange rate means PKR depreciate against the dollar at greater extent

Pakistan. The politically influenced economic fundamentals include public debt and estimated FOREX level. An interaction of Estimated FOREX level[16] and public debt is also introduced in the model to capture the fact that governments use public borrowing to build forex artificially.

We, therefore, incorporate the political and institutional variables as well as economic fundamental which we believe are influenced by political decision in Pakistan in the last three specifications of our model. These variables include political dummy i.e. 1 for autocratic regime and 0 for democratic regime, central bank independence, public debt, estimated FOREX[17] level and interaction of estimated forex level with public debt consecutively to test co-integration relationship among these extended group of variables.

Estimating these additional specifications of the model, the Trace statistics for the four specifications are reported in Table 4.2 below. The trace statistics 2 suggest four co-integrating relationships for the first specification, second specification indicates evidence of three co-integrating relationships, and third specification indicates evidence of five co-integrating relationships while the fourth specification shows five co-integrating relationships among variables.

Table 4. 2 Tests for the number of Cointegrating Vectors:

Model/ Specification	Test	H_o	Trace Statistic	95% Critical Value
		$r = 0$	302.12	103.84

16 It is the level of FOREX which Pakistan would have based on its economic fundamentals, and is not artificially accumulated by public borrowing to maintain FOREX above and beyond a certain level.
17 We follow Khan, & Ahmed, (2005) to construct estimated level of forex.

First Specification	λ_{trace}	$r = 0$	175.91	76.97
		$r = 0$	108.74	54.07
		$r = 0$	61.83	35.19
		$r \leq 0$	18.79	20.26
		$r = 0$	181.88	134.67
Second Specification	λ_{trace}	$r = 0$	128.45	103.84
		$r = 0$	78.15	76.97
		$r \leq 0$	42.67	54.07
		$r = 0$	266.60	159.52
Third Specification	λ_{trace}	$r = 0$	192.43	125.61
		$r = 0$	136.25	95.75
		$r = 0$	89.80	69.81
		$r = 0$	55.88	47.85
		$r \leq 0$	27.76	29.79
		$r = 0$	289.20	159.52
		$r = 0$	183.49	125.61
Fourth Specification	λ_{trace}	$r = 0$	132.17	95.75
		$r = 0$	87.31	69.81
		$r = 0$	49.68	47.85
		$r \leq 0$	25.38	29.79

Note: The number in the column labeled Trace is the Trace statistics values while the numbers in the Trace 95% column are the 95% significance levels from Osterwald-Lenum (1993).

Finally, in order to examine the statistical significance of fundamentals on real effective exchange rate, the following relationship is obtained for four specifications after normalizing the

first significant co-integrating vector on the real effective exchange rate. The estimated results of the four specifications are reported in Table- 4.3.

Table 4. 3 Estimation results of three specifications of BEER

Dependent Variable		Independent Variables										
REER		Constant	Top	Totd	Nfa	Wir	tb	pol_d	Icbi	Pd	Reserves	Reserves*pd
Model 1	Coefficients	6.21 *	−0.56	−0.81*	0.05 *	0.03	−0.12 *	-----	-----	-------	---------	--------
	Std errors	1.78	0.50	0.19	0.01	0.02	0.04	------	-----	-------	--------	--------
Model 2	Coefficients	6.02 *	−0.42	−0.15	0.16 *	0.08	−0.31 *	−2.95 *	------	-------	--------	--------
	Stan errors	2.44	2.70	1.33	0.05	0.05	0.04	0.39	------	-------	--------	--------
Model 3	Coefficients	------	1.02 *	0.32 *	0.03 *	0.07*	−0.17 *	−0.03	−5.30 *	------	-------	--------
	Stan errors	------	0.35	0.14	0.01	0.01	0.05	0.05	0.44	------	-------	--------

Model 4	Coefficients	------	0.80*	-0.157	0.04*	0.19*	-------	------	-------	1.49*	0.435*	-0.051*
	Stan errors	------	0.18	0.100	0.004	0.012	-------	------	-------	0.156	0.052	0.005

Note: top is trade openness, totd is terms of trade differential, nfa is net foreign assets, wir is world interest rate, tb is trade balance, pol_d is political dummy, icbi is index of central bank independence, pd is public debt, reserves are total forex exchange reserves including gold and reserves*pd is interaction term of reserves and public debt. Coefficients with steric represent significance , while non-steric coefficients are insignificant. Stan Errors denote standard errors .

Model 1 is based on economic fundamentals only. By ignoring the political economy context, model 1 is likely to produce inefficient measures of equilibrium exchange rate misalignment. This has policy implications. The decision about the choice of exchange rate regime[18] and its level is also a political priority, especially in developing countries where the central banks are not fully independent in the true sense. Overvaluation involves strong economy perception and vote prospective. In this context, there is need to introduce the political factors in order to explain the exchange rate movements and misalignment.

This study introduces political factors such, political regime, autocratic and democratic, and central bank independence index in model 2 and 3 while estimated forex level[19], public debt and its interaction term were included in model 4 to estimate the equilibrium exchange rate and the corresponding exchange rate misalignment.

The exchange rate policy depends on political circumstances and priorities of the governments e.g. the probability of having an appreciated exchange rate is higher in the months preceding elections, while the probability of having a depreciated exchange rate is higher in the months succeeding the elections. Moreover, kind of ruling regime in the country is also a deciding factor.

Dictators are indifferent or comparatively less interested to control the inflation and are more interested in balance of payments, so they prefer devaluated exchange rate. Finally, we provide regime analysis of exchange rate misalignment estimated from the last two extended models and

18 Pakistan was following a fixed exchange rate policy up to 1982, managed floating exchange rate policy from 1982 to 1998 and flexible exchange regime thereafter.

