The Impact of Foreign Capital Flows on the Competitiveness of Pakistan

By

Shabana Kishwar

Department of Economics

Supervised by: Dr. Zafar Mahmood

A dissertation submitted to the Department of Economics, PIDE, at Islamabad in partial fulfillment of the requirement for the degree of Master of Philosophy in Economics

Pakistan Institute of Development Economics
Islamabad
November, 2011

In the name of Allah who is the Most Merciful and the most Beneficent

CERTIFICATE

This is to certify that this thesis entitled *"The Impact of Foreign Capital Flows on the Competitiveness of Pakistan"* submitted by Ms. Shabana Kishwar, is accepted in its present form by the Department of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the Degree of Master of Philosophy in Economics.

Supervisor:

Dr. Zafar Mahmood
Foreign Professor (HEC)
PIDE
Islamabad

External Examiner:

Dr. Muhammad Idrees
Assistant Professor
Department of Economics
Quaid-i-Azam University
Islamabad

Head of the Economics Department:

Dr. Ejaz Ghani
Dean, Economics
PIDE
Islamabad

Abstract

Attracting capital and foreign exchange flows is crucial for developing countries. Capital inflows are assumed to be distributed between tradable and the non-tradable sectors of the receiving economy. Yet, these flows might lead to real exchange rate (RER) appreciation through raising the price of non-tradable as the real exchange rate is defined as the ratio of price of non-tradable to tradable. Appreciation of the RER therefore leads to the contraction of export and in turn loss of competitiveness. The objective of this study is to investigate changes in competitiveness of Pakistan's economy for the period, 1976-2009 by taking into account the effects of different types of capital flows and some policy variables on the real effective exchange rate (REER), a revealed indicator of competitiveness. Most of the existing literature shows that capital flows have positive impact on the real exchange rate. In this context, the size of the flows relative to the size of the economy and their usage is critical. By using auto regressive distributed lag (ARDL) cointegration technique, this study established that increased remittances, official development assistance, investment income and other investment are the sources real appreciation while increased government expenditure caused real depreciation. Foreign direct investment, trade openness and terms of trade (TOT) are found to be insignificant. Given the impact of capital inflows and other variables on the REER, it is expected that the study will benefit the policy makers in formulating different policies regarding exchange rate management, export promotion, demand management, etc.

i

Acknowledgements

A thesis is seldom only one man's work. First praise is to Allah, the Almighty, on whom ultimately we depend for sustenance and guidance. Allah granted me the determination, potential and capability to complete this dissertation. I present my sincerest and profound thanks to Prophet Muhammad (SAW) who is source of guidance and blessing for the humanity. After that I offer my sincerest gratitude to my supervisor, Dr. Zafar Mahmood, who has supported me throughout my thesis with his patience and knowledge whilst allowing me the room to work in my own way. I also attribute the level of my M.Phil degree to his encouragement and effort and without him this thesis, too, would not have been completed or written. One simply could not wish for a better or friendlier supervisor. I have learnt a lot from our discussions.

I am thankful to Mr. Muhammad Javid, Mr. Muhammad Ramzan, Ms. Noureen Fatima and Ms. Sidra Batool for their friendship and concern on the progress of the work and for other technical help. I would like to thank my parents, whose love, guidance and support are with me throughout my study. I view the years of graduate study as a family collective effort and the outcome as a shared achievement. Owing to the outstanding, superb and altruistic guidance of my parents that today I have a Master of Philosophy in Economics.

Shabana Kishwar

Table of Contents

List of Tables

List of Figures

Chapter 1

INTRODUCTION

1.1   Background and Motivation

Competitiveness is the ability of an economy to compete effectively in the international market. The most popular definition of competitiveness is due to Laura D' Andrea Tyson's book Who's Bashing Whom?(1992): "competitiveness is our ability to produce goods and services that meet the test of international competition while our citizens enjoy a standard of living that is both rising and sustainable." Maintaining a high level of competitiveness is thus crucial for achieving high export growth for developing countries. There is no unique measure of competitiveness. Competitiveness is measured through total factor productivity, terms of trade, real exchange rate, real effective exchange rate, revealed comparative advantage, balance of payments measure[1], etc.

The real effective exchange rate (*REER*) is one of the preferred tools for the assessment of competitiveness. The *REER* is an indicator that reveals international competitiveness. The *REER* index represents a nominal effective exchange rate index adjusted for inflation. A nominal effective exchange rate index represents the ratio of an index of a currency's period-average exchange rate to a weighted geometric average of exchange rates for the currencies of selected countries, weighted by each country's trade in both manufactured goods and primary products with its partner countries. Since *RER* is defined as the relative price of non-tradable to tradable goods, an increase in *RER* is thus equivalent to real exchange rate appreciation.[2]

One of the important factors in determining the changes in competitiveness is foreign capital flows. Capital flows are assumed here to be distributed between tradable and the non-tradable sectors of the receiving economy and will in turn affect the relative price of

---

[1] Balance of Payments is a rough guide to international competitiveness. If the current account balance improves and exports increases faster than imports then this suggests an improvement in competitiveness.
[2] Salter (1959) and Swan (1960)

tradable and non-tradable, which ultimately affect the REER of the country. There is a major concern that net capital flows either lead to appreciation of real exchange rate or have no impact on it. Most of the literature shows that an increase in capital flows causes the real effective exchange rate to appreciate. Appreciation of domestic currency impacts negatively the trade balance of an economy, an outcome known as "The Dutch Disease" in the literature.[3]

Capital flows to developing countries mainly consists of foreign direct investment (*FDI*), portfolio investment, official development assistance (*ODA*), investment income from abroad, remittances, etc. FDI is considered the most stable and advantageous form among the capital flows because it can bring with itself many benefits including increased access to foreign markets, management expertise, and transfer of technology. Additionally, FDI has lower sensitivity to international interest rates and is driven by consideration of long term profitability. Capital flows in general lower the cost of capital for creditworthy firms at the establishment level. At this level, these flows are used for investment purpose and can even act as a substitute for low level of domestic savings. These flows also help in stabilizing the balance of payments. Portfolio investment is a volatile form of capital flows because the market for this investment is relatively more liquid. It is easier to take it out of the country in periods of crises. It then puts downward pressure on the exchange rate and thus leads to depreciation of the currency.

Since the 1990s developing countries have experienced sharp increase in capital flows in the form of foreign loans, foreign direct investment, remittances, etc. The magnitude of the surge of capital flows is not uniform across all the developing countries. The surge phenomenon has been both in Asia and Latin America. Other developing regions like Africa have not benefited from these flows as much as Asia and Latin America. "FDI has been relatively large in Asian countries than in other countries where portfolio investment accounted for most of the flows" (Khan, 1998). Surges of capital flows to developing

---

[3] According to the Dutch Disease capital inflows affect real exchange rate through tradable and non-tradable goods prices and then affect the level of international competitiveness. This dual effect creates a problem for policy makers in managing the capital inflows in order to maximize the welfare of the economy.

countries also have some negative effects. Whereas the receiving countries do benefit from foreign capital flows, they also face some adverse effects. For instance, foreign capital flows, if not properly managed, can create deep monetary expansion, inflation and real exchange rate appreciation and increase the risk for the financial sectors and widening of current account deficit.

A surge of capital flows is linked to the increased domestic demand and this leads to the expansion of non-tradable sector and in turn the appreciation of the real exchange rate. Appreciation of the real exchange rate associated with the surge in capital flows adversely impact the tradable sector. This will result in loss of international competitiveness. Increased demand for non-tradable goods put pressure on the domestic prices which fuel up inflation. Increased demand for non-tradable is also associated with resource reallocation in favour of non-tradabl sector. This resource reallocation causes the higher factor returns and results in higher wages if labour is being intensively used in this sector. In these circumstances, the non-tradable sector is in the position to pass some wage pressures onto the prices but it is difficult for the tradable sector to raise prices to cover its cost because the prices of tradable commodities are given internationally.

Capital flows also play important role in widening of the current account deficit. In principle, it is hard to say that there is only increase in the demand for non-tradable commodities attached with the capital flows; some of the increased demand is also associated with the tradable commodities. Demand for imports also goes up as a result of surges of capital flows. Increased demand for imports and decline in level of exports as a result of capital flows creates the problem of trade deficit. According to the World Bank (2003) the surge in remittances observed in El Salvador during the 1990s was the most likely factor behind the worsening of the country's trade deficit which over the 1990s deteriorated from less than 7 percent of GDP to almost 14 percent of GDP.[4]

In the above context, the study of the behaviour of exchange rate is receiving lot of attention. The review of the empirical studies shows that some of the studies assessed only the impact of aggregate net capital flows on real exchange rate while the others were confined to limited number of capital flows in disaggregate form. The main contribution

---

[4] Lopez, *et al* (2007)

of this thesis is, assessment of the effect of each distinctive foreign capital and foreign income, remittances and official development assistance flow on the REER rather using real exchange rate (*RER*) for the period of 1976-2009. The Auto Regressive Distributed Lag model (ARDL) is used to examine the relationship between each type of capital and foreign income, remittances and official development assistance flow and REER. This estimator has the advantage of dealing with the small sample and endogeneity biases, often presented as two sources of inconsistency in the literature on REER and capital flows nexus.

The most significant finding of this thesis is that most of the capital flows lead to the appreciation of REER and thus causing a harmful effect on the competitiveness of the economy.

1.2 Objective of the Study

The overall objective of this study is to examine the international competitiveness of the Pakistan economy by analyzing the changes in the behavior of REER due to net capital flows and some selected policy variables. Specifically, the objectives are:

- To identify the variety of capital flows that results into the fluctuations in REER.

- To identify the policy variables that affect REER.

- To recommend policies to improve international competitiveness of Pakistan.

1.3 Arrangement of the Study

Rest of the thesis is divided into 5 chapters. Chapter 2 reviews the literature regarding the impact of capital flows and policy variables on the REER. Chapter 3 provides some background information regarding Pakistan economy. Chapter 4 describes the theoretical and empirical models, data and their limitations. This chapter also provides the estimation procedure. Empirical results are interpreted in chapter 5. Finally, chapter 6 concludes the thesis and recommends policies for improving the international competitiveness.

Chapter 2

LITERATURE REVIEW

This chapter provides literature review regarding the impact of capital flows on the real exchange rate/real effective exchange rate (REER). The empirical studies on the relationship between foreign capital flows and the real exchange rate in developing economies have produced different results.

Ying and Francis (2007) examine how the REER has responded to macroeconomic development over the last few decades in Tanzania. In this paper short run dynamics of the paper is assessed through an error correction model. Moreover, this paper closely examines the relationship of REER with aid inflows because Tanzania is a large receiver of aid inflows in the last decades. According to the result, aid lead to depreciation of the REER. This result is opposite to the findings of the most of the paper. General opinion is that aid inflows have positive relationship with real effective exchange rate. The Bank of Tanzania experiences accumulating reserves during the aid surges and decline the reserves when aid inflows are less is the main reason for this finding.

Nwachukwu (2008) investigates the Dutch disease effect of capital inflows through the real exchange rate appreciation by using the panel data of 24 Sub-Saharan African countries. He examines the short run relationship between the aggregate capital inflows and exchange rate, whether the capital flows lead to ER appreciation or not. His findings are opposite to the conventional belief that capital inflows lead to real exchange rate appreciation. In case of Sub-Saharan Africa there exist negative correlation between capital inflows and RER. The main reason of this is that if capital inflows are accompanied with structural policy reforms[5] then RER is not going to be appreciated.

---

[5] Such as tax reforms, restructuring and downsizing of civil services, privatization and cuts in public enterprises subsidies plus the liberalization of international trade controls and domestic prices as well as the actions to correct the disequilibrium in the nominal exchange market

Lartey (2007) examines the effect of capital inflows on the real exchange rate in sub-Saharan Africa. The main emphasis of this paper is on the foreign direct investment along with different capital flows. By applying the panel data technique he finds that the foreign direct investment leads to appreciation of the real exchange rate but the magnitude of the effect of the foreign direct investment is less than the effect of the official aid that also leads to the appreciation of the real exchange rate[6].

Lopez, Molina and Bassalo (2007) investigate the impact of remittances on the real effective exchange rate using the cross sectional data for the Latin America. There is no difference between their findings and the findings of the other researchers that flow of remittances leads to real exchange rate appreciation.

Athukorala and Rajapatriana (2003) make a cross regional comparison of Asia and Latin America regarding the impact of capital inflows on the real exchange rate. Their study reveals that the magnitude of the appreciation of the real exchange rate appreciation is less for Asia than Latin America, despite the fact that capital flows in most of the countries are larger relative to the size of the economy. The reason behind this result is the differences in policies adopted by both the regions to manage capital flows.

Nyoni (1998) discusses the phenomenon of the Dutch disease caused by aid inflows through real exchange rate appreciation in Tanzania. He uses the cointegeration technique and error correction model to find out this relationship. Using the trade openness, government expenditures, nominal devaluation and foreign aid inflows as the main determinants of the exchange rate he finds that nominal devaluation and openness has negative impact on real exchange rate while increase in government expenditures leads to real exchange rate appreciation. This appreciation may be due to increase in expenditure on non-tradable commodities which will in turn increase their prices and causes REER to appreciate. As far as aid inflow is concerned it negatively affects the exchange rate

---

[6] FDI is considered as safer form of investment than bank lending and portfolio investment because it is mainly on plant and equipment and also bring with itself technology.

contrary to other studies. So there is no Dutch disease effect of aid inflows in case of Tanzania.

Bakkardzhieva, Sami and Kamar (2010) study the impact of different types of capital and foreign exchange flows on real effective exchange rate (*REER*) across regions, including 57 developing countries. They use generalized method of moments to explain the relationship between the REER and capital flows. According to their findings aggregate capital flows that they call net capital flows (NKF) have positive impact on REER in all the regions except region CEEC. While estimation of the regression equation by disaggregating the capital inflows into their constituent elements suggests that income, remittances, aid, portfolio investment and debt have positive impact on real effective exchange rate, while foreign direct investment has no significant impact on REER appreciation.

Dornates and Pozo (2004) test the impact of worker's remittances on the real exchange rate (RER) using a panel of 13 Latin American and Caribbean countries. Methodology used by them is fixed effect OLS on the data from 1979-98. Their study finds incorporates the positive impact of worker's remittances on real exchange rate. Their results suggest that doubling of remittances causes the exchange rate to appreciate by 22% and thus reducing the countries' international competitiveness through decline in range of exports. Along with this they incorporate that public transfers in the form of foreign aid do not have any significant impact on the real exchange rate.

Lartey, Mandelman and Acosta (2008) find out the effect of remittances by using the panel data of 109 developing and transition economies. By using the data from 1990-2003 and applying GMM estimation technique they conclude that remittances have spending effect which leads to increase in prices of non-tradables relative to tradalbes and thus causes appreciation of real exchange rate. Increase in remittances also has resource movement effect from tradable to non-tradable sector, reducing the output of manufacturing sector and increasing the output of services sector that is to be considered as non-tradable sector. Appreciation of REER is more in the presence of fixed exchange

rate system than in the flexible exchange rate regime because in the flexible exchange rate regime it is easy to manage the exchange rate when it is affected by the capital inflows

Nukusu (2004) points out that if Government finances its expenditure through aid then this will not necessarily leads to the appreciation of the currency and creates the problem of Dutch disease. Appreciation of the currency may not cause reduction in exports because according to him Dutch disease is a phenomenon that takes place under full employment and efficient use of production factors and perfect elasticity of the demand for tradable. Increase in demand due to increase in aid can be meet by utilizing idle productive resources. This means that employing the unemployed resources to meet the increased demand for non-tradable may not turn up into Dutch disease while using the resources inefficiently are more harmful for the economy.

Fielding (2007) by applying the VAR technique studies the impact of aid inflows on the REER and on competitiveness in ten South Pacific economies. He finds mixed results. For some countries aid inflows causes RER appreciation but for one of the country the result is in opposite direction. In the economies that are of smaller size, exchange rate response is more towards aid. Appreciation of exchange rate is also linked with the decline in GDP. According to Fielding the economies which have no currencies of their own, the effect is more persistent because of no adjustment in the nominal exchange rate.

Arellano, Timothy and Lipschitz (2005) study the dynamic implications of aid and its variability by using the inter-temporal two sector optimizing model. They have done cross-country analysis for 73 aid dependent countries and find out that manufactured good exports are negatively related to the level of aid.

Kamar and Bakardzhieva (2003) study the behaviour of the Egyptian real exchange rate and its determinants that are liquidity, government consumption, terms of trade, trade openness and net capital flows for the period 1971-1999. By applying the Engle-Granger "two-steps" procedure they analyse that the monetary and spending policy of the

8

Egyptian government has played a consistent role on the determination of the long-run real exchange rate behavior. The effect of trade openness and terms of trade is found to be in opposite direction of the above two policies for the same time period. Although, Egyptian government allowed some capital flow liberalization but it intrude continuously to control for excess inflows and outflows. Egyptian policy makers always use monetary policy to maintain the internal balance.