19 The level of FOREX that Pakistan should have based on its economic fundamentals. This shall help us estimate exchange rate misalignment adjusted for artificially accumulated FOREX backed on public borrowing.

assess the chances of remaining in overvalued or undervalued exchange rate regime in pre and post-election period of democratic and autocratic regime.

It is interesting to see that in the extended version of the model (model 2) the highest coefficient is documented for political regime dummy. Inclusion of the dummy leaves some of economic fundamentals insignificant those were significant in model 1. One can interpret that the impact of political regime on choice of exchange rate outweighs the economic fundamentals in Pakistan.

A look into model 3, where we add central bank independence index, one can note that all the independent variables are statistically significant except the political regime dummy (1 for autocratic regime and o otherwise) and enter with the correct signs. This denote that autonomous and independent central bank reduces the impact of political choices regarding exchange rate regime. Trade openness, terms of trade differential and world interest rate are statistically insignificant in the specification when we add only political dummy with the economic fundamentals (model 2). This suggest that central bank independence leads to stronger role of economic fundamentals in determination of exchange rate choices.

Whereas trade openness and world interest rate are statistically insignificant when REER is regressed only on its fundamentals. This shows that trade openness and world interest rate are the least significant variable in the three models. A 1 percentage point increase in the differential between the real interest rate in Pakistan and the weighted average real interest rate of its main trading partners is associated with 7.9 percentage appreciation of the REER in the long run in the third specification. This is also confirmed by recent monetary policy stance. State Bank of

Pakistan has increased the interest rate to 13.25 with key objective to attract hot money, the portfolio investment etc. Egypt adopted the same model[20].

This sign is consistent with a conventional capital flow interpretation which predicts that a 100-basis point increase in Pakistan's real interest rate relative to her trading partners appreciate the real effective rate by 7.9 percentage (Debowicz & Saeed, 2014). The terms of trade differential suggest that a one percent improvement in Pakistan's terms of trade relative to her trading partners depreciate the real effective exchange rate in the first two specifications while appreciating the real effective exchange rate in the last specification. The coefficients are correctly signed in all specifications but insignificant in second specification.

The coefficients on the trade balance and the increase in interest rate relative to its partners appreciate REER for Pakistan. The size of the coefficients of trade balance is moderate across all the models. This may also suggest that the role of economic fundamentals is comparatively lower in exchange rate determination. One can find compelling evidence for this from last PML(N) Regime (2013-2018) when exports were falling, imports were increasing, but REER was appreciating mainly guided by strong nominal exchange rate of rupee.

The estimated coefficient of NFA specifies that net increase in foreign assets in Pakistan is accompanied by appreciation of real effective exchange rate in all the four specifications. It is again interesting to note a smaller size of coefficient. Pakistan is a net debtor and hence a short-term increase in capital inflow leads to currency appreciation.

[20] Refer to "readying for hot money" published in Business Recorder available at https://www.brecorder.com/2019/09/12/522613/readying-for-hot-money/

The results from the first two specifications show that as compared to democratic regime, exchange rate depreciate in autocratic regime. Moreover, the more the independent the central bank is, the less the real effective exchange rate will appreciate predicting that central bank independence aligns the real effective exchange rate to its long-run equilibrium value. The coefficient of central bank independence is higher suggesting a very large movement in real effective exchange rate can be explained by central bank independence.

Without second opinion that central bank has very multifarious relationship with the government. Though SBP is independent but at the same time it is also accountable and very often this independence is compromised in case of conflict. Both have different dimensions to look at the things and factors to consider. Treasury want low policy rate for easy borrowing and boost the public expenditure for economic growth. At the same time it prefers overvalued rupee for strong economy perceptions but it proffers inflation. In such circumstances, central bank might not be in a position to adopt easy monetary policy on the basis of ground realities. It leads to a tradeoff and policy choices.

The most extended and the version of model on which we want to focus on is the last specification (model 4). Our hypothesis here is that public debt and exchange rate reserves are politically influenced/controlled which is the gap between actual REER and equilibrium and as a result higher is the exchange rate misalignment. In model 4 the sign of WIR and NFA is the same as in the other three models, having almost same size of coefficients. Terms of trade differential sign and size changes along with trade openness sign and size. We include three new

variables the effect of which are not examined the previous literature i.e. estimated reserves, public debt and its interaction term.

Results indicate that higher trade openness, higher net foreign assets and public debt increases the index of REER. Most importantly public debt, estimated level of forex and the interaction terms appear significantly. Increase in public debt appreciates REER. So increases the magnitude of exchange rate misalignment.

The interpretation of interaction term is different from standard interpretation of other coefficients. And this is one of the most important aspect of the study. As we have used the estimated forex, rather than actual forex accumulated through public debt, a negative significant interaction term implies that equilibrium REER will be lower when we use forex adjusted for state of economy compared to using forex level accumulated through public debt. In other words, public debt accumulated forex appreciate the REER and the models using realized/actual forex level underestimate the misalignment.

4.2.4. Calculation of Exchange Rate Misalignment:

After establishing the long-run relationship between variables is followed by computing exchange rate misalignment. Since the fundamentals in the short run are not at equilibrium[21] level, therefore first Hodrick-Prescott (HP) filter is used to smooth out the fundamentals. This smoothed fundamental is then multiplied with the long-run estimated coefficients to obtain the

21 Exhibit a substantial degree of short-term 'noise'

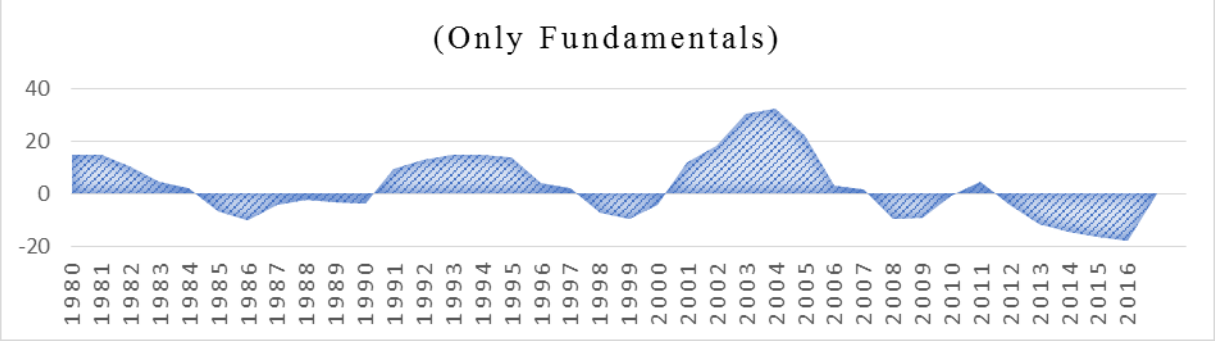
equilibrium exchange rate and then subtracted from actual exchange rate to obtain the exchange rate misalignment. The equilibrium exchange rate equation is expressed as follows: $lne_t^* = \hat{\beta} F_t^p$

where e_t^*, $\hat{\beta}$ and F_t^p are respectively equilibrium exchange rate, the vector of long-run estimated parameters and vector of sustainable values of fundamentals obtained through Hodrick-Prescott (HP) filter. Thus, the real exchange rate misalignment is obtained as the percentage difference between the actual and equilibrium exchange rate as follows:

$$EMIS = \left(\frac{Actual\ exchnage\ rate}{equilibrium\ exchnage\ rate}\right) - 1$$

The exchange rate misalignment[22] computed for the four specifications is drawn in Figure 4.1 below.

Figure 4 . 1 Model 1 Based Exchange Rate Misalignment (%)



The direction of misalignment according to our estimates suggest several misaligned periods. It is important to highlight here that we calculate misalignment as equilibrium exchange rate minus

22 The actual and equilibrium exchange rate of Pakistan are also drawn for each specification which is provided in appendix.

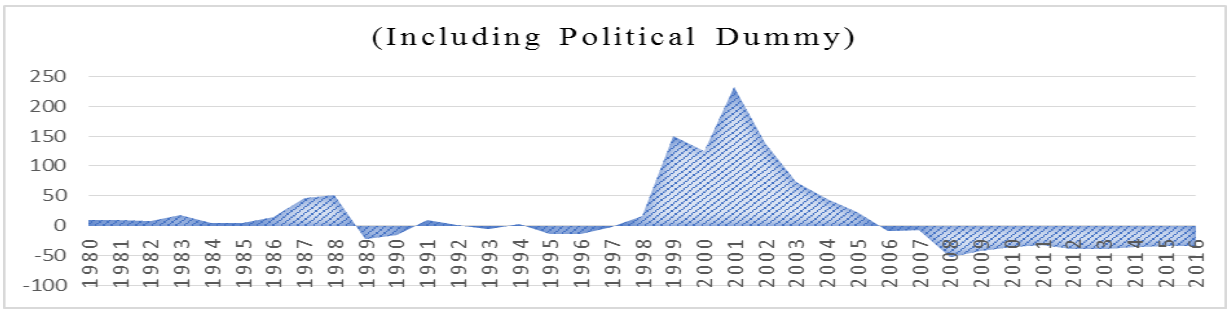
actual interest rate. Negative values, below the line, therefore, show overvaluation-actual exchange rate great than equilibrium exchange rate-and vice versa. The real effective exchange rate of Pakistan initially remains undervalued (between 1980 and 1984)[23].

The overvaluation period starts from 1985 and end with 1990 thereafter again the REER was undervalued till 1997 and again for a period of 7 years after two years overvaluation from 1998 to 2000. The overvaluation of the REER after 2007 is consistent with the findings of (Debowicz & Saeed, 2014). The magnitude of undervaluation varies from smallest 2 percent in 1984 (democratic period) to largest 32 percent in 2004 (autocratic). Similarly, the magnitude of overvaluation varies from smallest 0.54 percent in 2010 to largest 17 percent in 2016.

By including the political and institutional variables i.e. political dummy and central bank independence in the regression model, the estimated misalignment is shown in Figure 4.2 and Figure 4.3 respectively. By including the political dummy variable, in the first episode though undervalued but the actual remain mostly close to the equilibrium. A huge undervaluation could be observed in the third episode of misalignment followed by huge overvaluation (three years of Musharraf regime, five years of PPP regime and again three years of PML(N) regime.

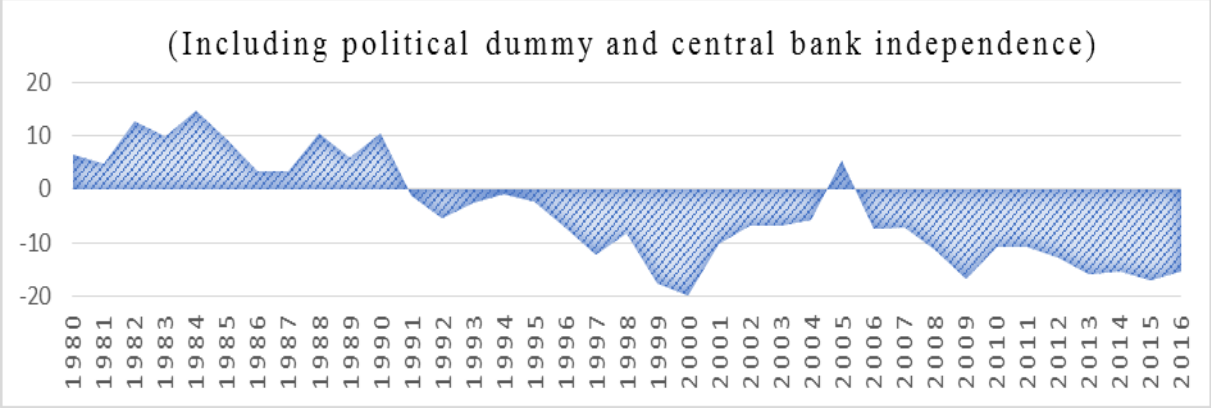
23 Hyder & Mahboob (2005) find undervaluation for Pakistan between 1978 and 1980.