Elbadawi and Soto (1994) analyse the impact of capital flows on long run exchange rate in Chili. By applying the cointegeration technique, they find that real exchange rate and its fundamentals are correlated for the period of 1960 to 1992. Under this an error correction model allows to check the effect of shocks from short run to long run in real exchange rate. Capital flows are disaggregated into four components, short-term capital flows, long-term capital flows, portfolio investment and foreign direct investment. Short term flows and portfolio investment have impact on RER only in the short run. But long term capital flows and foreign direct investment are found to be responsible for the appreciation of the ERER. Nominal exchange rate devaluation is found to be negatively correlated with RER.

Issa and Ouattara (2004) study the Dutch Disease phenomenon caused by aid inflows through appreciation of the real exchange rate in Syria from 1965 to 1997. ARDL approach is used to investigate the long run relationship between aid and real effective exchange rate. Aid leads to depreciation of the real exchange rate in long and short run rather than appreciating it. So the Dutch disease hypothesis does not hold for the case of Syria. Their results suggest that Syria can promote its export competitiveness by receiving more aid.

Sackey and Hary (2001) analyse the Ghana's real exchange rate with main focus on foreign aid. This study analyses how aid affects the export performance. Although, aid dependence of Ghana is very high yet it leads to depreciation in the real exchange rate. Aid flows also impact positively on export performance. According to empirical estimation terms of trade, aid inflows, government consumption and commercial policy

9

stance, and technological progress are main variables in the long-run equilibrium real exchange rate model for Ghana. As a result, the hypothesis that aid inflows lead to real exchange rate appreciation is rejected for Ghana.

Opoku-Afari, Morrissey and Lloyd (2004) examine the effects of capital inflows for Ghanaian economy. Capital inflows are decomposed into official inflows, permanent and non-permanent inflows. Using the vector autoregressive (*VAR*) technique they conclude that capital inflows tend to appreciate the real exchange rate in the long run as predicted by Dutch Disease theory, where as technology change, trade (export) and terms of trade tend to depreciate the real exchange rate. The degree of appreciation in the long-run was to some extent larger for the permanent inflows than for the non-permanent inflows. The equilibrium steady state path is identified by using the multivariate orthogonal decomposition technique for estimating the misalignment. In the short run, only trade is considered to be the major source of exchange rate misalignment.

Ouattara and Strobl (2004) study the relationship between foreign aid and the real exchange rate in 12 countries of the CFA France. By using the dynamic panel analysis from 1980 to 2000 they test whether aid leads to appreciation of the RER or not in the recipient country. According to their study aid affect negatively on the RER, so do not confirm the Dutch disease hypothesis in case of CFA France countries. Trade openness and nominal devaluation in 1994 also contributed to the depreciation of the Franc. Their results also indicate that terms of trade, government consumption and expansionary macroeconomic policies lead to real appreciation of the franc. The impact of public investment was also negative.

Emmanuel and Lartey (2007) examine the link between capital inflows and the real exchange rate in sub-Saharan Africa for the period 1980-2000 with the main focus on the FDI. They also analyse whether different forms of capital flows, official capital inflows and private capital inflows including FDI and other capital inflows have variable impact on the real exchange rate or not. Dynamic panel model is estimated by applying the GMM method. Their analysis shows that degree of appreciation associated with the FDI

is less than the official capital inflows while the other capital inflows do not affect the real exchange rate. This causes the Dutch disease effect in the sub-Saharan Africa.

Eyraud (2009) investigates Madagascar's competitiveness by, using both price and non price indicators and by analyzing the real exchange rate. To assess the distance between actual and equilibrium exchange rate they adopted two methodologies. First is macroeconomic balance approach and external sustainability approach and the second is reduced form equilibrium exchange rate. By applying these approaches he finds out that exchange rate is slightly overvalued. There is widening of the gap between actual and equilibrium exchange rate since 2000, market share of Madagascar's declines continuously as a result of deterioration in the price competitiveness.

White and Wignarja (1997) present an econometric model in order to study the real exchange rate behaviour in Sri Lanka. Appreciation in the real exchange rate is caused by the increased aid inflows so the attempts that have been made during 1980s in order to depreciate the real exchange rata by devaluing the Sri Lankan rupee were failed. As a result there was higher inflation wiping out all nominal changes. Appreciation of the RER adversely affected the performance of the exports from the manufacturing sector. Aid is to be considered the main factor causing divergence between nominal and RER, not the RER misalignment.

Adenauer, and Vagassky (1998) study the "Dutch disease" phenomenon by analyzing the relationship between aid inflows and the real exchange rate in CFA zone countries from 1980-1992. The link between aid and RER is tested for Burkina Faso, Cote d'Ivoire, Senegal and Togo. Appreciation in the RER is found as a result of aid inflows in these countries. This aid has also caused the wages to rise in the early 1980s.Government deficit in these countries also is the sign of Dutch disease effects caused by this aid .Level of government consumption was high as compare to the investment showing that a little amount of aid is spent on investment projects.

11

Kang, Prati and Rebucci (2010) by using panel vector auto regression model study the dynamic response of exports, imports and per capital GDP to aid shock. Considering the 37 countries and taking the data from 1960-2002 they find that aid shock causes the export and per-capital GDP growth to commove strongly in the long run and. there is inverse relationship between exchange rate overvaluation and these variables (exports, imports and per capita GDP). In half of the countries in their sample aid impact negatively on export import and GDP growth rate while on the other half sample its impact is positive. Along with this their study reveals that in those countries where the aid is spent on tradable goods, exchange rate is less overvalued there and aid has positive impact on these variables.

Rajan and Subramanian (2005) investigate why the strong effect of aid on the growth of the poor countries is hard to find out even if these countries are having good policies. Their study explores the offsetting effect of aid in cross country analysis. According to their analysis aid is having negative impact on the competitiveness of countries and there is decline in share of labor in tradable industries. This is because of the overvaluation of the exchange rate caused by aid inflows but the remittances do not seem to have such impact on competitiveness.

Vos (1998) by applying the CGE model approach tries to find out the Dutch disease effect of aid for Pakistan. Aid produces strong Dutch disease in case of Pakistan. But if aid inflows are used to for financing the household firms which are involved in producing the traded goods can lessen the Dutch disease effect. According to him nominal exchange rate adjustment are counter productive and findings for Pakistan depend strongly on the existing economic structure, investment and savings behavior of institutional agents, and the allocation of additional capital inflows among public and private sector agents.

Literature review related to Pakistan

Only few attempts have been made to find out the factors that affect the equilibrium level of exchange rate in Pakistan. These studies includes Chisti and Hassan (1993), Afridi

(1995), and Siddiqui, Afridi and Mahmood (1996), Haider and Mahboob (2005), Hussain (2009), Hamna (2009) and Sadia, Ahmed and Ihsan (2009).

Chisti and Hassan (1993) by using the Engle and Granger cointegeration test the relevance of purchasing power parity (*PPP*) for Pakistan. This test is applied on quarterly data from 1957.1-1992.2. After applying this they used the VAR approach to find out the monetary and real variables for the determination of real exchange rate. According to their findings ppp model is not appropriate for Pakistan while VAR analysis shows that medium term disturbances in equilibrium level of exchange rate are due to monetary expansion and deficit financing along with terms of trade, nominal devaluation, technological progress, tariff revenue and capital inflows.

Afridi (1995) tries to find out the determinants of the real exchange rate for Pakistan using data from 1960-1990. Most of the determinants of the RER are redefined in this paper and also the improved proxies are being used. So the results obtained by him are different from the earlier studies. Terms of trade variable is found to be insignificant but positive and technological change is also insignificant. Capital flows found to have inverse relationship with the real exchange rate.

Siddiqui, Afridi and Mahmood (1996) by using the single equation and simultaneous equation approach find out the relationship between the REER and monetary and real variables. The data used are from 1960 to 1994. OLS and 2SLS procedure is used for the estimation. The result shows that both monetary and real variables are responsible for fluctuations in REER.

Haider and Mahboob (2005) try to estimate the equilibrium real effective exchange rate misalignment for Pakistan by applying Engle Granger co-integration technique on data from 1978-2005. According to them terms of trade, trade openness, net capital inflows, relative productivity differential, government consumption, and workers' remittances are the main determinants of equilibrium real effective exchange rate (*EREER*). Trade openness, increase in government consumption and capital inflows cause the depreciation

13

in the REER, while, the increase in workers' remittances, improvement in terms of trade and total factor productivity appreciate REER.

Hamna (2009) tries to estimate the equilibrium real exchange rate for Pakistan and the misalignment for the period 1972-2007. She also tests the Dutch Disease hypothesis caused by capital flows in Pakistan through exchange rate appreciation. Equilibrium exchange rate is estimated by her taking into account government spending, trade liberalization, terms of trade, workers' remittances, foreign direct investment and foreign economic assistance. She concludes that all these variables lead to appreciation of RER except trade liberalization. RER is overvalued in Pakistan. FDI and remittances are the main factors responsible for the overvaluation. According to her Dutch Disease hypothesis holds for Pakistan.

Hussain (2009) investigates the Dutch Disease hypothesis by analyzing the appreciation of real exchange rate associated with capital inflows from 1981-2007 for six South East Asian countries. He also tries to find out the contraction in tradable (agriculture and industrial) sector and expansion in non-tradable (services) sector caused by surge in capital inflows. Firstly, he concludes an increase in ODA, remittances and FDI inflows lead to a real appreciation. Secondly FDI and REM are causing spending effect whereas remittances and ODA represent resource movement effect. So the empirical analysis shows that different kinds of foreign inflows seem to establish Dutch Disease in different regions.

Sadia, Ahmed and Ihsan (2009) examine the determinants of REER for 13 countries including Pakistan using the panel data from 1973 to 2006. Pedroni (1997, 1999) trst is applied to find out the relationship between capital flows and REER. The result shows that appreciation of the REER is caused by increase in net capital flows, government consumption and terms of trade confirming the results of most of the earlier studies.

The main finding of the reviewed papers is that long run behaviour of REER is influenced by terms of trade, trade liberalization and capital inflows. These flows lead to

real exchange rate appreciation and thus affect the competitiveness of the economy through reduction in exports.

The review of literature also suggests that different types of capital flows may have different effects on the real and real effective exchange rate (*REER*) because they affect it through different channels. Studies regarding the impact of capital inflow in disaggregate form depicts contradictory and ambiguous impact. Some studies show positive impact of capital inflows on competitiveness while the others portray the negative impact on it. The results may differ because of application of different estimation techniques.

The review of literature related to Pakistan shows that most of the existing studies only conduct the impact of net capital flows on the RER. These studies examine in general the impact of net capital inflows whereas some studies try to segregate the capital inflows into their constituent elements and then find their impact on the real exchange rate. It may be noted that RER represents only the bilateral exchange rate whereas REER takes into account all the major trading partners. In the same way, bilateral exchange rate represents the price of foreign currency in terms of domestic currency whereas the multilateral exchange rate represents the price of domestic currency in terms of number of currency. Thus, considering the bilateral exchange rate means ignoring the other major trading partners. Some of the studies did not analyse the time series properties of the data such as the stationarity of data. The non-stationarity of variables may have serious effects on t, F and DW tests. This calls for further investigation on these important issues that are not addressed in the reviewed studies.

Chapter 3

OVERVIEW OF PAKISTAN ECONOMY

This chapter provides some facts and figures about the Pakistan's economic situation. This chapter is divided into three sections.

3.1   Domestic economy

3.2   External sector

3.3   Foreign capital flows

3.4   Tradable and Non-tradable sector

3.1   Domestic Economy

Pakistan as a semi-industrialized economy is composed of textile, chemicals, agriculture and other industries. Despite the perpetuating political instability, over population and low levels of foreign investment, Pakistan started achieving high economic growth soon after its independence. Substantial macroeconomic reforms since the early 2000s, especially in the financial sector, have helped the economy to grow faster.

During the 1980s Pakistan experienced high rate of economic growth. The average annual rate of growth of real GDP during the decade was over 6 Percent, while the manufacturing sector grew at an average annual rate of more than 8 percent and agriculture sector experienced 3.5 percent growth for the same period (Table 3.1).

To achieve the sustained growth a comprehensive programme of economic liberalization was introduced in FY89. The aim of this programme was to reduce market distortions, increase domestic investment and to enhance the role of private sector in the economy. As a result industrial activity and private sector investment accelerated. The share of industrial output in the GDP increased from 24.5 percent in FY88 to about 27 percent in FY94.

The growth rate of GDP then declined to 2.3 percent in FY92, while the agricultural output declined by more than 5 percent. In FY93, Pakistan's economic situation was

16

affected by floods, deterioration in the external terms of trade, and political uncertainty. During FY94, because of the recovery in the agriculture sector the GDP growth rate recovered and reached to nearly 4 percent.

During the 1980s output grew without creating any inflationary pressures, as the price increase was moderate. The main focus of the Federal and Provincial development programmes was on the development of agricultural infrastructure. These programmes contributed towards productivity enhancement through the provision of extension services, timely availability of inputs and ensuring greater access to agricultural credit.

Liberalsation policies introduced to promote investment in export industries helped in increasing the industrial output growth that began in the late 1980s. Cotton based industries continued to dominate the sector, where output was significantly enhanced by renovation and addition to existing industrial capacity.

The government launched a privatization program in FY91 to improve the efficiency and competitiveness of public sector firms. Most of the public-sector enterprises were privatized to domestic investors, foreign investors or sold to the adequate buyers. Economic reforms that took place in FY00 helped the economy to improve its economic growth. The GDP growth rate reached to 6.8 percent between FY04 to FY06. From FY03 to FY07, the average GDP growth rate of the Pakistan's economy reached at the exceptional level of 7%. This was because of the better performance in manufacturing and services sectors. From FY00 to FY07, the growth rate of the manufacturing sector crosses the double-digit. The growth rate of the large scale manufacturing sector was 1.5% in 1999 but it then reached to a record level of 19.9% in FY04 to FY05 and by the end of FY07 it reached to 8.8%.

Pakistan did sustain growth but in the recent years economic growth has plunged. The prevailing situation is primarily due to devastating floods, energy shortages, political instability and security concerns arising out of war on terror.

Table 3.1: Average Growth Rates (Agriculture Sector, Manufacturing Sector and GDP)

Year	Agriculture	Manufacturing	Gross Domestic Product (GDP)
1976-80	3.88	6.34	5.32
1981-85	3.78	9.48	6.7
1986-90	4.36	6.94	5.6
1991-95	4.2	4.54	4.84
1996-00	4.86	3.22	3.98
2000-05	2.14	10.06	4.95
2006-09	3.85	4.55	4.3

Source: GOP (2005 and 2011).

3.2 The External Environment

3.2.1 Balance of Payments

Indeed, no factor has more dramatically affected the domestic employment situation and the balance-of-payments position as the outflow of contract workers and inflow of workers' remittances from those countries. Pakistani government always tried to focus on the foreign exchange savings rather than earning it. This is why Pakistan's balance of payments has always been in the deficit. Government adopted policies having anti export bias and imports were maintained up to the level of foreign exchange availability. If the import bill exceeds the export bill then there is deficit in the balance of payments. [7]

The overvalued exchange rate has serious consequence for the economy. It affects the size of the tradable sector and macroeconomic stability of the economy. Unfortunately, Pakistan remained unable to handle both of the problems created by the overvalued exchange rate. In the past, foreign currency reserves declined continuously creating the problem of persistent deficits.

---

[7] http://www.scribd.com/doc/13225438/Economic-History-of-Pakistan.

Current account deficit to gross domestic product (*GDP*) ratio in excess of 5.0% is considered to be not suitable for any economy.[8] During FY72 to FY78, on average, the trade deficit as percentage of the GDP was 6.3 while current account deficit in BOP was 5.6. Pakistan's balance of payments mostly rely on workers remittances. After FY72 they started increasing and in the late 1970s there was a surge in the flow of remittances. It went up from $107 million in FY72 to $2,885 million in FY83. After FY83 a declining trend was observed in the flow of the workers' remittances. The trade deficit as percentage of GDP rose to 9.9 percent while current account deficit on an average decreased to 3.7 percent during FY79 to FY85.

From FY86 to FY88 exports grew on average by 30 percent whereas growth rate of imports decreased to 1.5 percent and because of this current account balance improved. The amount of the workers' remittances also increased in FY86, and deficit in the current account balance decreased by 3.6 percent.

There was a significant improvement in the BOP during FY89 to FY94. Trade deficit as a percentage of GDP on an average was about 5.3 percent. During FY95 to FY97, Pakistan's external balance of payments worsened. Trade deficit as a percentage of GDP on an average was 5.0 percent while deficit in current account increased to 5.8 percent.