Figure 4 . 2 Model 2 Based Exchange Rate Misalignment:



In the third specification, we obtained only two episodes of misalignment besides a minor undervaluation in the year 2005. In the first episode it remains undervalued, followed by overvaluation which initially increases in magnitude until 2000 then gradually fall in anticipation of 2005 and again start increases till the end of the sample period.

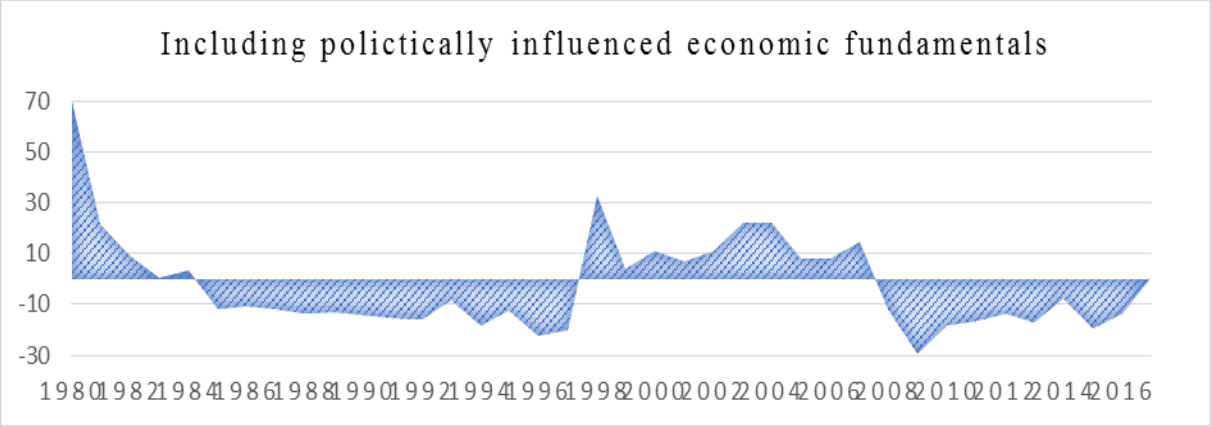
Figure 4 . 3 Model 3 Based Exchange Rate Misalignment



In the last specification (model4), we have four episodes of exchange rate misalignment. In the first episodes when actual REER is greater than its equilibrium value, the magnitude of the undervaluation varies from 10% to 60%. In the second episode our actual REER remain

overvalued followed by undervaluation from 1998 to 2008[24]. And REER was overvalued since 2000 and onward[25].

Figure 4 . 4 Model 4 Based Exchange Rate Misalignment



One can clearly note that size of the misalignment is sensitive to choice of model. So, the models ignoring political drivers are vulnerable to inefficient estimates of equilibrium exchange rate and misalignment. It is in this context that models, including, but not limited to, BEER and REER must be updated to match with local context before estimating the equilibrium exchange rate.

4.3. Ruling Regimes, Elections and Exchange Rate:

The third and final objective is to examine whether political factors explain exchange rate policy of Pakistan. The hypothesis that whether the political economy factors play any role to explain the exchange rate policy in Pakistan from 1980 to 2017, will be tested by using the Markov Switching Model (MSM) with time varying transition probabilities. The conventional Markov

24 Musharraf regime
25 Musharraf regime, PPP regime and PML(N) regime.

switching model proposed by (Goldfeld & Quandt, 1973) to econometrics and popularized by (Hamilton, 1989) is based on the idea that economic series adapt different regimes related with events such as financial crises and unexpected changes in economic policy.

These models consider that the probability of transition from one state to other is exogenous. The Hamilton, (1989) technique, assumes the probability of moving from one regime to another regime as constant. But the impact of political economy variables on exchange rate regime can be better depicted through Markov Regime Switching Model with time varying transition probabilities introduced by (Filardo, 1994). It systematically characterizes and identifies the variation in transition probabilities around the inflection point i.e. before and after happening of the particular event (Bollen & Whaley, 1998; Kamissky, 1993 and Weinbach & lee, 1993).

4.3.1 Why did we Apply Regime Switching Model and What is the Objective?

The hypothesis that whether political economy factors contribute to explain the exchange rate policy in Pakistan from 1980 to 2017 is tested by using Markov Switching Model (MSM) regression models. The exchange rate regimes are characterized statistically as overvalued and undervalued. We then test whether political economy variables have any influence on the probability of regime changes or not. The relationship between election dummy and misalignment of REER is depicted in Figure 4.5 below. Overvaluation misalignment is observed before the election period during democratic regime while undervaluation could be seen from the figure during autocratic regime.

Figure 4 . 5 Relationship between misalignment of REER (left) and election dummy (right) (based on model 4)

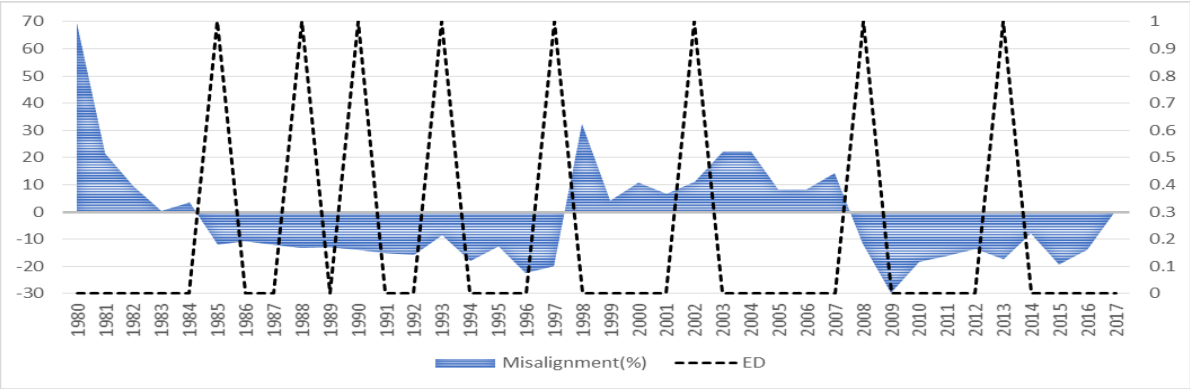


Table 4.4 below shows the estimated results summary where each row represents different specification of the model. Different (combination) of political dummy variables have been added to estimate transition probabilities[26] for each specification. The transition probabilities of each specification explain the transition of REER from one regime (may be overvalued exchange rate regime) to another regime (may be undervalued exchange rate regime). So, the purpose of addition of each political dummy variable in each specification is to know how these political dummy variables can affect the probability of transition from one exchange rate regime to another.

26 The shift in regimes in Markov regime switching models follow a first-order Markov chain process which is based on transition probability matrix. The probability that a particular regime will stay in period t or will transit to some other regime in period t+1 is given by transition probabilities. In these transition probability matrices, first element is the probability that if the system is in state one in period t it will remain in the same state for next period t+1. The transition from one state to other is given by the off-diagonal elements of the transition probability matrix.

4.3.2. Results of the Markov Regime Switching Model:

Table 4. 4 Estimation Results Summary of the Markov Regime-Switching Model Based on Misalignment from Model 3:

	Mean		The constant part of probability		X1 coefficient		X2 coefficient	
	Overvalued $\mu_{(0)}$	Undervalued $\mu_{(1)}$	Overvalued β_0	Undervalued β_1	Overvalued λ_0^1	Undervalued λ_1^1	Overvalued λ_0^2	Undervalued λ_1^2
1. Constant Probabilities	-5.80 (6.70)	3.20 (9.66)	0.77 (15.40)	0.67 (13.40)				
2. X1-Political Regime	-5.75 (1.37)	0.73 (-10.45)	0.86 (21.5)	0.70 (1.32)	-7.29 (9.00)	9.72 (13.88)		
3. X1-Pre-elections	-6.22 (-7.87)	3.43 (5.53)	0.66 (13.20)	0.77 (19.25)	1.28 (2.78)	-0.58 (-3.37)		

4. X1-Pre-election during democracy	5.76 (-3.22)	-4.03 (3.38)	0.74 (5.28)	0.90 (4.73)	0.65 (4.30)	-6.21 (-1.40)		
5. X1-Pre-election during democracy X2-Pre-election during	-4.55 (2.84)	2.65 (-5.29)	0.95 (8.87)	0.80 (11.42)	-2.71 (-0.94)	1.40 (0.61)	3.44 (0.65)	10.16 (3.39)
6. X1-After-election during democracy	-6.38 (-8.28)	3.55 (7.01)	0.64 (11.03)	0.79 (16.45)	-0.10 (-0.05)	-4.54 (-2.44)		
7. X1-Political Regime X2-Pre-election during democracy	-4.34 (1.48)	1.44 (-4.52)	0.91 (15.16)	0.98 (16.89)	4.59 (4.09)	-0.63 (-0.56)	-9.90 (-3.79)	2.91 (1.97)
8. X1-Political Regime X2-After-election during democracy	-3.91 (0.60)	0.56 (-4.49)	0.78 (19.21)	0.94 (19.58)	3.50 (3.36)	-1.44 (-1.37)	-7.69 (-4.06)	4.76 (3.74)

First a univariate model is estimated (Row1) in which the transition probabilities of switching between exchanges rate regimes depends on its past values only (Bonommo & Terra, 1999). The results of this specification show that the mean misalignment of overvalued regime is -5.80 greater than the mean misalignment of undervalued regime (3.20). Moreover, this specification also suggests that the probability of remaining in the overvalued regime is 66.6% lower than the probability of remaining in the undervalued regime (72.9%). This means that the undervalued regime is more persistence than the overvalued regime, although the average misalignment in overvalued regime is greater than average misalignment in undervalued regime.

Next we test the influence of different political economy dummy variables on establishing a particular exchange rate regime. In this regard, first estimation of transition probabilities that define the exchange rate regime is based on political regime dummy variable i.e. this dummy takes the value of 1 for autocratic (dictatorship) regime and 0 otherwise.

Table 4.5 shows that the probability of remaining in the overvalued regime for dictatorship period is lower (22%) than for democratic regime (32%). In contrast the probability of remaining in undervalued regime is higher for dictatorship period (75%) than democratic regime (67%). Overvaluation is more likely to prevail in democratic regimes.

Table 4. 5 Estimated Transition Probabilities and Expected Duration for each Specification on Table 4

Explanatory variables of the transition probabilities	Probabilities when dummies equal 0		Probabilities when X1=1		Probabilities when X2=1	
	Overvalued	Undervalued	Overvalued	Undervalued	Overvalued	Undervalued
0. Constant Probabilities	0.87	0.69				
1. X1-Political Regime	0.32	0.67	0.22	0.75		
2. X1-Pre-elections	0.12	0.78	0.49	0.81		
3. X1Pre-election during democracy	0.99	0.56	0.80	0.19		
4. X1Pre-election during democracy X2Pre-election during dictatorship	0.48	0.57	0.72	0.66	0.73	0.67

5. X1-After-election during democracy	0.68	0.66	0.66	0.85		
6. X1-Political Regime X2Pre-election during democracy	0.67	0.32	0.49	0.50	0.55	0.44
7. X1-Political Regime X2-After-election during democracy	0.14	0.85	0.33	0.66	0.68	0.66

The results when we use a set of pre-election dummy as a source of explaining transition probabilities are given in rows, 4 and 5 of Table 4.5. Results of row 3 (pre-election during the whole period) show that the probability of remaining in the overvalued exchange rate regime increases when the proximity of election increases while the probability of remaining in the undervalued exchange rate regime decreases as the election period approaches. The results remain same when we include dummy variable of pre-election during democracy.