A significant improvement in the overall balance of payments is observed during FY98 to FY00 although there was adverse external environment. Different fiscal and monetary activities including Hub Power dispute, political uncertainty and the freezing of Foreign Currency Accounts (FCAs) discouraged the free trade. All this eroded the confidence in the economy. The deficit in the balance of payment and the balance of trade both decreased during the above specified period despite the fact in this period Pakistan had faced different sanctions imposed by the G-8 countries as a result of its nuclear test. The deficit in the balance of trade decreased to 2.92 percent of GDP while current account decreased to 2.93 percent of GDP as a result of introducing the structural reforms,

---

[8] Hamna (2009).

liberalization of the economy due to which there were some signs of improvement. Exchange payment and exchange rate regime was deregulated. [9]

There was a significant improvement in Pakistan's external position between FY01 and FY04. Because of the increase in exports during the FY00 to FY01 deficit in both the balance of trade and current account decreased. The current account balance emerged with a surplus of $1338 million in FY02. Primary commodities such as rice, raw cotton, and fish, and other manufactures such as leather, carpets, sporting goods, and surgical instruments played an important role in the growth of exports in FY2001. These five categories of exports comprised of about 82.6 per cent of the total exports during FY03. Such a high degree of concentration of exports in few items caused the volatility in export earnings.

Table 3.2: Trade and Current Account Balance (1981 to 2009)

Year	Trade deficit ($ Million)	Current account deficit ($ Million)	Trade deficit (% of GDP)	Current account deficit (% of GDP)
1981-85	-3215.8	-1153	-10	-3.82
1986-90	-2590.2	-1492.4	-7.244	-4.12
1991-95	-2504.6	-2330.8	-4.438	-4.54
1996-00	-2442.6	-2782.8	-3.91	-4.44
2000-05	-1513.4	710.2	-1.61	0.98
2006-09	-11342.8	-8098.8	-8.37	-4.94

Source: GOP (2009).

After FY05, trade account and current account again started deteriorating. The deficit in the current account balance was 1.4% of the GDP in FY05, while rose to 3.9% in FY06.

---

[9] http://www.scribd.com/doc/13225438/Economic-History-of-Pakistan.

According to the State Bank of Pakistan's Annual Report, the current account deficit expanded by approximately 8.4% over the FY08 and reached a record historical peak of US$14 billion. More than 80% of this increase was because of the large trade deficit mainly as a result of falling export and a massive increase in imports, which rose due to an increase in domestic demand, and an extraordinary rise in global oil and commodity prices. It may be noted that the rise in import bill was responsible for about 38% of the overall deterioration in the current account between FY07 and FY08.

3.2.2 Trade Liberalization

During 1970' to encourage the exports three measures of trade liberalization were taken i.e. devaluation of Rupee in 1972, elimination of the export bonus scheme and the end of restrictive licensing. These measures led to increase in the manufactured exports at a rate of 26% per annum but at this time the trade and industrial policies were biased against exports. During 1980's substantial trade liberalization have taken place with a view to reduce anti-export bias. In the early 80's the major improvements in the trade regime were reduction in the non tariff barriers (NTBs) and the adoption of negative import system. Non-tariff barriers provide the protection to import competing industries and it also restrict the imports of luxury consumer goods. By 1986, firstly, import quotas on non-capital imports were removed and secondly, restricted imports were then liberalized.

The most widespread reforms were undertaken in 1987. In 1985, the average tariff rate declined sharply from 77 percent to about 17 percent. Even though trade policies were modified continuously in Pakistan but the significant changes in it were made after the formulation of the new trade policy in 1987. The new trade policy led to a reduction in tariff slabs from 17 to 10 percent. Actually, in this decade, the government is paying attention mainly on enhancing the role of private sector, increasing the competitiveness and efficiency of the domestic industrial sector, and promoting exports. The maximum tariff was reduced from 225 percent in 1986-87 to 70 percent in 1994-95. The custom duty slabs were reduced from 13 to 5. In 2000-2003, the policies of liberalization, deregulation, and reduction in the cost of doing business were introduced and these policies have put down equal emphasis on encouraging a stable macro economic

framework in terms of inflation, interest rate and exchange rate. Further, they have also concentrated on the promotion of export of services, which had not received relative importance in the past. In fact, they have made the promotion of services an essential component of the overall trade policy of the country.

Trade, that represents the sum of imports and exports, has accelerated as a result of the process of greater openness of the economy, especially over the past 5 years. However, trade performance relative to many other developing Asian economies has not been that impressive. While the trade-to-GDP ratio has increased 0.4 percentage points per annum in Pakistan since 1990. The world average growth of trade as a share of GDP, at 1 percent per annum, has also been higher than that of Pakistan. [10]

3.2.3 Exchange Rate Regimes

Pakistan maintained fixed peg exchange rate regime for nearly thirty five years. After its independence Pakistan linked its currency, Pak-Rupee, to the Pound Sterling till 1971. After the Korean War there was a global recession and the world economies had to face the problem of scarcity of the foreign exchange reserves. Countries at that time linked their currencies to the Pound Sterling devalued their currencies following the fate of the pound. But Pakistan did not devalue its currency in 1949 and also in 1952. In spite of this Pakistan practiced import controls so that it could regulate and manage the imports and foreign exchange crisis. First devaluation took place in 1955 when the rupee was devalued by 30 percent with respect to the pound sterling in order to bring it in line with other trading countries.

With the increase of economic influence of the USA, Pakistan pegged its currency to the US dollar in 17th September 1971 and the exchange rate of Pakistan with US dollar was kept fixed at Rs.4.76 per US dollar. In 1971 Pakistan fell into the problem of rising deficit after the separation of East Pakistan, so it depreciated its currency by 58% and the new exchange rate was set at Rs11 per US dollar in 11th May 1972. This act of the Government helped in raising the export revenues. In the face of the loss of East

---

[10] For detail overviews see Khan (1998).

Pakistan's exportable produce, West Pakistan doubled its foreign exchange earnings, but then, in 1973, OPEC increased the price of oil and Pakistan had to pay higher price in order to import oil. There was a worldwide recession in that year and demand for goods and services decreased throughout the world which also caused Pakistan's export to decline.

All these factors greatly damaged Pakistan's economy. Pakistani currency appreciated by 11% in February 1973 after the devaluation of US dollar by 10% and the exchange rate declined and reached to the level of Rs.9.90. This exchange rate continued till 8th January 1982 because in this year Pakistan again fell into the problem of budget deficit due to strengthening of US dollar $ and the decline in remittances from abroad. To overcome this problem Pakistan abandoned the fixed exchange rate with US dollar and float the rupee under managed exchange rate regime by linking its currency to the currencies of 16 major trading partners following the worldwide trend of deregulation of economies and exchange rates. The value of the rupee started declining after the adoption of the managed floating exchange rate regime.

From FY73 to FY82, when Pakistan's Exchange rate was fixed with the US$, the Real Effective Exchange Rate (REER) moved with the movement in the US dollar vis-à-vis major currencies and the price differential[11]. Depreciation of the dollar vis-à-vis major currencies and the lower inflation differential kept the Rupee competitive during 1976-79. In the early 1980s due to appreciation of the US dollar against major currencies and higher domestic inflation caused the REER to appreciate substantially.

On 28th May, 1998 Pakistan made the nuclear test created a financial crisis due to sanctions by its donor countries. In order to mitigate this crisis, authorities adopted the system of multiple exchange rates comprising of an official rate (pegged to U.S. dollar), a

---

[11] Janjua (2007).

Floating Inter-bank Rate (FIBR), and a composite rate (which combines the official and FIBR rates).[12]

On May 19, 1999, the SBP adopted the system of dirty float exchange rate and the currency was pegged to the U.S dollar by removing the multiple exchange rate system. The exchange rate was then defended within a narrow band until 20th July 2000. During this period the rupee was floated by the SBP within a narrow range of 52.10-52.30 rupees to the U.S. dollar. The SBP then moved away from the managed exchange rate to a floating exchange rate regime and removed this band.

The event of September 11, 2001 had affected the Pakistan economy like other economies of the world. The rupee started appreciating against the dollar and kept on appreciating because of increasing capital inflows during the month of October 2001. The capital inflows got increased as a result of easing of quota restrictions that were imposed on some of the Pakistani exports to the Euro zone and the USA, an increase in foreign exchange reserves, rescheduling of external debt and a positive response by the IMF in terms of approval of credit.

Because of the market correction that took place during FY1999 and FY2000, the nominal exchange rate against dollar depreciated by18.5% during FY2001. High volatility of the exchange rate was controlled by using the monetary instruments in the new exchange rate regime. Nominal exchange rate got stable after the sharp depreciation in FY2001. Significant inflow of workers' remittances in the inter-bank market after September 11, 2001 played an important role in reversing the downward pressure on the exchange rate.

The State Bank of Pakistan, purchased US$ 8.2 billion between October 2001 to March 2004 from the foreign exchange market because of the excess liquidity in market. This was caused by surge in workers' remittances after September 11, 2001 event and resulted into the appreciation of exchange. Consequently, competitiveness of exports declined in

---

[12] Janjua (2007).

the international market. Simultaneously, there was increased demand of foreign exchange by importers, which not only helped in removing the excess liquidity from the inter-bank market, but also forced the SBP to scale down its purchases from the inter-bank market. Interestingly, in real terms, the Rupee continued to maintain the compositeness due to the fact that the basket of currencies appreciated against the Dollar more than the Rupee and relatively higher inflation compared to that of trading partners.

During the Musharraf's rule, because of high inflow of remittances and foreign capital to Pakistan the exchange rate remained almost stable at Rs.60 per US dollar. From 2008 onwards due to increase in oil prices and unstable political situation, Pakistan have been facing the problem of shortage of foreign exchange reserves and this has caused the exchange rate to reach the level more than 86 per US dollar.

Table 3.3 and 3.4 reports the nominal exchange rates and exchange rate regimes adopted by Pakistan during different time periods.

Table 3.3: Nominal Exchange Rate and Changes

Date	Pak Rs. in terms of US$	App(+)/Dep(-)
1972	11	-56.73
1973-81	9.99	10.11
1982	10.55	5.31
1983	12.71	16.99
1984	13.49	5.78
1985	15.16	11.02
1986	16.134	6.04
1987	17.18	6.09
1988	17.599	2.38
1989	19.215	8.41
1990	21.445	10.40
1991	22.423	4.36
1992	24.844	9.74
1993	25.96	4.30
1994	30.164	13.94

Date	Pak Rs. in terms of US$	App(+)/Dep(-)
1995	30.852	2.23
1996	33.568	8.09
1997	38.994	13.91
1998	43.196	9.73
1999	46.79	7.68
2000	51.771	9.62
2001	58.438	11.41
2002	61.426	4.86
2003	58.5	-5.00
2004	57.575	-1.61
2005	59.458	3.17
2006	59.857	0.67
2007	60.634	1.28
2008	62.547	3.06
2009	78.498	20.32

Source: Janjua (2007) and GOP (various issues)
* Appreciation and Depreciation

Table 3.4: Exchange Rate Regimes in Pakistan

Periods	Regime
From 14th Aug 1947 to 7th Jan 1982	Fixed Exchange Rate
From 8th Jan. 1982 to 21st July 1998	Managed Float
From 22nd July 1998 to 18th May 1999	Two tier Exchange Rate System (Multiple Exchange Rate)
From 19th May 1999 to 20th July 2000	Dirty Float: SBP defending the exchange rate within a narrow band
Since July 20, 2000	Flexible Exchange Rate

3.3   Foreign capital inflows

If we look at the foreign capital flows, it comprises of mainly foreign direct investment (*FDI*), foreign portfolio investment (*FPI*), other investment, remittances, official development assistance (*ODA*), etc. The amount of foreign private investment inflows to Pakistan is smaller compared with that to other developing countries despite the efforts of the government.[13]

3.3.1   Foreign direct investment (*FDI*)

There was no sharp increase in FDI to Pakistan like other developing countries during the first two decades (1950s and 1960s). In Pakistan there were restrictions on the free flow of foreign investment that is why in the early seventies the FDI flow was very low. With the passage of time Pakistan started implementing more liberal investment policies such as duty-free imports and exports of goods and tax exemptions. Firstly it opened up its industrial sector and then agricultural for foreign investment.

There are two phases of FDI inflows to Pakistan. In the first phase the Government attempted to attract the FDI through the Foreign Private Investment Act (*FPIA*) 1976. The, 1976 Act provided security against expropriation and assured adequate compensation in case of acquisition. It also guaranteed the remittance of profit, capital, and up to 50% of net income. In the second phase which, started at the end of the 1980s, the government tried to eliminate the controls on the free movement of capital, remittances and other transfers. In the first phase the FDI was low because of political instability, lack of human capital lack of physical infrastructure.

In 1988, the process of liberalization and privatization started. This strategy of the government helped in improving the FDI inflows from 1988 to 1996. In 1988 different incentives such as 'One Window' facility to overcome difficulties in setting up new industries, requirement for government approval of foreign investment was removed, and

---

[13] Le and Attaullah (2002). Brazil, Mexico, Malaysia, Nigeria, Singapore, Egypt, Indonesia, Hong Kong, Iran and Uruguay are among the ten largest recipients of FDI in the developing world

foreign equity participation of up to 100 percent were offered to foreign investors by the government including investment in the agriculture and services sectors. The amount of foreign investment inflow was $185.6 million in 1988 that increased to $939 million in 1996. But after that there was a decline in the level of the FDI from 1997 to 2001. Major reasons for this decline were considered to be the economic sanctions as a result of the nuclear tests, freezing of foreign currency accounts and so on. Also, because of the Asian Financial crisis there was loss in confidence of the foreign investors that also led to decline in the level of FDI. Previously, foreign investors faced different problems such as (i) permits and clearance from different government agencies; (ii) federal, local and provincial taxes; (iii) complex legal situations, etc., despite the introduction of FPIA (1976). In order to improve the foreign investors' confidence, New Investment Policy 1997[14] and the Corrupt Business Practices Ordinance 1998 were introduced by the government.

After the September 11 event, it was considered that this event will worse the situation of FDI in Pakistan but Pakistan's support against the terrorism turned around expectation and foreign aid poured into the country along with foreign direct investment. Over the time increase in foreign investment was very slow. From FY71 to FY85 FDI remained under 100 million dollars. After this period it started increasing rapidly because of adoption of the more liberal policies towards it. The amount of foreign investment rose from $8.1 million in FY72 to $4589 million in 2008. The highest level of FDI witnessed by Pakistan is in FY07 and FY08, i.e., $5140 and $5153 million, respectively.

3.3.2 Foreign portfolio investment (*FPI*)

Portfolio investment is also one of the forms of external financing in developing countries like Pakistan. It accounts for one fifth of all capital flows to the developing world. In Pakistan it is a rather recent phenomenon. When the Government opened up the financial market in the early 1990s then portfolio investment increased significantly. Pakistan was the first among emerging market economies that opened its stock market for

---

[14] For further detail see, Khan (1997).

foreign investors. Participation of the foreign investor was the major factor responsible for the increase in portfolio investment. In this era declining trend in the international rate of interest was also one of the factors that caused the increase in the foreign portfolio investment in Pakistani assets.

In 1994, portfolio investment increased significantly up to the level of $1,471 million. As this flow of capital is considered highly volatile, after reaching this level it declined continuously till 2003. It then reached above $2000 million in 2005.

Figure 3.1: FDI and FPI inflows (1976-2009)
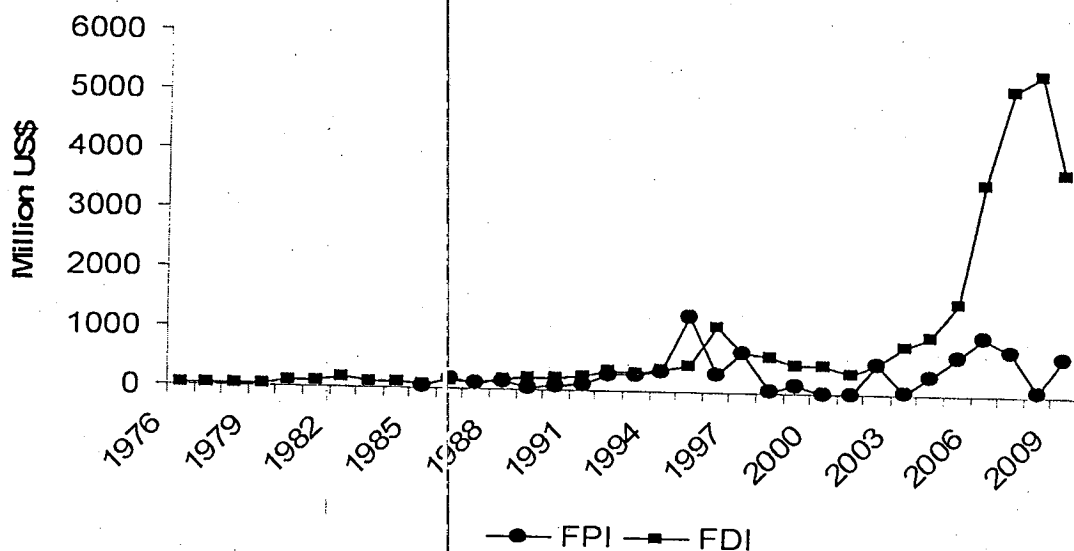
3.3.3 Foreign aid

One of the sources of capital for Pakistan is foreign aid. During the 1960s and 1970's Pakistan was considered as the largest aid recipient country in Asia. Pakistan received a large amount of foreign aid in the 1980s because it played an important role in the conflict between American and Russian over the Afghanistan issue but Pakistan has not benefited much from this aid. Aid to Pakistan is decreasing over the time and it is transformed into loan-type aid with the passage of time.