The results change quite drastically, when a combination of pre-election during democracy and pre-election during dictatorship dummy were included. The results of pre-election during democracy is totally in contrast with the previous specification i.e. the probability of remaining in the overvalued exchange rate regime decreases during the closeness of election and increases in other way round.

For the pre-election during dictatorship dummy the probability of remaining in both overvalued and undervalued exchange rate regime increases as the election period approaches. The results of the first two specifications are significant including the third specification except the probability of remaining in the undervalued exchange rate regime when a dummy variable of pre-election during dictatorship were included.

Our hypothesis that exchange rate remain overvalued as election period approaches is evident from Table 4.6 row (3). The probability of remaining in the overvalued exchange rate regime during normal times is (12%) lower than the probability (49%) during pre-election period.

The hypothesis is true for pre-election during dictatorship as well where the probability of remaining in the overvalued exchange rate regime is (48%) lower during normal times while

higher (73%) during pre-election period in autocracy. The same is true for pre-election during democracy as the probability of remaining in the undervalued regime during normal times is (56%) while the probability of remaining in the undervalued regime during pre-election period is (19%) , Table 4.6, row (3).

The increasing probability of remaining in the undervalued regime after election is evident from row (8) Table 4.4 when we combine the two dummies of political regime and dummy of after election during democracy. This is not the case when only after election dummy during democracy were included. The results in the latter case is insignificant for overvalued exchange rate regime while the probability of remaining in the undervalued regime decreases during post-election period in democracy.

The results are insignificant for undervalued regime when we combined political regime dummy with pre-election during democracy. The probability of remaining in the overvalued regime increases during dictatorship period and for pre-election during democracy dummy which is statistically significant as well. The restricted specification in row (2) and row (4) is rejected in favor of the extended specification by including both political regime dummy and pre-election during democracy dummy at any conventional significance level.

In final specification we combine the political regime dummy with the after-election during democracy dummy and the results is given in the final row of Table 4.4. The impact of political regime dummy on the probability of remaining in the overvalued regime (the probability is 14% during democracy and 33% during dictatorship) is positive and significant while negative and insignificant in the undervalued regime (the probabilities are 85% and 66% respectively).

In contrast the impact of after-election during democracy the probability of remaining in overvalued regime is negative while positive in undervalued regime. This confirms that authoritarian don't have any incentives to keep the exchange rate overvalued. Both the coefficients are statistically significant. Overall this extended specification is significant.

In summary the results support the evidence that authoritarian keep exchange rate overvalued during pre-election period. Also, the probability of keeping exchange rate overvalued during democracy period is higher than during military regime. As the election period approaches the chances of keeping the exchange rate overvalued increases while the chances of keeping the exchange rate undervalued decreases. Moreover, it can also be inferred from the results that there are sufficient chances of changing the regime from overvalued exchange rate to undervalued exchange rate as the election period over. We found stronger election cycle during democracy than during dictatorship.

Table 4. 6 Results of Explanatory Variable – Election Cycle During Democracy – vs- Dictatorship:

	Autoregressive factor	Standard Deviation	Likelihood Function Value	Likelihood ratio test (P-value)	
	A	σ		Inclusion of X1	Inclusion of X2
0. Constant Probabilities	-0.70 (5.38)	0.88 (6.28)	-106.59		
1. X1-Political Regime	-0.82 (7.45)	0.61 (4.06)	-97.99	0.032	
2. X1-Pre-elections	-0.71 (-5.46)	0.85 (6.07)	-106.13	0.017	
3. X1-Pre-election during democracy	0.28 (0.82)	1.17 (7.31)	-108.77	0.000	

4. X1-Pre-election during democracy X2-Pre-election during dictatorship	-0.56 (-2.94)	1.10 (6.47)	-105.45		0.120
5. X1-After-election during democracy	-0.71 (-5.07)	0.82 (5.85)	-104.88	0.322	
6. X1-Political Regime X2-Pre-election during democracy	-0.61 (-5.08)	0.72 (4.41)	-101.79	0.001	0.006
7. X1-Political Regime X2-After-election during democracy	-0.81 (-6.75)	0.63 (4.11)	-100.46	0.000	0.053

The results determining exchange rate regime in Table 4.7, 4.8 and 4.9 is based on the exchange rate misalignment computed from model 4 in Table 4.3. Again, we tried eight specification by changing only independent dummy variable to examine how the probability of remaining either in undervalued exchange rate regime or overvalued exchange rate regime is changing with the changes in political dummy variable. The impact of political regime dummy on the probability of remaining either in overvalued or undervalued regime is insignificant, though the chances of remaining in overvalued regime during dictatorship period as compared to democracy is increasing and the chances of remaining in undervalued is decreasing.