29

"According to *Pakistan Economic Surveys* (various issues), the share of grant-type aid in total aid commitment reduced sharply from 80% in the First Development Plan (1955-60) to 12% in 1970-1978 and to less than 9% since 1993".[15] The role of the world aid agencies such as IMF and the World Bank is more prominent in the economy of Pakistan in structuring the loan.

3.3.4 Remittances

Remittances represent the income that is earned by the home country residents who live in foreign countries. Remittances have played an important role in raising the foreign exchange level of Pakistan economy. Since, 1973 most of the remittances in Pakistan came from Oil rich Arab states. Most of remittances to Pakistan come from UAE, USA, Saudi Arabia, GCC countries (including Bahrain, Kuwait, Qatar and Oman), Australia, Canada, Japan, UK and EU countries like Norway, Switzerland, etc. The inflows of remittance and ODA, during 1976–2009 are shown in Figure 3.1. The growth started from around $1 billion in 2000 and had reached to more than $8 billion by 2009. The largest inflow of remittances to Pakistan in early 1970s comes from UK with 54% share. The flow of remittances has increased tremendously in late 1970s and early 1980s. From 1976-77 to 1982-83 major remittances come form Middle East and reached from $339.02 million(1976-77) to $2885 million(1982-83). These flows started declining since 1982-83 to 1999-00 because of the exclusion of the inflows from Kuwait in 1994-95. From 2001, remittances increased from USA, UK and other European countries and reached to $4237 million in 2002-2003.

---

[15] Le and Attaullah (2002). It may be noted that for the period 1970-1975 Pakistan was under Fourth Developmental Plan.

Figure 3.2: Remittances and ODA inflows (1976-2009)
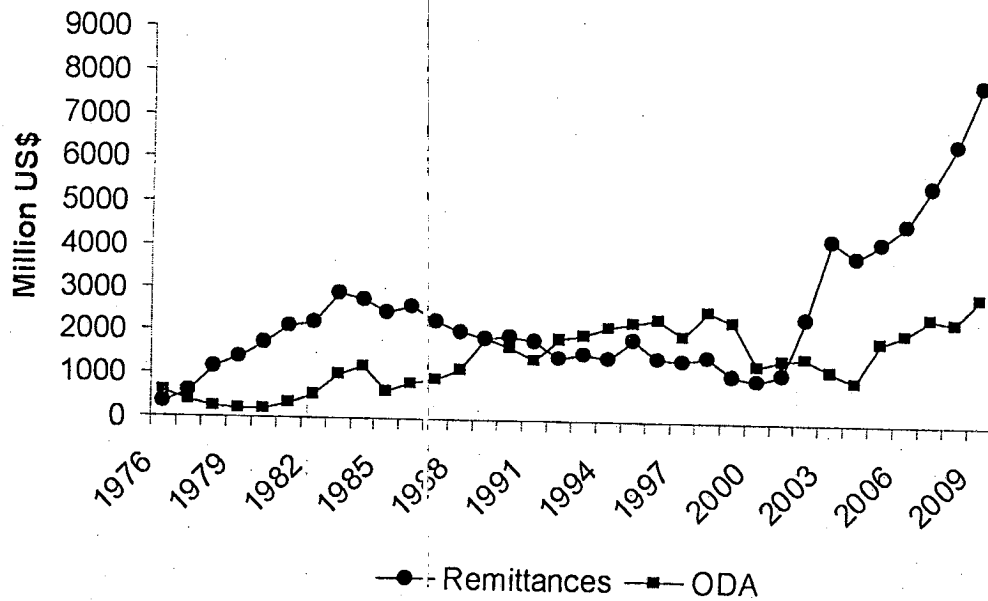
3.4 Tradable and non-tradable sectors

The output of the agriculture, manufacturing and mining sector can be defined as the tradable sector while the construction and services sector (which includes transport and communication, whole sale and retail trade, public administration, community services, etc.) can be taken as the non-tradable sector. Now because of the technological progress in developing economies, some of the services are also considered under the category of tradables but the economies like Pakistan are still considered to be the outlier given that global trends are concerned. It is, therefore, more appropriate to use the traditional definition to measure the relative performance of these two sectors. [16]

---

[16] Hamna (2009).

31

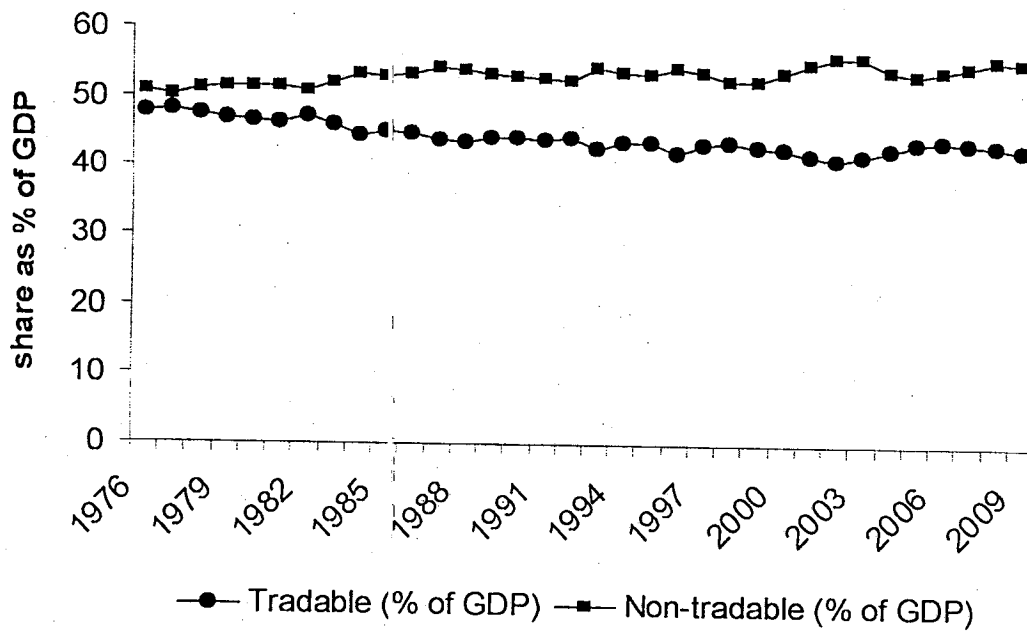**Figure 3.3: Relative Performance of Tradable and Non-tradable Sectors**

Figure 4.3 shows the performance of the tradable and non-tradable sector as a percent of the GDP. According to this figure the percentage share of the non-tradable sector in GDP has always remained higher than the tradable sector.

Chapter 4

MODEL DESCRIPTION AND METHODOLOGY

4.1   Introduction

Theoretical background to test empirically the effect of capital inflows on the REER can be found in the dependent economy model described by Salter (1959), Swan (1960), Corden (1960) and Dornbusch (1974). This model is also known as 'Salter-Swan-Corden-Dornbusch' model. This model describes the mechanism through which an appreciation in REER is caused by an increase in capital inflows. There are two types of effects caused by these inflows one is spending effect and the other is resource movement effect. Increase in real income caused by capital inflows leads to expansion in aggregate demand. As the prices of tradable are exogenously given (small country assumption), this increased demand causes the relative price of non-tradable to increase (spending effect). These inflows raises the marginal productivity of the labor in the booming sector of the economy and hence the wages. Resources will be drawn from other sectors of the economy and being employed in the booming sector (resource movement). Within this background a surge in inflows raises the real wages by raising the marginal productivity of labor in that sector. Increase in prices of non-tradable corresponds to REER appreciation, a phenomenon known as the Dutch Disease.

The 'Dutch Disease' Dimension

This phenomenon is named after the economic development of Netherlands in 1970's. It explains the relationship between the development of natural resources and the downfall in the manufacturing sector. The increase in the natural resources is attached with the increase in revenues in the form of foreign exchange by exporting these natural resources. But this will in turn raises the exchange rate of the exporting economy because of increase in foreign exchange inflows. The increase in exchange rate leads to decline in

manufacturing sectors output by affecting its competitiveness level. Although it is related with the discovery or development of the natural resources but we can relate it with any development which is associated with the large inflows of foreign exchange.

Why called Dutch disease. It is the phenomenon associated with the discovery of natural gas in Netherlands in 1959. But this development then turn into decline in other home industries whose products become expensive in the world market because of appreciation of the domestic currency.

The model of Dutch disease is first presented by Corden and Neary (1982). This model explains the way in which the inflows to the economy affect the production level. According to this model there are two sectors we called them traded and non-traded goods. Non traded goods sector includes the services sector while the traded goods sector consists of booming and lagging sectors (manufacturing or agriculture).

According to this model increase in resources affect the economy in two ways; resource movement affect and the spending affect.

Resource Movement Effect:

Under this effect transfer of resources from lagging sectors to booming sector takes place. If we refer the discovery of the natural resources as the booming sectors of the economy then demand for labor increases in that sectors. Some of the labor from the lagging sector shifts towards the booming sector. This is called direct affect of deindustrialization.

Spending Effect:

Spending effect occurs as a result of increase in revenues caused by increase in resources. Increase in demand for labor leads to higher wages and higher level of spending on non traded goods. So labor will also shift from lagging sector towards non-tradable goods sector. This is called indirect affect of deindustrialization. Increased demand for non traded goods then tend to higher domestic prices. But we know that traded goods prices are fixed internationally, so, in the face of fixed international prices, increased prices of non traded goods cause the real exchange rate to appreciate.

Relationship between Dutch disease and Capital Inflows

If there is increase in capital inflows (foreign direct investment, foreign assistance, debt etc) this will affect the economy through resource movement and spending effect.
Spending effect: increase in capital inflows is related with the higher level of domestic income and this increased income tempt the residents of the countries to increase their spending on both tradable and non-tradable goods. This high level of consumption raises the price of non-tradable goods but the prices of tradable goods remain unchanged because the developing countries (being the small) can not influence the international prices of the commodities. As we know that real exchange rate is defined as the ratio between the domestic and foreign prices so the increased domestic prices leads the real exchange rate appreciation.

Resource movement effect: if prices of non-tradable goods increase relative to tradable goods prices this will have an affect on the real wages. Increased prices of non-tradable goods result into decline in real wages in non-tradable goods sector. As a result of this production of non-tradable goods become more attractive relative to tradable goods where the prices are fixed. Labor will start transferring from tradable to non-tradable sectors because of increased demand for non traded goods and labor.

4.2 Mathematical Background of the Model

In order to analyse the impact of capital inflows on the RER, we follow the model suggested by Elbadawi and Soto (1994) for estimating the equilibrium exchange rate for Chili. Assume a small open economy with two sectors, tradable (exportable, importable) and non-tradable. Price of tradable is assumed to be given exogenously but domestic price of tradable is determined by the amount of tariff and nominal exchange rate. If we assume $P*x$ and $P*m$ are foreign prices of exportable and importable, t_x and t_m are export and import tax rates and E is the nominal exchange rate then domestic prices of tradable (P_T) is given by

$$P_T = E[(1-t_x)P_x^*]^\alpha[(1+t_m)P_m^*]^{1-\alpha} \qquad (1)$$

Where, α and $1-\alpha$ represents export and import shares in trade simultaneously.
In order to determine price of non-tradable we need to know about demand and supply of non-tradable.

Demand for non-tradable

The demand for non-tradable can be decomposed into private and public components. Let us assume D_{PN} and D_{GN} represents demand for private and public sector simultaneously.

$$D_{NT} = D_{PN} + D_{GN}$$

Proportion of private expenditure (ϕ_n) spent on non-tradable is a fraction of absorption less total government expenditure and this proportion depend upon export, import and non-tradable prices (P_N).

$$D_{PN} = \phi_n(P_x,P_m,P_N)(A-g.Y)$$

36

Where, A is absorption, Y is total income and g is the ratio of government expenditure to total income.

The proportion of government expenditure (g_n) that is spend on non-tradable is a fraction of total expenditure $g.Y$.

$$D_{GN} = g_n(g.Y)$$

Total demand for non-tradable (D_{NT}) is thus given by

$$D_{NT} = \phi_n(P_x, P_m, P_N)(A - g.Y) + g_n(g.Y) \qquad (2)$$

Supply of non-tradable

The supply of non-tradable (S_N) depends upon prices of non-tradable and tradable goods.

Supply of non-tradable is specified as the fraction of income.

$$S_N = s_n(P_x, P_m, P_n)Y \qquad (3)$$

By equating demand and supply we can find out the prices of non-tradable.

$$\phi_n(P_x, P_m, P_N)(A - g.Y) + g_n(g.Y) = s_n(P_x, P_m, P_n)Y$$

Now taking total income common from both sides we get

$$\phi_n(P_x, P_m, P_N)[(A/Y) - g)] + g_n g = s_n(P_x, P_m, P_n) \qquad (4)$$

Price of non-tradable determine in this way becomes the function of export and import prices, government expenditure on non traded goods, ratio of the government expenditure to total income and absorption capacity out of total income i.e. (A/Y).

Real Exchange Rate (_RER_)

RER (e) is defined as the ratio of prices of non-tradable to tradable.

$$e = P_N / P_T$$

$$e = P_N / E[(1-t_x)P_x^*]^\alpha [(1+t_m)P_m^*]^{1-\alpha} \tag{5}$$

By putting the value of P_N, we can define the _RER_ as a function of A, g_n, g terms of trade (TOT) that is (P_x / P_m) and export taxes (t_x) and import taxes (t_m) in the following equation:

$$e = e(A/Y, TOT, g_n, g, t_x, t_m) \tag{6}$$

Absorption capacity depends upon net capital inflow (NKI) and expected real exchange rate depreciation by Elbadawi (1993).

$$A/Y = (NKI/Y, [_t e_{t-1} - e_t]) \tag{7}$$

For keeping our analysis simple we are keeping the expectations regarding the real exchange rate depreciation constant as the purpose of this study is just to find out the impact of capital inflows and some policy variables on the REER. From equations 6 and 7, we can define the real exchange rate as:

$$e = e(NKI/Y, TOT, g_n, g, t_x, t_m) \tag{8}$$

4.3 Econometric Model

Now, in this regard, we present the mathematical model given in eq (8) in an empirical form. We follow Bakkardzhieva, Saini and Kamar (2010).

$$REER_t = \beta_0 + \beta_1 (capitalflows)_t + \beta_2 (GCON)_t + \beta_3 (TOT)_t + \beta_4 (TOP)_t + \varepsilon_t \qquad (A)$$

Here *GCON*, *TOT* and *TOP* represents government consumption, terms of trade and trade openness while β's are the coefficients that we estimated and ε is an i.i.d., mean-zero, stationary random variable.

This equation is estimated by disaggregating the capital flows into their constituent elements. In this case we are expecting to have positive signs of all the coefficients of the capital flows.

The theoretical impact of these variables is β_1 to β_3 is expected to be positive while β_4 is expected to be negative.

4.4   Description of Variables

4.4.1   Real Effective Exchange Rate (REER)

REER is the real effective exchange rate that shows the ratio of prices of non-tradable commodities to prices of tradable commodities multiplied by NEER. REER defined in this way is used to measure the internal competitiveness of the economy. Due to the unavailability of data on prices of non-tradable and tradable commodities the consumer price index (*CPI*) and whole sale price index (*WPI*) are used as proxies (Appendix-I). As REER is defined as the ratio of prices of non-tradable to prices of tradable commodities so the increase in the value of this index represents the appreciation of domestic currency. For external competitiveness the ratio of the foreign and domestic consumer price index is going to be used.

4.4.2 Capital flows

Capital flows includes foreign direct investment, portfolio investment, other investment, official development assistance (*ODA*), investment income and remittances.

First three flows appear in the capital account of the BOP sheet and considered as the capital flows, while the remaining three appears in the current account of the BOP sheet and considered as foreign exchange flows.

4.4.2.1   Expected Theoretical Impacts of Capital flows

If capital flows are utilized to pay directly for imports then REER will not be affected. If these flows are used for the production of importables then wage in this sector will go up this will result in higher prices of non-tradable. However, if capital inflow is used for the production of non-tradable then the conversion of foreign exchange in domestic currency will increase the money supply and as a result the prices of non-tradable will go up causing an appreciation of the real exchange rate.

Foreign Direct Investment (*FDI*)

Foreign direct investment (*FDI*) is considered as safer form of investment than any other investment because it is mainly on plant and equipment and it also brings with itself technology. It is assumed, therefore, appreciation of the REER associated with it is smaller than the other forms of capital inflows.