Table 4. 7 Estimation Results Summary of the Markov Regime-Switching Model based on Misalignment from Model 4:

	Mean		The constant part of probability		X1 coefficient		X2 coefficient	
	Overvalued $\mu_{(0)}$	Undervalued $\mu_{(1)}$	Overvalued β_0	Undervalued β_1	Overvalued λ_0^1	Undervalued λ_1^1	Overvalued λ_0^2	Undervalued λ_1^2
1. Constant Probabilities	34.70 (2.80)	-18.23 (-1.55)	-0.22 (-1.22)	-0.36 (-4.18)				
2. X1-Political Regime	27.81 (2.81)	-24.21 (-2.75)	-0.24 (-1.14)	-0.30 (-3.33)	3.24 (0.63)	-1.00 (-0.07)		
3. X1-Pre-elections	-19.46 (-1.60)	34.88 (2.79)	-0.36 (-4.13)	-0.21 (-1.05)	61.66 (3.62)	-28.19 (-2.95)		
4. X1-Pre-election	-2.73	3.98	0.38	0.76	11.16	6.65		

during democracy	(-0.60)	(4.47)	(3.58)	(20.54)	(1.45)	(3.67)		
5. X1-Pre-election during democracy X2-Pre-election during dictatorship	-14.66 (-2.01)	27.76 (3.69)	-0.28 (-3.18)	-0.24 (-1.84)	-0.96 (-0.22)	8.64 (0.86)	17.40 (2.04)	-28.04 (-1.89)
6. X1-After-election during democracy	13.81 (2.81)	-8.66 (-1.69)	0.48 (1.84)	-0.43 (-2.26)			-28.58 (-3.23)	48.00 (3.37)
7. X1-Political Regime X2-Pre-election during democracy	-19.99 (-1.89)	27.32 (2.53)	-0.29 (-3.22)	-0.29 (-3.22)	45.26 (5.33)	-31.67 (-3.96)	0.26 (0.06)	12.87 (1.52)
8. X1-Political Regime X2-After-election during democracy	-13.49 (-2.06)	16.49 (2.40)	-0.73 (-3.47)	0.29 (1.70)	10.35 (0.91)	-10.64 (-1.13)	65.38 (5.44)	-33.33 (-3.83)

The concept that authoritarian keep exchange rate overvalued prior to election is validated in our estimation based on model 4, Table 4.3. The results confirm that the probability of remining in the overvalued exchange rate regime is increasing for overall pre-election dummy and the probability of remaining in the undervalued regime is decreasing. For pre-election during democracy the impact of remaining either in overvalued or undervalued is ambiguous as the results are insignificant for overvalued regime and positive for undervalued regime.

Table 4.9 gives the probability of remaining either in overvalued regime or undervalued regime. It is evident that the chances of remaining in overvalued regime during normal times (and/or during democracy) is lower than during dictatorship period and during pre-election period.

When a combination of pre-election during democracy dummy and pre-election during dictatorship dummy were included, we come up with insignificant results for the first dummy while the later dummy results is significant for overvalued regime and the sign support the argument that pre-election during dictatorship period the authoritarian keep exchange rate overvalued though the chances is quite low (56%).

The election cycle effect is also evident from row 6 of Table 4.7 where the coefficient sign shows that the probability of remaining in the overvalued/undervalued regime during after election period is decreasing/increasing. The chances of remaining in overvalued regime decreasing from (62%) during normal times to (60%) during after election period (Table 4.9, row (6).

Specification (7) and (8) is aimed to check the impact of two combined political dummy variables on exchange rate regime probability. Row (7) and (8) of Table 4.7 shows that in

specification (7) the impact of second political dummy variable (pre-election during democracy) is insignificant while in specification (8) the impact of first political dummy variable (political regime) is insignificant. In specification (7) the chances of remaining in overvalued exchange rate regime increases from (49%) during normal times to (61%) during dictatorship period. Similarly, the probability of remaining in overvalued exchange rate regime decreases from (94%) in normal times to (72%) in after election during democracy period.

In summary the results support the evidence that authoritarian keep exchange rate overvalued during pre-election period. As the election period approaches the chances of keeping the exchange rate overvalued increases while the chances of keeping the exchange rate undervalued decreases. We also found that the chances of remaining in the overvalued exchange rate regime decreases during after election period. In contrast to the previous model, we found stronger election cycle during dictatorship period than during democracy.

Table 4. 8 Results of Explanatory Variable – Election Cycle During Dictatorship – vs- Democracy:

	Autoregressive factor	**Standard Deviation**	**Likelihood Function Value**	**Likelihood ratio test (P-value)**	
	A	σ		Inclusion of X1	Inclusion of X2
8. Constant Probabilities	0.76 (6.33)	2.63 (20.23)	-171.14		
9. X1-Political Regime	0.65 (4.06)	2.60 (18.84)	-167.33	0.003	
10. X1-Pre-elections	0.76 (6.33)	2.62 (18.71)	-170.86	0.061	
11. X1-Pre-election during democracy	-0.24 (-5.45)	3.54 (20.82)	-165.72	0.040	

12. X1-Pre-election during democracy X2-Pre-election during dictatorship	0.71 (5.46)	2.26 (16.14)	-157.49		0.230
13. X1-After-election during democracy	0.24 (0.82)	2.52 (16.80)	-159.41	0.023	
14. X1-Political Regime X2-Pre-election during democracy	0.82 (6.83)	2.18 (15.57)	-156.08	0.021	0.451
15. X1-Political Regime X2-After-election during democracy	0.39 (1.69)	2.50 (14.70)	-155.91	0.612	0.031

Table 4. 9 Estimated Transition Probabilities and Expected Duration for each Specification on Table 7

Explanatory variables of the transition probabilities	Probabilities when dummies equal 0		Probabilities when X1=1		Probabilities when X2=1	
	Overvalued	Undervalued	Overvalued	Undervalued	Overvalued	Undervalued
9. Constant Probabilities	0.63	0.61				
10. X1-Political Regime	0.51	0.48	0.55	0.80		
11. X1-Pre-elections	0.80	0.36	0.97	0.96		
12. X1Pre-election during democracy	0.61	0.51	0.61	0.53		
13. X1Pre-election during democracy X2Pre-election during dictatorship	0.72	0.50	0.55	0.63	0.56	0.54

14. X1-After-election during democracy	0.62	0.94	0.60	0.48		
15. X1-Political Regime X2Pre-election during democracy	0.49	0.61	0.61	0.52	0.67	0.67
16. X1-Political Regime X2-After-election during democracy	0.94	0.89	0.86	0.68	0.72	0.57

5. The Conclusion and Policy Implications

There is a complete consensus that economic stability and growth of a country is a long run phenomenon, which depends on flourished educational institutions, a strong industrial base, good law and order condition, ease of doing business, progressive taxation, business friendly policies etc., When it comes to policies, the exchange rate is prominent in economic policies, which is core subject matter of this study.