Foreign Portfolio Investment (*FPI*)

Portfolio investment is considered as the fastest growing form of external financing for developing economies. If portfolio investment is used for modernization of   the firms such as purchasing new machines and new product lines the impact may be smaller. If

this investment is towards speculation then effect will be different. As foreign portfolio investment is a recent phenomenor so it is not included in estimation process.

Other Investment (*OI*)

Other investment is either the liabilities of the private sector or the public sector of the economy. It this investment is on nonproductive activities rather than on export promotion than their effect on REER will be different.

Figure 4.1 below illustrates over the time trend in capital flows as percentage of GDP.

Figure 4.1: Trends in Foreign Direct Investment (FDI) & Other Investment (OI)
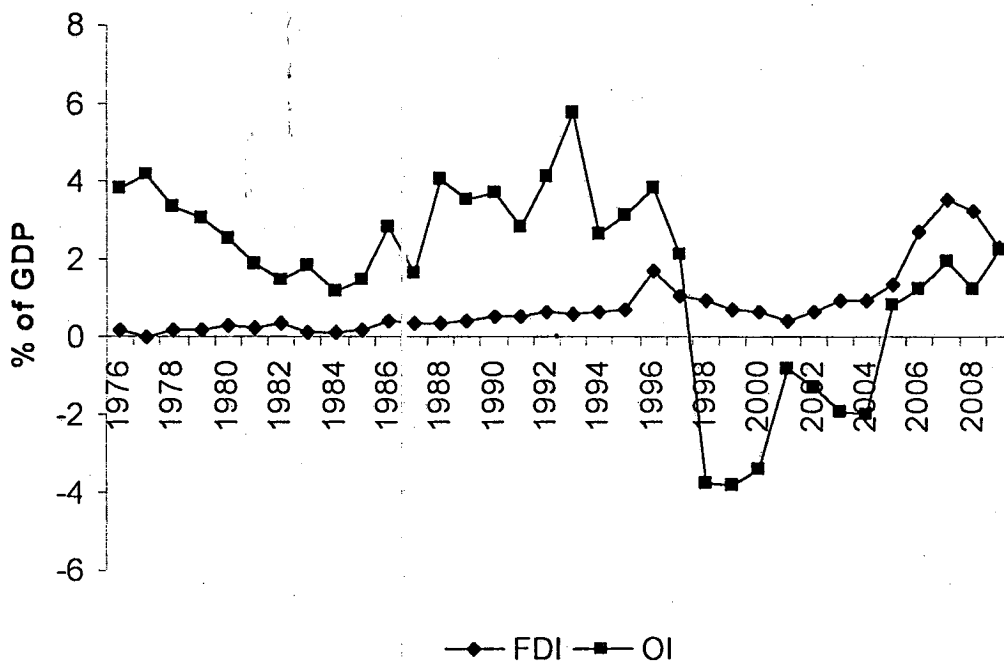
Foreign Aid

Foreign aid is usually provided to ease foreign exchange constraint, ease services of external debt burden and support on investment in infrastructure and human capital.[17] Important factors determining the impact of aid inflows seem to be the spending pattern of trade, the amount of import financed with aid and the coordination between the fiscal and monetary policy. Aid inflows impact ambiguously on the relative price and output. If Aid inflows leads to increase domestic expenditure then it causes real exchange rate to appreciate. But if this expenditure raises the capital stock in traded goods sector then output in this sector might not contract.

Remittances

As far as the remittances are concerned they are mainly used to finance current consumption. A little of them is spent on productive activities. Migrant households also affect the consumption behavior of non-migrant household. Transfers in the form of remittances have a positive impact on development indicators (Fajlber and Lobez, 2005) but when these flows are very large they create undesired problems through spending on non-traded goods for the recipient economies.

Investment Income

Investment income received by the domestic country will have ambiguous impact. If this income is reinvested then have no impact on REER.

Figure 4.2, depicts the trends in investment income, official development assistance and remittances as percentage of GDP.

---

[17] Mwanza Nkusu (2004).

Figure 4.2: Trends in Investment Income (INI), Official Development Assistance (ODA) & Remittances (REMITT)
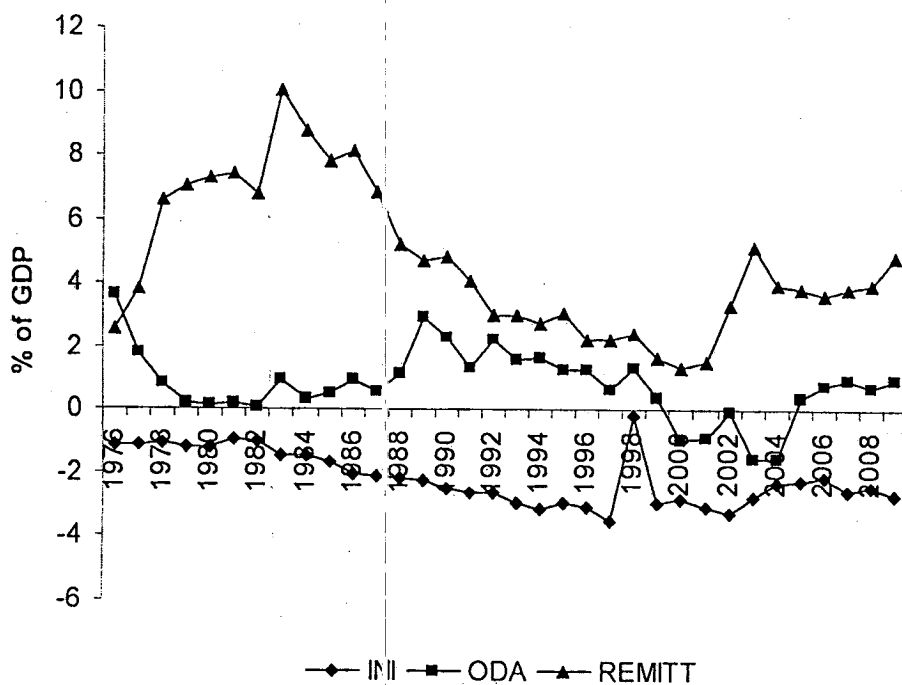
4.4.3 Policy Variables

Policy variables include trades terms of trade, trade openness and government consumption.

4.4.3.1 Expected Theoretical Impacts of Policy Variables

Terms of Trade (TOT)

Terms of trade are the ratio of export prices to import prices. Whenever there is a term of trade improvement this leads to appreciation of REER through increase in real income. So, increase in the prices of exports of any country will increase the real income in the export sector. This will result in increasing the demand for non traded commodities, which will lead to appreciation of the real exchange rate provided there is no substitution

effect from domestic goods to foreign goods. If substitution effect dominates then it causes the real effective exchange rate to depreciate.

Trade Liberalization (*TOP*)

Trade openness is defined as the ratio of exports and import to the GDP. Improvement in trade openness leads to depreciation of real exchange rate if substitution effect dominates the income effect. [18] Along with this, trade liberalization results in increased supply of commodities both tradables and non-tradable and there is also increased demand for non-tradable because of income effect so prices of non-tradable will go up which result in exchange rate appreciation. According to Edward (1988) substation effect dominates the income effect so openness leads to depreciation of REER. As a result of this improvements in the balance of trade take place.

Government Consumption (*GCON*)

Allocation of government expenditures across different sectors of the economy is crucial for determining the changes in exchange rate. Government expenditures on traded commodities results in increased demand for importable which in turn causes trade deficit. So, real exchange rate depreciation is required to maintain external balance. But if the government expenditures are on non-tradable then opposite to this takes place.

Figure 4.3 depicts the trends in Government Consumption (*GCON*), Terms of Trade (*TOT*) & Trade Openness (*TOP*)

---

[18]Substitution effect causes the substitution of tradables for non-tradable because of low prices of importables.

Figure 4.3: Trends in Government Consumption (GCON), Terms of Trade (TOT) & Trade Openness (TOP)
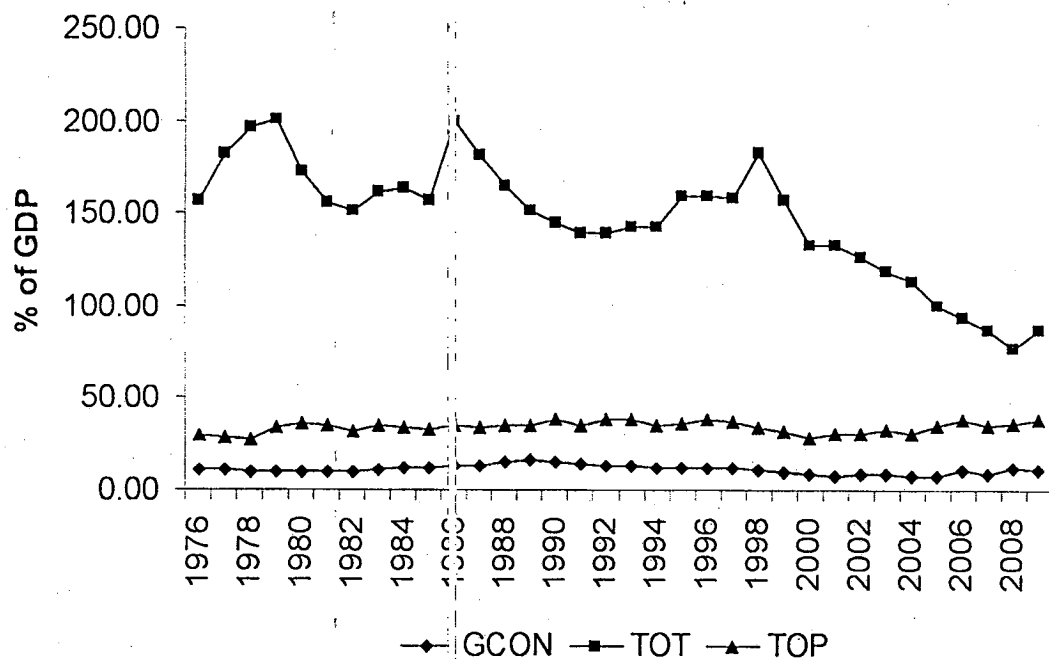
Total factor productivity is another variable that can be added to see the Balassa-Sameulson effect which states " if productivity improvements are higher in the traded goods sector then, in the long run, the resulting fall in the prices of tradable relative to the price of non-tradable, should lead to RER appreciation." When production level in tradable go up then this will result in high wages in both tradable and non-tradable sectors. The resulting increase in real income tends to increase the relative demand for non-tradable. So, there is increase in prices of non-traded commodities and real exchange rate appreciation. Due to non availability of data on this variable it could not become possible to include it in the regression analysis.

4.5   Data and Estimation Procedure

The data come from various sources; International Financial Statistics (*IFS*), the World Development Indicators (*WDI*), Handbook of Statistics and various issues of Pakistan

Economic Survey, the Government of Pakistan. The real effective exchange rate (*REER*) is taken as the ratio of the domestic consumer price index to foreign consumer price index due to non-existence of data on the prices of non-tradable goods. The REER index is calculated by using geometric mean and total trade share of trading partners as weights.

Data on remittances (*REM*), GDP and Government Consumption is taken from different issues of Pakistan Economic Survey, Government of Pakistan while the data on other investment and terms of trade (*TOT*) is taken from International Financial Statistics (*IFS*). Data on investment income and foreign direct investment (*FDI*) and official development assistance (*ODA*) is collected from Hand Book of Statistics on Pakistan Economy (2005). Data on trade openness (*TOP*) is collected from world development indicator (*WDI*).

4.5.1 Construction of variables

GCON   = Public consumption expenditure/ GDP
TOT   = Export prices/import prices
TOP   = (exports+imports)/GDP
FDI   = Foreign direct investment/GDP
OI   = Other investment/GDP
INI   = Investment income /GDP
ODA   = Official development assistance/GDP
REMITT = Remittances/GDP

4.5.2 Estimation Procedure

Different estimation procedures can be used to estimate regression equation and analysing the variables and capital flows, which influence the real exchange rate. Our main objective is to analyse how capital flows affect the real effective exchange rate. In this study, we estimate our model by using the autoregressive distributed lag (*ARDL*) approach developed by Pesran and Shin (1999) and further developed by Pesaran *et al.* (2001). This approach is superior to the Engle and Granger (1987) two-step procedure

and Johansen (1998) cointegration approach, and has many advantages. Using this approach, estimation of single equation is required to find out the long run relationship.

By applying ARDL methodology the long run and short run effects could be find out simultaneously. With the ARDL model, cointegration analysis can be conducted irrespective of whether the explanatory variables are I(0), I(1) or a mixture of both but the other methods such as the Johansen, Engle and Granger approach are concerned with the long run relationship among I(1) variables. It allows the cointegration relationship to be estimated by OLS once the lag order of the model is identified.

This technique improves upon the other methods since it is better at handling small samples and dynamic sources of bias. Pesaran and Shin (1999), Pesaran *et al.* (2001) and Haug (2002) show that the OLS estimators of the short-run parameters in the UECM are consistent and the long-run coefficients are super consistent in small sizes. This technique also controls for endogeneity.

ARDL MODEL SPECIFICATION

To estimate the equation of REER (A), we employ the ARDL approach to cointegration given by Pesaran *et al.* (1996) and Pesaran *et al.* (2001). The unrestricted error correction representation of the ARDL model for (A) is given as follows:

$$
\Delta \ln(REER)_t = \theta_0 + \sum_{i=1}^{p} \beta_{1i} \Delta \ln(REER)_{t-i} + \sum_{i=0}^{p} \beta_{2i} \Delta FDI_{t-i} + \sum_{i=0}^{p} \beta_{3i} \Delta OI_{t-i} + \sum_{i=0}^{p} \beta_{4i} \Delta INI_{t-i} +
$$
$$
\sum_{i=0}^{p} \beta_{5i} \Delta remitt_{t-i} + \sum_{i=0}^{p} \beta_{6i} \Delta ODA_{t-i} + \sum_{i=0}^{p} \beta_{7i} \Delta \ln(gcon)_{t-i} + \sum_{i=0}^{p} \beta_{8i} \Delta \ln(tot)_{t-i} + \sum_{i=0}^{p} \beta_{9i} \Delta \ln(top)_{t-i}
$$
$$
+ \phi_1 \ln(REER)_{t-1} + \phi_2 FDI_{t-1} + \phi_3 OI_{t-1} + \phi_4 INI_{t-1} + \phi_5 remitt_{t-1} + \phi_6 oda_{t-1} + \phi_7 \ln(gcon)_{t-1}
$$
$$
+ \phi_8 \ln(tot)_{t-1} + \phi_9 \ln(top)_{t-1} + \upsilon_t \ldots (1)
$$

Where ln(*REER*), *FDI, OI, INI, remitt, ODA, ln(gcon), ln(tot) and ln(top)* are real effective exchange rate, foreign direct investment, other investment, investment income, remittances, official development assistance, government consumption, terms of trade

and trade openness and ϕ_i s represent the long run multiplier, θ_o is the drift and v_t are white noise error. Δ is the first difference operator and ρ is the optimal lag length.

The orders of the lags in ARDL model are selected by either Akaike Information Criteria (*AIC*) criteria or Schwarz Bayesian Criteria (*SBC*). ARDL procedure involves the following three steps. First of all we estimate the equation (1) by ordinary least square (OLS) method.

BOUNDS TESTING PROCEDURE

The first step in the ARDL bounds testing approach, in order to test for the existence of a long-run relationship among the variables is to estimate equation (1) by ordinary least squares (OLS). A long-run relationship exists between real effective exchange rate (*REER*) and capital flows if the coefficients on the lagged level variables are jointly significant. In other words, if the null hypothesis as represented by $H_0 : \phi_1 = \phi_2 = \phi_3 = \phi_4 = \phi_5 = \phi_6 = \phi_7 = \phi_8 = \phi_9 = 0$ is rejected against the alternate hypothesis $H_1 : \phi_1 = \phi_2 = \phi_3 = \phi_4 = \phi_5 = \phi_6 = \phi_7 = \phi_8 = \phi_9 \neq 0$, then it can be said that a long–run relationship exists between the REER and capital flows. The existence of a long-run relationship carries out by an F-test. The F-test represents the joint significance of the coefficients of the lagged levels of the variables. The F-test has non standard distribution which depends upon whether the variables are I(0) or I(1), the number of regressors and whether the model contains intercept or trend.

Pesaran *et al.* (2001). propose two sets of critical values to test for cointegration when the variables are integerated of order d i.e. I(d) where 0≤d≤1. A lower value assuming the regressors are integerated of order zero, I(0), and an upper value assuming purely regressors are integerated of order 1, I(1). If the F-statistic is above the upper critical value that is F > FU the null hypothesis of no long-run relationship can be rejected irrespective of the orders of integration for the time series and hence conclude that there is a long-term relationship between REER and the explanatory variables.

Conversely, if the test statistic falls below the lower critical value that is $F < FL$ the null hypothesis of no conintegeration cannot be rejected. In this case, a long-run relationship does not seem to exit.

Finally, if the statistic falls between the lower and upper critical values that is, $FL < F < FU$ the result is inconclusive and the order of integration of the underlying variables has to be investigated more deeply. The approximate critical values for the F-test were obtained from Pesaran and Pesaran (1997).

After confirming the existence of cointegration among the variables, the second stage of the analysis is to estimate the coefficients of the long run relation of the REER equation.

$$\ln(REER)_{t-1} = \pi_1 FDI_{t-1} + \pi_2 OI_{t-1} + \pi_3 INI_{t-1} + \pi_4 remitt_{t-1} + \pi_5 oda_{t-1} + \pi_6 \ln(gcon)_{t-1}$$
$$+ \pi_7 \ln(tot)_{t-1} + \pi_8 \ln(top)_{t-1} + \upsilon_t \quad ...(2)$$

where, $\pi_1 = \phi_2 / \phi_1$, $\pi_2 = \phi_3 / \phi_1$, $\pi_3 = \phi_4 / \phi_1$, $\pi_4 = \phi_5 / \phi_1$, $\pi_5 = \phi_6 / \phi_1$, $\pi_6 = \phi_7 / \phi_1$, $\pi_7 = \phi_8 / \phi_1$ and $\pi_8 = \phi_9 / \phi_1$

In final step, we obtain the short-run dynamic parameters by estimating an error correction model associated with the long-run estimates. The equation for this is specified as follows:

$$\Delta \ln(REER)_t = \theta_2 + \sum_{i=1}^{\rho} \beta_{1i} \Delta \ln(REER)_{t-i} + \sum_{i=0}^{\rho} \beta_{2i} \Delta FDI_{t-i} + \sum_{i=0}^{\rho} \beta_{3i} \Delta OI_{t-i} + \sum_{i=0}^{\rho} \beta_{4i} \Delta INI_{t-i}$$
$$+ \sum_{i=0}^{\rho} \beta_{5i} \Delta remitt_{t-i} + \sum_{i=0}^{\rho} \beta_{6i} \Delta ODA_{t-i} + \sum_{i=0}^{\rho} \beta_{7i} \Delta \ln(gcon)_{t-i} + \sum_{i=0}^{\rho} \beta_{8i} \Delta \ln(tot)_{t-i} + \sum_{i=0}^{\rho} \beta_{9i} \Delta \ln(top)_{t-i}$$
$$\psi ECM_{t-1} + \upsilon_t \quad ...(3)$$

ECM is the error correction term and can be defined as follows

$$ECM_t = \ln(REER)_t - \theta_2 - \sum_{i=1}^{\rho} \beta_{1i} \Delta \ln(REER)_{t-i} - \sum_{i=0}^{\rho} \beta_{2i} \Delta FDI_{t-i} - \sum_{i=0}^{\rho} \beta_{3i} \Delta OI_{t-i} - \sum_{i=0}^{\rho} \beta_{4i} \Delta INI_{t-i}$$
$$+ \sum_{i=0}^{\rho} \beta_{5i} \Delta remitt_{t-i} - \sum_{i=0}^{\rho} \beta_{6i} \Delta ODA_{t-i} - \sum_{i=0}^{\rho} \beta_{7i} \Delta \ln(gcon)_{t-i} - \sum_{i=0}^{\rho} \beta_{8i} \Delta \ln(tot)_{t-i} - \sum_{i=0}^{\rho} \beta_{9i} \Delta \ln(top)_{t-i}$$

In the eq (3) ψ represents the speed of adjustment towards the equilibrium.

This approach assumes that one set of variables are I(0) and the other are I(1). However, as noted by Ouattara (2004), if the order of integration of a variable is greater than one then the underlying assumption of the ARDL is violated. So, testing the order of integration of the variables included in the model is important to ensure that we satisfy these underlying assumptions. For this reason, in this paper, we begin by checking for the order of integration of the variables, prior to proceeding to the ARDL estimation itself.

To further find out the quality of model, the Cumulative Sum of Recursive Residuals (CUSUM) and the Cumulative Sum of Squares of Residuals (CUSUMQ) are used to test for parameter stability. The CUSUM test (Brown, Durbin, and Evans, 1975) is based on the cumulative sum of the recursive residuals.

Chapter 5

EMPIRICAL RESULTS

To achieve the objective of this dissertation, using the methodology reported in chapter 4, we report and analyse the results. Specifically, the following are included in this chapter. (i) unit root test to check the stationarity of the data; (ii) bounds test for cointegration to determine the long run cointegration relationship; (iii) CUSUM and CUSUMQ test of stability.

5.1   Unit Root Test

First of all we test for the stationarity status of all variables to determine their order of integration.   This is to ensure that the variables are not integrated of order 2 that is $I(2)$ stationary so as to avoid spurious results. According to Ouattara (2004) in the presence of $I(2)$ variables the computed F-statistics provided by Pesaran *et al.* (2001) are not valid because the bounds test is based on the assumption that the variables are $I(0)$ or $I(1)$.

Therefore, the implementation of unit root tests in the ARDL procedure might still be necessary in order to ensure that none of the variables is integrated of order 2 or above. Unit root test is carried out using the Augmented Dickey-Fuller (*ADF*) (Dickey and Fuller, 1979 and 1981) stationarity tests.

The standard Augmented Dickey-Fuller (*ADF*) test has been utilized to explore the order of integration of the variables. The results are reported in Table 5.1. Based on the ADF test statistic, it is found that REER, FDI, other investment, ODA, investment income and trade openness (*TOP*) are I(0) while remittances, government consumption and terms of trade (*TOT*) have unit root problem at level while stationary at the first difference.

Thus, empirical exercise provides dissimilar order of integration for variables, i.e., $I(1)$ / $I(0)$. This dissimilarity is a good rational for applying the ARDL bounds testing approach to co-integration developed by Pesaran *et al.* (2001). The unit root results presented in Table 5.1 show that the order of integration of the variables in our model is zero or equal to one. Thus, we can proceed ahead to check for the existence of the long run relationship by applying the ARDL bounds testing approach of cointegration.

Table 5.1: Unit Root Test

Variable	ADF Test (Levels)	ADF Test (First Difference)
lnREER	-2.104**	-2.976**
FDI	-3.858**	-3.915***
OI	-1.809*	-5.620***
Remitt	-0.349	-5.047***
INI	-4.303***	-9.934***
ODA	-3.016***	-5.389***
lnGCON	-0.119	-6.826***
lnTOP	-2.665*	-6.149***
lnTOT	-1.313	-3.279***

*indicate the significance at 10%
** indicate the significance at 5%
*** indicate the significance at 1%

5.2   Bounds Test for Cointegration

In this section, ARDL (autoregressive distributive lag) is applied to test the cointegration. For this procedure it is essential to determine the order of lag on the first difference of the variables. Akaike Information Criterion (AIC) and Schwarz Bayesian Information Criterion (SBC) are applied to obtained optimal lag from unrestricted VAR model. It is selected 2 on the basis of AIC (reported in Table 5.2).

Table 5.2: VAR order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC
0	-106.3611	NA	1.09e-08	7.210067	7.622305
1	99.31470	282.8042	5.49e-12	-0.58217	3.540213
2	247.6841	120.5502*	3.37e-13*	-4.792759*	3.039767*

*indicates lag order selected by the criterion
Note: LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error.
AIC: Akaike information criterion.
SC: Schwarz information criterion.

The F-statistic for the ARDL cointegration test is computed using the Wald Coefficient restriction test after estimating the ARDL equation by Ordinary Least Square (OLS) Procedure. This number is then compared to two sets of critical values computed by Pesaran *et al.* (2001). The computed F-statistics of the joint null hypothesis of no long-run relationship among the variables is 4.540, which is greater than the higher bound of the 90, 95 and 99 percent critical value interval (Table5.3). This implies a rejection of the null hypothesis of no long-run relationship and confirms that co-integration relationship exists between the REER and capital flows.

Table 5.3: F-Statistics of Cointegration Relationship

Test-Statistics	10%		5%		1%		Cointegration
	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$	
4.540478	1.85	2.85	2.11	3.15	2.62	3.77	Yes

* Source: Pesaran et al. (2001, p. 300), Table CI(ii) Case II: Restricted intercept and no trend.

The estimates of the long run relationship between the REER and capital flows are reported in Table 5.4 while the short run results are given in Table 5.5. The results of

various diagnostic tests are reported in Table 5.6 while Figures 5.1 and 5.2, respectively, show the plots of CUSUM and CUSUMQ statistic.

Table 5.4: Long Run Estimates of the Real Effective Exchange Rate

Regressor	Coefficient	Std.Error	t-Statistics	Prob.
C	5.193215	0.648165	3.265535	0.0052
FDI	-0.01529	0.026896	-0.23161	0.82
OI	0.028478	0.005611	2.068425	0.0563
INI	0.116574	0.020691	2.296214	0.0365
ODA	0.11109	0.017015	2.661042	0.0178
REMITT	0.062117	0.008746	2.894849	0.0111
LGCON	-0.70985	0.06782	-4.26592	0.0007
LTOT	-0.03762	0.100748	-0.15219	0.8811
LTOP	0.387979	0.1328	1.190737	0.2523

R-squared	0.779275	Akaike info criterion	-3.635831
Adjusted R-squared	0.558549	Schwarz criterion	-2.895708
Durbin-Watson stat	2.015475	F-statistic	3.53.518

The model performs well as it explains approximately 56% of the variation in REER and satisfies the diagnostic checks of serial correlation, J.B. test of normality, ARCH test of hetreoskedasticity and Ramsey Reset test of specification.

According to the estimates reported in Table 5.4, FDI is not significantly associated with the REER. There is a possibility that in the short run FDI inflow might lead to REER appreciation when the economy receives this flow. With the passage of time; however, when foreign capital outflows from the country in the form of payments made to foreigners on account of repatriation of profits earned on FDI, imported machinery and raw materials then it waters down the initial appreciation of the currency. Besides the

Remittances may affect the real exchange rate through different channels. Remittances unlike other flows have no obligation associated. It may affect directly on the net financial position of the country. In this regard its affect on the stock of net foreign assets may differ from other types of flows. For example, FDI is associated with the increased foreign liabilities so there is a decline in the net foreign asset position. In case of loans the contribution to the net foreign asset position is given by the difference between the proceeds and the net present value of repayment obligations. In this respect loans positively affect net foreign assets.

Given the supply of non-tradable goods, increase demand for non-tradable goods due to the receipt of remittances is expected to increase inflation, alternatively it can be said that on the one hand spending effect (discussed in appendix) is associated with the increased level of remittances and this spending effect raises the relative price of non-tradables and in turn causes the appreciation of the REER. On the other hand resource movement effect is also associated with it. Remittances also lead to the acceleration in the demand for services. The allocation of resources takes place from the tradable to non-tradable sector of the economy thus further effecting the competitive position of the economy. Remittances that are largely consumption oriented having more of an appreciating impact on the real exchange rate.

Remittances do also affect the RER through their impact on growth (Acosta, Calderon, Fajnzylber, and Lopez, 2007). In this respect, the impact on the exchange rate is not clear. On the one hand, acceleration in the growth rate would lower the stock of net foreign assets as a percentage of GDP and hence this would lower the RER. On the other hand, if the net foreign asset position of the country is negative, the increase in the rate of growth would lower the liabilities to GDP ratio and hence lead to an appreciation.

Our results also predict that a one percent in ODA appreciates REER by 0.11%. Increased aid enhances the demand for both imports and non-tradable goods such as health care and education. If the government spends aid resources more on imports then there is no direct impact on such macroeconomic variables as the exchange rate, the price

level, or the interest rate. According to Bevan (2005), the public sector is having large propensity to consume domestically produced goods and services than the private sector. As non-tradable are supplied only by the domestic producers, if the supply does not match the demand then prices of non-tradable goods go up relative to price of tradable goods. Consequently, the Real exchange rate appreciates as a result of this and tradable goods sector contract affecting the competitiveness of the economy. According to Gupta et al., (2005) if aid is spent on the imports, its absorption level is low or it is used to accumulate the reserves then this will not lead to the appreciation of the real exchange rate.

As far as the government consumption is concerned, the sign of its coefficient is negative and statistically significant pointing towards the depreciation of the REER. As predicted by the results, one percent increase in the government spending depreciates real effective exchange rate by 0.71%. This could be the case, when financing its expenditures, government adopts the policy of tax increase. The tax increase in turn causes the reduction in personal disposable income. This may lead to decline in the demand for both non-tradable and tradable goods. The relative price of non-tradable declines as a result of decreased demand, in the face of given world prices of tradable and as a result REER appreciates. Also, fiscal balance is going to be deteriorated by an increase in government spending and is therefore put downward pressure on the exchange rate.[20]

After establishing the long run relationship between capital flows and REER, we now investigate the short run dynamics of ADRL model. Table 5.5 reports the estimate of short run that are obtained form the error correction method (*ECM*). ECM shows how slowly or quickly variables converge to the equilibrium, alternatively this term represents the speed of adjustment to re-establish the stable equilibrium in the short run model. The sign of the ECM should be negative with the high level of significance. The negative sign of ECM_{t-1} with the high level of significance in our analysis confirms that long run relationship can be attained. The coefficient of the ECM_{t-1} is -0.33 and is significant for

---

[20] Afridi (1995).

the short run model. This implies that long term deviation in REER is corrected by 33.36 percent every year.

Table 5.5: Error Correction Model for the REER

Regressors	Coefficients	Std. Error	t-Statistic	Prob.
C	-0.005078	0.007230	-0.702341	0.4895
D(FDI(-2))	-0.045007	0.020687	-2.175607	0.0401
D(INI)	0.035452	0.009161	3.869901	0.0008
D(ODA(-1))	-0.022985	0.009826	-2.339163	0.0284
D(REMITT)	0.020231	0.006497	3.113990	0.0049
D(LTOT)	-0.232011	0.107779	-2.152661	0.0421
D(LTOT(-1))	0.216820	0.108074	2.006214	0.0567
ECM(-1)	-0.333680	0.055962	-5.962600	0.0000

R-squared	0.694499	Akaike info criterion	-3.826925
Adjusted R-squared	0.601520	Schwarz criterion	-3.456864
Durbin-Watson stat	2.108700	F-statistic	7.469446

Diagnostic tests are reported in Table 5.6. We find no evidence of serial correlation, hetroskedasticity, non-normality and mispecification. Serial correlation, heteroskedasticity, or non-normality all violate the assumption that the disturbances are distributed $N(0, \sigma^2 I)$, i.e., mean zero and constant variance.

Jarque-Bera (*JB*) test is a goodness of fit test. It represents whether the data under study is having skewness or kurtosis matching a normal distribution. The JB statistics has a chi-square distribution with two degrees of freedom. The test statistics is used to test the hypothesis that the data have normal distribution.

Table 5.6: Diagnostic Test

LM Test Statistics	F-Statistics	Prob.	χ^2
Jarque-Bera	2.344582	0.309657	5.99
Serial Correlation	0.114019	0.738815	3.84
ARCH	0.525609	0.474474	3.84
Ramsey RESET	1.040487	0.318795	3.84

The null hypothesis is a joint hypothesis of the skewness being zero and the excess kurtosis being zero. At 5% level of significance the value of JB test (Table 5.6) shows that the residuals are normal.

No evidence of serial correlation is found at 5% level of significance (Table 5.6). The problem of serial correlation arises when either the dependent variable or the residual show correlation with its values in past periods. Standard errors become inconsistent due to this problem and thus affecting statistical inferences.

In time series, the magnitude of past residuals appeared to be related to the magnitude of recent residuals. This problem is named as Auto regressive conditional hetroskedasticity (ARCH). Ignoring ARCH effects may result in loss of efficiency. According to the value of this test, there is no problem of hetroskedasticity (Table 5.6).

Ramsey RESET (Regression Specification Error Test) test is also found to be non-significant implying that there is no misspecification regarding functional form (Table 5.6). RESET is basically a general test for the following types of specification errors: (i) omitted variables; (ii) incorrect functional form; (iii) correlation between independent variable and error term, which may be caused due to measurement error, presence of lagged values or serially correlated disturbance term. Rejection of the null hypothesis states that the equation is suffering from misspecification.

5.3 CUSUM and CUSUMQ test of stability

To further determine quality of the model, the Cumulative Sum of Recursive Residuals (CUSUM) and the Cumulative Sum of Squares of Residuals (CUSUMQ) are used to test for parameter stability. The CUSUM test (Brown, Durbin, and Evans, 1975) is based on the cumulative sum of the recursive residuals. This option plots the cumulative sum together with the 5% critical lines. The test finds parameter instability if the cumulative sum goes outside the area between the two critical lines.

For this purpose the plot of the cumulative sum (CUSUM) and the cumulative sum of square (CUSUMSQ) are given in Figures 5.1 and 5.2. The plots show that none of the straight lines is crossed, thus showing that there is no significant structural instability.