The study was initiated on the basis of assumption that political economy factors are ignored while studying the exchange rate policies and only economic factors are emphasized. It can be assumed as an alternate route as it is not considered in the mainstream studies. The political factors compel to retain the exchange rate overvalued for their vested interests. This overvalued exchange rate injects bad blood in the economy and sets a wrong direction having dependency on imports. It deprives country from the gains of the exports and takes a country to brink of currency crisis.

We argue that a decrease in the value of currency is generally considered a sign of a failing economy. In order to keep the exchange rate constant, the policymakers may raise interest rates and sell foreign exchange earnings in order to defend the overvalued exchange rate while facing the speculative pressures. Democratic regimes are more sensitive to devaluation as they have to go to public for votes.

Political regimes, therefore try to maintain the overvalued exchange rate by borrowing the Foreign exchange. Efforts are made to work out the impact of political factors on REER in Pakistan. The political variables i.e., political dummy and central bank independence index are

statistically significant except the political dummy and enter with the correct signs, which mean that they have significant effect on REER.

Interest rate is considered the most important tool of the monetary policy our results shows that 1 percentage point increase in the differential between the real interest rate in Pakistan and the weighted average real interest rate of its main trading partners is associated with 7.9 percentage appreciation of the REER in the long run in the third specification. This sign is consistent with a conventional capital flow interpretation which predicts that a 100-basis point increase in Pakistan's real interest rate relative to her trading partners appreciate the real effective rate by 7.9 percentage.

The terms of trade differential suggest that a one percent improvement in Pakistan's terms of trade as compared to trading partners depreciate the real effective exchange rate in the first two specifications while appreciating the real effective exchange rate in the last specification. The coefficients are correctly signed in all specifications but insignificant in second specification. It shows that the foreign debt help appreciate the REER, which hurts the economy. This was our main preposition that debts are used to maintain the overvalued exchange rate.

The misalignment mean in overvalued regime is greater than the misalignment means in undervalued regime. Results confirm our hypothesis that the probability of remaining in the overvalued regime for dictatorship period is lower (22%) than for democratic regime (32%). In contrast the probability of remaining in undervalued regime is higher for dictatorship period (75%) than democratic regime (67%).

Results of the estimation clearly indicates that the probability of remaining in the overvalued exchange rate regime increases when the proximity of election increases while the probability of remaining in the undervalued exchange rate regime decreases as the election period approaches. The results remain same when we include dummy variable of pre-election during democracy.

The results of pre-election during democracy is totally in contrast with the previous specification i.e. the probability of remaining in the overvalued exchange rate regime decreases during the closeness of election and increases in other way round. Our claim/hypothesis that exchange rate remain overvalued as election period approaches is evident from Table 4.5 row (3). Where the probability of remaining in the overvalued exchanger rate regime during normal times is (12%) lower than the probability (49%) during pre-election period.

The hypothesis is true for pre-election during dictatorship as well where the probability of remaining in the overvalued exchange rate regime is (48%) lower during normal times while higher (73%) during pre-election period in autocracy. The same is true for pre-election during democracy as the probability of remaining in the undervalued regime during normal times is (56%) while the probability of remaining in the undervalued regime during pre-election period is (19%), Table 4.5, row (3).

The probability of remaining in the overvalued regime increases during dictatorship period and for pre-election during democracy dummy which is statistically significant as well. The impact of political regime dummy on the probability of remaining in the overvalued regime (the probability is 14% during democracy and 33% during dictatorship) is positive and significant

while negative and insignificant in the undervalued regime (the probabilities are 85% and 66% respectively).

In contrast the impact of after-election during democracy the probability of remaining in overvalued regime is negative while positive in undervalued regime. This confirms that authoritarian don't have any incentives to keep the exchange rate overvalued. Both the coefficients are statistically significant. Overall this extended specification is significant

In summary the results support the evidence that authoritarian keep exchange rate overvalued during pre-election period. Also, the probability of keeping exchange rate overvalued during democracy period is higher than during military regime. As the election period approaches the chances of keeping the exchange rate overvalued increases while the chances of keeping the exchange rate undervalued decreases. Moreover, it can also be inferred from the results that there are sufficient chances of changing the regime from overvalued exchange rate to undervalued exchange rate as the election period over. We found stronger election cycle during democracy than during the autocratic regimes.

It is evident from the analysis that the independence of the State bank can pay a vital role in liberalizing the exchange rate policy. It is one of the main tools in the hand of government through which it can manipulate and interfere in the currency market. Independence of the state bank can be ensured by having selected governor for much longer period rather more than the tenure of the government, selection out of more than one nomination, ensuring legal protection, independence in budget and by adopting long term policies for stability of the policy rate having

less volatile market based exchange rate, which is ultimate route to competition, human welfare and economic growth.

Findings of our study have implications for literature on measuring exchange rate misalignment. The implications, through exchange rate misalignment, affect conclusions of the literature assessing the impact of misalignment on different economic outcomes. The literature on assessing the size and direction of misalignment need consider political economy factors shaping exchange rate outcomes while modeling the equilibrium exchange rate. Also, reliance on economic fundamentals without considering the composition of the fundamentals may produce inefficient results. The researchers, therefore, need to take into account local structures into consideration while selecting economic fundamentals. We have demonstrated the issue through using estimated forex level controlled for interaction term between forex and public debt. Future research may extend the inquest.

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