Figure 5.1: Cumulative Sum of Recursive Residuals

60

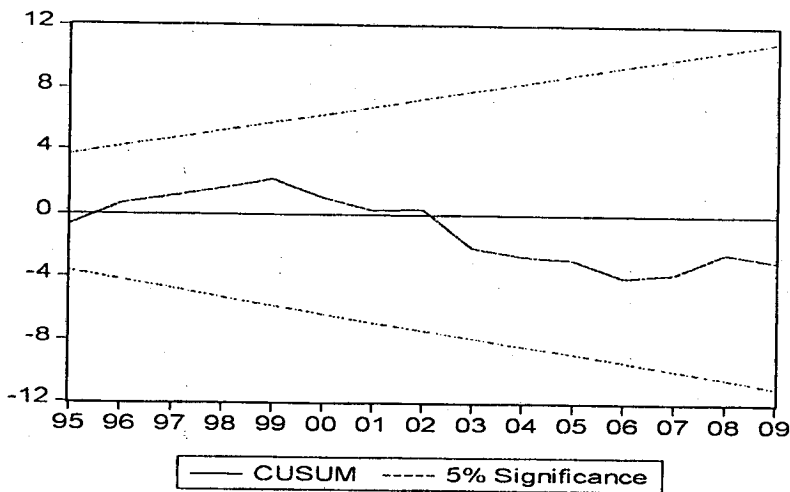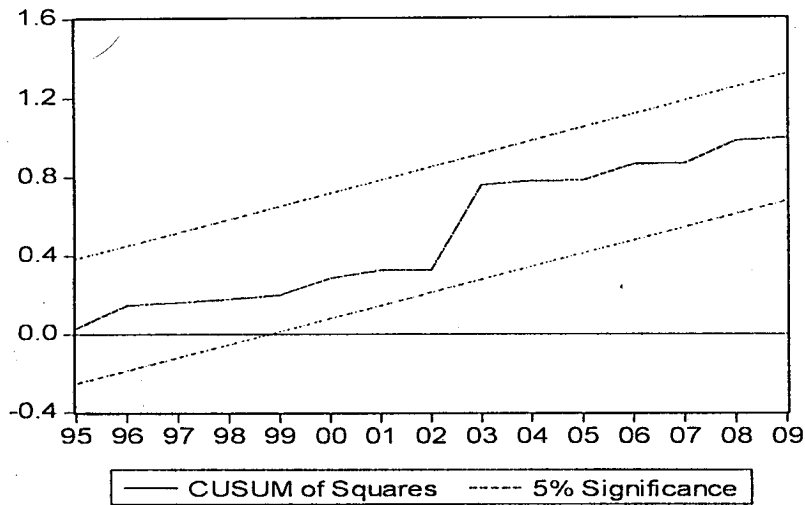**Figure 5.2: Cumulative Sum of Square of Residual**

The CUSUM and CUSUMQ are well within the critical lines of 5% significance through out the sample suggesting that the coefficients are stable.

Equation (A) is further estimated by using the imports over GDP as a proxy for trade openness (*TOP*). The results are reported in appendix-II. These results further confirm the findings of our thesis.

Chapter 6

CONCLUSION AND POLICY IMPLICATIONS

In this thesis the effect of capital flows on the international competitiveness of the Pakistan economy is analysed by considering the real effective exchange rate as an important index of competitiveness. Specifically, the study finds out the international competitiveness of Pakistan's economy through analyzing the behavior of REER by taking into account capital flows and some selected policy variables.

To begin with, we estimated REER series based on consumer price index by taking into account sixteen major trading partners. After estimating this series, it is used to measure external competitiveness of the economy.

ARDL bounds testing approach is used to explain the long run relationship between capital flows and REER. Short run dynamics of Pakistan's REER are analysed through error-correction specification. The results obtained by these two indexes for the period of 1976 to 2009 are almost similar. The main finding of this study is that most of the capital flows have a positive and significant impact on REER. Indeed, the results suggest that capital flows are associated with appreciation of the REER both in the short-run and the long-term. These results confirm the findings of the literature that capital flows tend to harm competitiveness as a consequence of appreciation of REER.

Looking at the results, other investment, investment income, official development assistance (*ODA*) and remittances are found to be positive and significant implying that these flows leads to the appreciation of the REER while the foreign direct investment *(FDI)* is the only capital flow that is found to be negative but insignificant in the long run analysis.

The long-run co-integrating relationship indicates that, in addition to capital flows, the government consumption is found to be negative and significant. This exerts downward pressure on the REER, while the terms of trade and trade liberalization are found to be statistically insignificant.

production gains achieved from the FDI inflow also put downward pressure on prices, consequently depreciation of REER will improve competitveness. The factors that are working in opposing directions simultaneously can produce such results. Our finding of this relation is similar to that of Athukorala and Rajapatirana (2003) and Bakardzhieva, *et al.* (2010). Competitiveness is not harmed by the FDI when FDI is associated with depreciation of the REER.

The impact of other investment is positive and statistically significant. According to estimates, one percent in the other investment appreciates the exchange rate by 0.028%. These flows are the liabilities of the private or the public sectors of the economy. If this investment is used in financing of the non-tradable, such as building houses, golf courses, etc., then it creates the problem of exchange rate appreciation. On the other hand, if like FDI, it is directed towards productive activities, then it may not cause appreciation in the real exchange rate, it may depreciate it.

Income flows consist mainly of the net revenue on investments abroad (both direct and portfolio) and interest paid on public debt. Table 5.4 reveals that a one percent in the investment income appreciates exchange rate by 0.12%. Foreign exchange earned by a country through investment abroad can be either reinvested or used for consumption purposes. As in case of oil rich countries, there is possibility that income which is received from investment abroad is being reinvested there. In this case, investment income might not affect the REER but developing countries like Pakistan; the possibility of reinvestment of earned income is low.[19] This could be one of the reasons of significant and appreciating impact of investment income on REER. Interest payments are also included in the income flows, therefore a decline in interest payments also leads to appreciation of the real exchange rate.

Remittances are also having significant and positive impact on the REER. Results suggest, a one percent increase in the remittances appreciates exchange rate by 0.062%.

---

[19]Bakardzhieva. *et al.* (2010).

The short run dynamics of the model are shown by the error correction representation. ECM term is found to be negative and significant indicating the convergence towards the long run stable equilibrium. Some of the capital flows are also found to be positive and significant in the short run analysis.

According to the findings of the thesis it may be concluded that surge in capital flows have an important spending effect, which causes an increase in the relative price of non-tradable and real exchange rate appreciation. The results also indicate that an increase in the capital flows results in *resource movement effect* that favors the non-tradable sector at the expense of tradable sector.

In light of the result of the thesis, it may be concluded that policymakers face a number of problems in the context of a surge in capital flows. There are at least two points of concern: First, the appreciation of the real exchange rate adversely affects some sectors of the economy who may find it to difficult to compete internationally. Even a subsequent depreciation will not help them to regain the lost strength. Second, a sudden appreciation does not allow export firms to adjust quickly, and therefore brings in a very painful adjustment. The probability of the short run reversals or sudden adjustment of the economy to its previous position is quite low because of the counter cyclical movement of the capital flows. The magnitude of the real appreciation associated to the capital inflows is thus the main concern for the policy makers.

According to the findings of this thesis other investment, investment income, official development assistance and remittances are associated with appreciation of the real exchange rate that in turn affect the international competitive position of the economy. In order to offset the adverse impact of capital flows on the economy, we recommend the following measures.

1. The Pakistan economy needs foreign capital for its developmental activities. But given the adverse impact of foreign capital on international competitiveness, we recommend that it follows policies such as improvement in total factor

productivity (*TFP*) to improve its productive capacity and levels. In this case the pressure on the real exchange rate to some extent will be averted. If there is an increase in the productivity specifically in the non-tradable sector, it may also offset the effects of the increasing demand.

2. Policy of sterilization can be adopted by the government. Sterilization refers to the central bank's open market operations to reduce the affect of capital inflow, currency appreciation and inflation. The domestic component of the monetary base (bank reserves plus currency) is reduced to offset the negative impact of capital inflows through sterilization operation. This can be achieved in several ways, such as by encouraging private investment overseas, or allowing foreigners to borrow from the local market. The classical form of sterilization is the use of open market operations, that is, selling Treasury bills and other instruments to reduce the domestic component of the monetary base. This policy of sterilization will help in reducing the spending effect of surges in capital inflows.

3. Capital inflows can also be used in improving the performance of the tradable sectors through raising the level of exports. The increased exports in turn may help in improving the trade balance and thus the current account balance. An improvement in current account balance can be instrumental in neutralizing the adverse impact of capital inflows on competitiveness.

4. The Government may implement such policies, the aim of which is to stimulate labor demand by reducing labor costs so that it may not adversely affect the tradable sector.

Future Research

To assess whether the appreciation of the REER creates the problem of Dutch Disease or not further research needs to be conducted. In this regard, studies should consider the REER and Capital flows as independent variables while the output of tradable and non-tradable sectors as dependent variable to see the impact of the REER appreciation on these variables individually. If these flows are involved in appreciation of the REER then it is expected to have a positive relationship between the non-tradable sector's output and

capital flows and similarly negative relationship should exist between the tradable sector's output and capital flows. This will further confirm the findings of our study that appreciation of REER caused by capital flows may be creating the problem of Dutch Disease through harming the international competitiveness.

References

Adenauer, Isabell, and L.Vagassky (1998) Aid and the Real Exchange Rate: Dutch Disease Effects in African Countries. Intereconomics: Review of International Trade and Development, 33: 177–85.

Afari, M.O., O.Morrissey and T.Lloyd (2004) Real Exchange Rate Response to Capital Inflows: A Dynamic Analysis for Ghana. CREDIT Research Paper No. 04/12.

Afridi, U. (1995) Determining Real Exchange Rates. The Pakistan Development Review, 34(3): 263-276.

Ahmed, H. (2009) Capital Flows and Real Exchange Rate Overvaluation-A Chronic Ailment: Evidence from Pakistan. The Lahore Journal of Economics, 14: 51-86.

Amuedo-Dorantes, C. and S. Pozo, (2004) Workers' Remittances and the REER: A Paradox of Gifts. World Development, 32(8): 1407-17.

Athukorala, P.C. and S.Rajapatirana (2003) Capital Flows and the REER: A Comparative Study of Asia and Latin America. The World Economy, 26 (4): 613-637.

Bakkardzhieva.D., S.Naceur and B.Kamar (2010) " *The Impact of Capital and Foreign Exchange Flows on the Competitiveness of Developing Countries.*" IMF Working Paper No.10/154, Washington, D.C.: International Monetary Fund.

Chisti, S. and H.M. Anyul (1993) What Determines the Behaviour of Real Exchange Rate in Pakistan. The Pakistan Development Review, 32(4): 1015-1029.

Corden, W.M. and J.P. Neary (1982) Booming Sector and De-Industrialisation in a Small Open Economy. The Economic Journal, 92(368):825-848.

Dornbusch, R. (1974) Tariff and Nontraded goods. Journal of International Economics, 4(2): 177-185.

Duasa, J. (2007) Determinants of Malaysian Trade Balance: An ARDL Bound Testing Approach. Journal of Economic Cooperaton, 28(3): 21-40.

Edwards, S. (1987) Tariffs, The Real Exchange Rate and The Terms of Trade: On two Popular Propositions in Internnational Economics. Oxford Economic Paper, 39: 458-464.

Edwards, S. (1988) Real and Monetary Determinants of Real Exchange Rate Behaviour: Theory and Evidence from Developing Countries. Journal of Development Economics, 29: 311-341.

Fielding, D. (2007) Aid and Dutch Disease in the South Pacific. UNU-WIDER Research Paper No. 2007/50, World Institute for Development Economic Research.

Elbadawi, I. (1993) *"Estimating Long-run Equilibrium Real Exchange Rates"* unpublished mimeo, Washington D.C.: The World Bank.

Elbadawi, I. and R. Soto. (1994) *"Capital Flows and Long Term Equilibrium Real Exchange Rates in Chile."* WB Policy Research Working Paper No. 1306, Washington D.C.: The World Bank.

Emmanuel, K. and K. Lartey (2007) Capital Inflows and the Real Exchange Rate: An Empirical Study of Sub-Saharan Africa International Trade & Economic Development, 16(3):337 – 357.

Eyraud,L. (2009) *"A Competitiveness and Exchange Rate Assessment"* IMF Working Paper No. 09/107, Washington D.C.: International Monetary Fund.

GOP (2009) Pakistan Economic Survey: Statistical Supplement. Economic Advisor's Wing, Ministry of Finance, Government of Pakistan.

GOP (2011) Pakistan Economic Survey: Economic Advisor's Wing, Ministry of Finance, Government of Pakistan.

Gupta, S, R. Powell, and Y. Yang (2005) *"The macroeconomic Challenges of Scaling up Aid to Africa,"* IMF Working Paper No. 05/79, Washington D.C.: International Monetary Fund.

Harry, A. S. (2001) External Aid Inflows and the Real Exchange Rate in Ghana, African Economic Research Consortium, Research Paper No. 110, Nairobi, Kenya.

IMF (2010) International Financial Statistics. Washington D.C.: International Monetary Fund.

Issa, H. and B. Ouattara (2004) Foreign Aid Flows and Real Exchange Rate: Evidence from Syria. The School of Economics, Discussion Paper No. 0408, Manchester, United Kingdom.

Janjua, M. A. (2007) Pakistan's External Trade: Does Exchange Rate Misalignment Matter for Pakistan? The Lahore Journal of Economics, Special Edition (September 2007): 125-152.

Javaid, S. H. (2009) "Dutch *Disease Investigated: Empirical Evidence from Selected South-East Asian Economies.*" State Bank of Pakistan Working Paper No 31, Karachi, Pakistan.

67

Khan, A.H. (1998) The Experience of Trade Liberalization in Pakistan. The Pakistan Development Review, 37(4): 661-685.

Khan, A.H. (1997) Foreign Direct Investment in Pakistan: Policies and Trends. The Pakistan Development Review, 36(4): 959-985.

Khan, M. S. (1998) Capital Flows to Developing Countries: Blessing or Curse? The Pakistan Development Review, 37(4): 125-151.

Kamar, B., and D. Bakardzhieva (2005) Economic Trilemma and Exchange Rate Management in Egypt. Review of Middle East Economics and Finance, 3 (2): 91–114.

Kipici, A.N. and M.Kesriyeli (1997) The Real Exchange Rate Definition and Calculations. The Central Bank of the Republic of Turkey Research Department, Publication No. 97(1), Ankara, Turkey.

Lartey, E.K. (2007) Capital Inflows and the Real Exchange Rate: An empirical study of Sub-Saharan Africa. The Journal of International Trade and Economic Development, 16(3): 337-357.

Lartey, F. S., Mandelman, and P. A. Acosta (2008) *"Remittances, Exchange Rate Regimes, and the Dutch Disease: A Panel Data Analysis."* Federal Reserve Bank of Atlanta Working Paper No. 2008-12.

Le, M.H. and A.Ataullah (2002) Foreign Capital and Economic Performance of Pakistan. The Lahore Journal of Economics, 17(1): 1-40.

Li, Y. and F.Rowe, (2007) *"Aid Inflows and the Real Effective exchange Rate."* World Bank Policy Research Working Paper No. 4456, Washington D. C.: The World Bank.

Lopez, H., L.Molina and M.Bussolo (2007) *" Remittances and the Real Exchange Rate."* World Bank Policy Research Working Paper No. 4213, Washington D.C.: The World Bank.

Mahmood, Z. and R.Siddiqui (2000) State of Technology and productivity in Pakistan's Manufacturing Industries: Some Strategic Directions to build Technological competence. The Pakistan Development Review, 39(4): 1-21.

Moosa, I.A. (2003) *"International Finance."* Australia: McGraw Hill Companies Inc.

Nkusu, M. (2004) *"Aid and the Dutch Disease in Low-Income Countries: Informed Diagnoses for Prudent Prognoses."* IMF Working Paper No. 04/49, Washington D.C.: International Monetary Fund.

Nwachukwu, J. (2008) *"Foreign Capital Inflow, Economic Policies and Exchange Rate in Sub-Saharan Africa: Is there an International Effect?"* Brook World Poverty Institute Working Paper No.25.

Nyoni, T. S. (1998) Foreign Aid and Economic Performance in Tanzania. World Development, 26(7): 1235-1240.

Opoku-Afari, M., (2004) Measuring the Real Effective Exchange Rate (REER) in Ghana. CREDIT Research Paper, 04/11, Nottingham, United Kingdom.

Quattara. B. and E. Strobl (2004) Do Aid Inflows Cause Dutch Disease? A Case Study of the CFA Franc Countries. CREDIT Research Paper No.04/07, Manchester, United Kingdom.

Pesaran, H., Y. Shin and R.J.Smith (2001) Bounds Testing Approaches to the Analysis of Level Relationshipsm. Journal of Applied Econometrics. 16: 289–326.

Sadia, H., E.Ahmed and H. Ihsan. (2009) Determinants of Real Effective Exchange Rate: Evidence from Panel Unit-Root and Co-Integration Approach. Journal of Business Economics, 1: 97-119.

Salter, W. E. (1959) Internal and External Balance: The Role of Price and Expenditure Effects. Economic Record, 35(71): 226–38.

SBP (2005) Handbook of Statistics. State Bank of Pakistan, Statistics Department, Karachi; Pakistan.

Siddiqui, R., U. Afridi and Z. Mahmood (1996) Exchange Rate Determination In Pakistan: A Simultaneous Equation Model. The Pakistan Development Review, 35(4): 683-692.

Swan, T. W. (1960) Economic Control in a Dependent Economy. Economic Record, 36 (73): 51–66.

Tyson, L. D. (1992) *"Who's Bashing Whom?: Trade Conflict in High Technology Industries."* Washington, D.C.: Institute for International Economics.

Rob, V. (1998) Aid Flows and Dutch Disease in a General Equilibrium Framework for Pakistan. Journal of Policy Modeling, 20: 77–109.

White, H. and G.Wignaraja (1992) Exchange Rates, Trade Liberalization and Aid: The Sri Lankan Experience. World Development, 20(10):1471-1480.

Word Bank (2008) World Development Indicator. Washington D.C.: The World Bank.

WTO (1995) General Agreement on Trade and Tariffs, Trade Policy Review Mechanism. World Trade Organization, Geneva, Switzerland.

aiolos.um.savba.sk/~viktor/Econ/Lecture5.pdf

en.wikipedia.org/wiki/Dutch_disease.

en.wikipedia.org/wiki/Jarque-Bera_test.

http://intl.econ.cuhk.edu.hk/exchange_rate_regime/index.php?cid=22

http://www.scribd.com/doc/13225438/Economic-History-of-Pakistan

www-cgi.uniregernsburg.de/Fakultaeten/.../RamseysRESETTest.pdf

www.imf.org/external/pubs/ft/issues7/index.htm

Appendix-I

REAL EFFECTIVE EXCHANGE RATE: (REER)

Real Exchange Rate:

Real exchange rate is the nominal exchange rate that is adjusted for the price differences between the foreign and domestic country. It is a measure of prices of one country's goods and services relative to the prices other country's goods and services. For small open economy this measure can be used as an indicator of economy's competitiveness. An appreciation of this index shows an increase in the domestic cost of producing goods and services and implying that now this country is producing goods less efficiently as compare to the rest of the world. RER is defined as

$$RER_d = eP^f / p^d$$

Where e is the nominal exchange rate

p^d is domestic price level

p^f is foreign price level

We have two definitions of real exchange rate

Home and foreign price levels are measured by prices indices. We can use different price indices in order to measure the real measure exchange rate. Choice of the price indices that we are going to use depends upon the purpose of the study.

1. External Real Exchange Rate:

When we use the consumer price index to calculate the real exchange rate then this gives the concept of external real exchange rate. This exchange rate is going to be used when our aim is to capture the effect of capital inflows on the economy as well as the external competitiveness of the home country. CPI is based on the prices of both the traded and

non traded goods and capital inflows are assumed to be distributed between the tradable and non-tradable sectors of the economy, in this respect CPI is considered to be more appropriate to capture the affect of capital inflows than any other price index. Capital inflows affect the prices of tradable and non-tradable goods and then have an impact on the real exchange rate of the receiving country.

2. Internal Real Exchange Rate:

When we adjust the nominal exchange as the ratio of the tradable to non-tradable goods prices within a single country this gives us the concept of internal real exchange rate. This type of exchange rate achieves the internal balance in the domestic supply and demand of non-traded and traded goods. This provides the economy a relative price incentive for producing or consuming tradable and non-tradable goods (Hinkle and Nsengiyumva 1999). So this exchange rate becomes an indication of domestic resource allocation between the tradable and non-tradable sectors of the domestic country. The internal real exchange rate is also considered as one of the appropriate measure of competitiveness in case of small countries. Small country is a price taker in the world market, its share in the international market that is external competitiveness depends upon the domestic price incentives and profitability of producing tradable goods. As the world prices are fixed for the small countries, so our concern is whether our products are competitive or not in the international market, this depends upon the internal competitiveness. If they are internally competitive that is cost of producing tradable goods is not more than the revenues that he receives by selling these at the fixed international prices then producer of the domestic country have an incentive to produce tradable goods over the non-tradable.

Measuring the prices of tradable and non-tradable goods in order to compute the real exchange rate is an important issue. Generally, the prices of tradable and non-tradable are not available in the low income countries. In this case internal real exchange rate is computed by using the whole sale price index (*WPI*) and consumer price index (*CPI*) as proxies. Domestic CPI is used as a proxy for the non-tradable goods prices while the

foreign WPI multiplied by the nominal exchange rate proxies the domestic country's tradable goods prices.

Domestic prices of tradable can also be calculated by taking weighted average of the foreign price of importables (P^*_m) and exportables (P^*_x) multiplied by the nominal exchange rate as

$$P_T = E[(1-t_x)p^*_x]^{\alpha}[(1+t_m)p^*_m]^{1-\alpha}$$

Real Effective Exchange Rate: (*REER*)

In order to workout the REER we first have to identify the range of the countries as a major trading partner, their weights in the total trade (exports and imports) and the price indices.

The effective component of the REER (Major Trading Partners):

In computing the REER, all the trading partners that compete with the domestic producer either directly or indirectly are going to be considered. But there are some constraints pertaining to data availability that restricts the number of trading partners. If the chosen partners cover most of the trade then the influence of the excluded partner on the exchange rate should be marginal.

The criterion for selecting the currencies to be included in the effective exchange rates is that they must have had an individual share of no less than 1 percent of Pakistan's total trade. According to this criterion there are 21 countries the percentage of which are 1% and above it in total trade of Pakistan. Due to unavailability of some nominal exchange rate data and the price indices restricted us to drop some of the countries. We restrict ourselves in selecting only 16 partners. The highest percentage of trade that these partners cover is 70.85549 in 1985 and the lowest percentage cover by these countries is 40.6292 in 2006.

The countries chosen are Kuwait, Saudi Arabia, Iran, USA, Canada, Belgium, France, Germany, Italy, UK, Japan, Switzerland, Australia, Malaysia, Singapore and Hong Kong, as major trading partners of Pakistan that covers all trading blocs.

Whole sale price index (WPI) or producer price index (PPI) is going to be used to cover the price of tradable goods. According to ((Edwards, 1989) WPI is heavily weighted by traded goods rather non-traded goods.

Table A1: Trade weights of Major Trading Partners

Trading partner	1975	1980	1985	1990	1995	2000	2005	2009
Kuwait	0.066	0.113	0.083	0.094	0.052	0.108	0.045	0.097
Saudi Arabia	0.102	0.098	0.135	0.054	0.061	0.096	0.126	0.185
Iran	0.033	0.025	0.024	0.026	0.020	0.012	0.017	0.050
USA	0.163	0.139	0.168	0.198	0.189	0.234	0.222	0.195
Canada	0.034	0.021	0.017	0.017	0.024	0.022	0.017	0.023
Belgium	0.025	0.020	0.016	0.022	0.025	0.027	0.022	0.024
France	0.033	0.059	0.028	0.038	0.043	0.043	0.172	0.027
Germany	0.095	0.081	0.081	0.114	0.105	0.079	0.070	0.079
Italy	0.040	0.059	0.041	0.044	0.065	0.032	0.042	0.054
UK	0.090	0.087	0.086	0.086	0.091	0.079	0.063	0.069
Japan	0.156	0.157	0.183	0.164	0.127	0.078	0.072	0.053
Switzerland	0.011	0.018	0.018	0.024	0.023	0.033	0.020	0.013
Australia	0.061	0.022	0.030	0.031	0.024	0.040	0.030	0.024
Malaysia	0.036	0.029	0.053	0.033	0.080	0.041	0.033	0.065
Singapore	0.015	0.027	0.020	0.025	0.024	0.027	0.019	0.023
Hong Kong	0.042	0.045	0.016	0.030	0.048	0.049	0.029	0.020

Source: Statistical Supplement: Direction of Trade Statistics

Computation of Weights:

Weights capture the trade flows between the domestic country and the foreign countries. The issue regarding taking the fixed or flexible weights in computing the REER is of particular importance. Fixing the weights in particular year is very easy to do but exchange rate calculated in this way does not give us the true picture of the effect of bilateral exchange rate and also the competitiveness. As the trading patterns change over time with the trading partners so it is sensible to consider the changing weights.

The trade flows between the home country and country i is equal to the sum of imports and exports to country i as a proportion of the home country's total trade flows that is represented by the formula as:

$$\omega_{it} = X_{it} + M_{it} / \sum_{1}^{k} (X_{jt} + M_{jt})$$

Bilateral trade weights of this sort fail to capture indirect competition from trading partners, there by understating the degree of competition faced by domestic producers. REER indices calculated using weights to capture third party competition have been found to have significant impacts on the measures.

Where $\sum_{1}^{k} (X_{jt} + M_{jt})$ represents total trade between the home country and all trading partners while $\omega_{it} = X_{it} + M_{it}$ represents trade between major trading partner i and domestic country in time period t. W_{it} represents the trade weight between the trading partner and domestic country. Computing the weights in this way allows the time variation that is changing of the weights of the trading partner over the time.

As objective of our study is to capture macroeconomic effect of external shocks like capital inflows and productivity shocks with this index, so an index that is computed using the fixed weight will not represents the true picture of the dynamic and hence the impact on the real exchange rate (Chinn, 2002).

Arithmetic versus Geometric Average:

By using the Arithmetic Mean (AM) method of averaging REER is defined in domestic currency terms as:

Where

$$REER_{d,t} = \sum \omega_{i,t}(R_{i,t} / R_{i,0})$$

$$R_t = S_t(x_0 / x_i) * (P_{i,t} / P_{0,t})$$

R_t is the real exchange rate and St is the nominal exchange rate of domestic countries defined in terms of foreign country. $P_{i,t}$ and P_{0t} and are the foreign and domestic price indices respectively in time period t. Each of the Rs's exchange rates against other major currencies (i.e. nominal exchange rates) is obtained by deflating the price indices of domestic country and the corresponding trading partners to calculate the real exchange rate. ω_i w_i represents the weights that is assigned to the currencies of the major trading partners. Taking the weighted average of these real exchange rates gives us the real effective exchange rate.

REER by using the geometric mean method can then be calculated as:

$$REER_{d,t} = \prod_{i-1}^{k} (R_{i,t} / R_{i,0})^{\omega_i}$$

Where symbol $\prod$ represents the product of the real exchange rate.

These two ways of averaging has significant impact on the index. The major advantage of the AM is lies in its ease of computation while the GM is not easy to compute but one of the most important properties of the GM is its symmetry and consistency. The disadvantage of the AM is that it is greatly influenced by the base year which, is chosen in its computation. In doing trend analysis it has to be rebase for example, the analysis of misalignment because it is relative to the base year. Indices based on GM are not influenced by the base year. The AM gives the larger weights to currencies which have appreciated or depreciated to a significant extent alongside the home country currency,

76

while the GM treats depreciation and appreciation symmetrically. This makes GM more efficient in capturing trends in REER. This paper reports the indices based on the GM method of averaging due to its obvious advantage.

Appendix-II

RESULTS

Long Run Estimates of the Real Effective Exchange Rate

Table A2: Dependent Variable: Real Effective Exchange Rate (REER)

Regressor	Coefficient	Std. Error	t-Statistic	Prob.
C	6.205164	0.635168	3.410235	0.0031
FDI	-0.05053	0.020796	-0.848215	0.4075
OI	0.033795	0.005349	2.205207	0.0407
INI	0.112763	0.021995	1.789636	0.0904
ODA	0.087101	0.015303	1.986883	0.0624
REMITT	0.047414	0.008290	1.996647	-0.0612
LGCON	-0.70382	0.066430	-3.698461	0.0016
LTOT	-0.0337	0.112322	-0.104737	0.9177
LTOPM	0.144731	0.130405	0.387419	0.7030

R-squared	0.681097
Adjusted R-squared	0.468494
Durbin-Watson stat	2.038090

Table A3: F-Statistics of Cointegration Relationship

F-Statistics	10%		5%		1%		Cointegeration
	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$	
3.759129	1.95	3.06	2.22	3.39	2.79	4.1	Yes

Table A4: Error Correction Model for the REER

Regressor	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.003239	0.008027	-0.403504	0.6905
D(FDI)	-0.030108	0.019761	-1.523580	0.1419
D(FDI(-2))	-0.060596	0.024147	-2.509511	0.0199
D(OI(-1))	-0.010546	0.005132	-2.055043	0.0519
D(INI)	0.033301	0.010172	3.273702	0.0035
D(ODA(-1))	-0.023119	0.010172	-2.272712	0.0332
D(LGCON)	0.158527	0.076776	2.064796	0.0509
D(LTOPM(-1))	0.241080	0.101409	2.377303	0.0266
ECM(-1)	-0.335974	0.067706	-4.962285	0.0001

R-squared	0.680607	Akaike info criterion		-3.717939
Adjusted R-squared	0.564464	Schwarz criterion		-3.301620
S.E. of regression	0.033482	F-statistic		5.860075
Sum squared resid	0.024662	Prob(F-statistic)		0.000456
Log likelihood	66.62806			
Durbin-Watson stat	2.043518			

Table A5: Diagnostic Test

LM Test Statistics	F-Statistics	Prob.	χ^2
Jarque-Bera	0.908717	0.634855	5.99
Serial Correlation	1.002409	0.384700	3.84
ARCH	0.109501	0.896692	3.84
Ramsey RESET	0.828359	0.451204	3.84

Figure A1: Cumulative Sum of Recursive Residuals
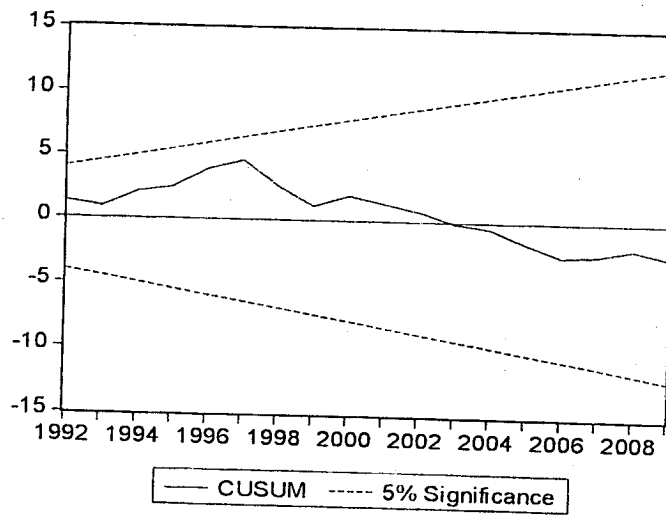
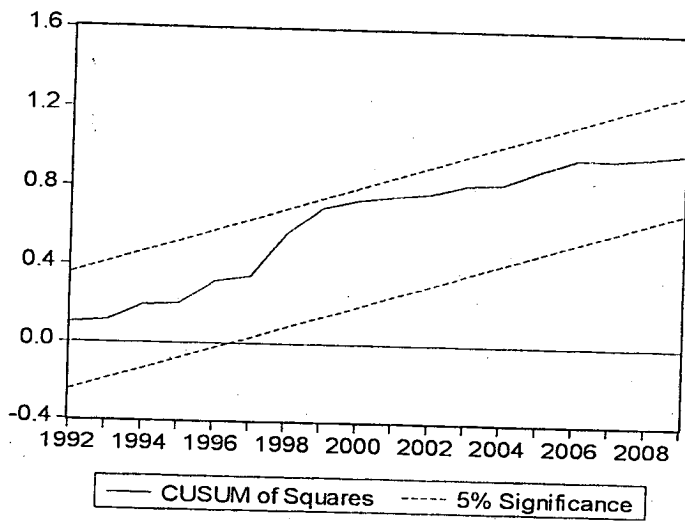## Figure A2: Cumulative Sum of Square of Residuals

80

Table A6: CORRELATION COEFFICENT MATRIX

	FDI	LTOP	LREER	LTOT	ODA	OI	REMITT	LGCON	INI
FDI	1.000								
LTOP	0.388	1.000							
LREER	-0.535	-0.241	1.000						
LTOT	-0.832	-0.229	0.599	1.000					
ODA	-0.049	0.333	0.261	0.127	1.000				
OI	-0.104	0.412	0.430	0.163	0.656	1.000			
REMITT	-0.327	0.045	0.663	0.318	-0.109	0.243	1.000		
LGCON	-0.116	0.509	0.145	0.257	0.679	0.563	0.152	1.000	
INI	-0.331	-0.274	0.765	0.385	0.128	0.049	0.547	-0.044	1.000