Dynamics of Current Account Deficit: A Lesson from Pakistan

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Abstract

This study investigates the determinants of current account deficit in Pakistan by using the annual time series data for the period 1976 to 2010. The cointegration results suggest the positive and significant long run relationship of current account deficit with exchange rate, trade deficit and fiscal deficit, while significant negative relationship is found with external debt and private saving. The error correction model also confirms the significant positive relationship of current account deficit with exchange rate, trade deficit and fiscal deficit in short run. The Granger-causality test shows the bidirectional causality run from exchange rate and external debt to current account deficit. However, unidirectional causality is found from current account deficit to external debt and fiscal deficit. It is recommended that government needs to be cautious in financing its fiscal deficit. Savings habits should be increase to narrow the investment gap in economy.

Keywords: Current Account, Saving, Fiscal Deficit, Trade Deficit, External Debt, Exchange Rate

JEL Classification: F32, E21, E62, F13, F35, F31

1. Introduction

In Pakistan during the last three decades, the current account is having continuously deficit. In 1980's the average current account deficit was 3.9 percent of GDP, in 1990's it is increased to 4.5 percent of GDP and in the decade of 2000's the average current deficits was 3.9 percent of

GDP.[1] The persistent current account deficit in Pakistan show considerably interest to identify their determinants.

Most of the empirical studies use the cross country data to analyze the determinants of current account imbalances. Furthermore, Pakistan is mostly not included in these cross country studies. The objective of this study is to empirically examine the determinants of current account deficit in Pakistan in short run as well as in long run.

The rest of paper is organized as follow: Section 2 reviews the theoretical and empirical literature on the determinants of current account imbalances. Section 3 discusses the methodology; section 4 outlines empirical results and finally, section 5 presents conclusion and policy recommendations.

2. Review of Literature

2.1 Theoretical Background

According to Mundell-Fleming model, an increase in fiscal deficit induces upward pressure on interest rate that leads to increase in capital inflows & appreciation of exchange rate, ultimately the appreciation of domestic currency will lead to an increase in current account deficit.[2] According to Keynesian absorption theory, an increase in fiscal deficit would increase domestic absorption and hence imports, and the expansion of imports leads to the worsening of current account deficit.[3]

[1] Information is gather from official website of ministry of finance of Pakistan: www.finance.org.pk
[2] Mundell (1963) & Fleming (1962)
[3] Khan & Knight (1983) Baharumshah & Lau (2007)

Most of the studies have been conducted under saving-investment approach.[4] Saving-Investment approach states that the current account balance is the difference between the national savings and investments. If savings are less then investment (saving gap), this indicates that an economy needs to import resources to finance investment beyond the level of capital accumulation in the domestic country.[5] The economies suffer with trade deficit when there imports exceeds over exports. Trade balance is a sub part of current account balance. If trade balance is deficit so it will move the current account balance on deficit side.

The depreciation in the exchange rate can positively affect on country's export and negatively affect on country's imports. When exchange rate is depreciating the products are available on cheaper prices so it can increase the exports of a country while on the other side the values of importing products become higher because of currency depreciation.[6] External debt is a foreign cash inflow (including aid and grant) and increase in foreign cash inflow can reduce the balance of current account deficit.

2.2 Empirical Studies

Khan and Knight (1983) investigate the determinants of current account balances by using the pooled time series cross section data of 32 non-oil developing countries over the period of 1973 to 1980. Regression results suggest that the main external factors which are relevant in explaining the deterioration of the current account include; declining growth rate of industrial countries, decline in terms of trade, and rising foreign real interest rates. The internal factors include; real exchange rate appreciation and increasing fiscal deficits.

[4] Debelle and Faruqee (1996), Calderon, Chong and Loayza (2002) and Chin and Prasad (2003)
[5] Debelle and Faruqee (1996)
[6] Khan and Knight (1983), Ang & Sek (2011)

Debelle and Faruqee, (1996) investigate the factors affecting current account balances by using data of 21 industrial countries over the period of 1971 to 1993.They use panel data regression technique & error correction model. Results show that capital controls, terms of trade and fiscal surplus do not play a significant role in the variation of a current account in long term, while government debt, relative income and demographic have significant effect on current account balance. They also conclude that the changes in fiscal policy, movements in terms of trade, state of business cycle and the real exchange rate are the factors which having the significant impact on current account balance in short term.

Calderon *et al.* (2002) analyze the link between a broad set of economic variable and current account deficit in developing countries by using the data of 44 developing countries over the period of 1966 to 1994. Panel regression results indicate that the increase in domestic output growth, movement in terms of trade, rising real exchange rate will lead to higher current account deficit. Results also show that the higher interest rate and higher growth rate in industrial countries will lead to reduce the current account deficit in developing countries.

Chinn and Prasad (2003) examine the medium term determinants of current account balance in developing and industrial countries by using the data of 18 industrial and 71 developing countries over the period of 1971 to 1995. Results of panel regression indicate the positive relationship of initial stocks of net foreign assets and government budget balances with current account balances in industrial countries. In developing countries measures of financial deepening show positive relationship with current account balance while, measures of degree of openness to international trade show negative relationship with current account balance.

Ang and Sek (2011) compare the determinants of current account balances in the five current account deficit countries and five current account surplus countries over the period of 1973 to 2010. Generalized methods of moments have been used. Results indicate that the consumer price index, world oil prices, interest rate and exchange rate are the major determinants of current account deficit while, trade openness, terms of trade and consumer price index are the major determinants of current account surpluses.

Kwalingana and Nkuna (2009) examine the short run and long run determinants of current account deficit in Malawi by using the Johansen's co-integration technique over a period of 1980 to 2006. The results indicate that the trade openness, terms of trade, external debt are the factors which determine current account deficit in Malawi.

Morsy (2009) investigate the short term determinants of current account balances for oil exporting countries by using panel data of 28 oil exporting countries over the period of 1970 to 2006. The results indicate that the oil balance[7], oil wealth, fiscal balance, age dependency[8] and degree of maturity in oil production[9] are the main determinants of current account balance in oil exporting countries.

Gulzar *et al.* (2007) examine the factors that influence the current account balance of Pakistan by using the cointegration and error correction model technique on annual time series data of period from 1972 to 2005. Balance of trade, workers' remittances, total consumption and domestic saving are considered. Results indicate that current account balance of Pakistan is positively

[7] The ratio of the oil trade balance to GDP.
[8] The age dependency ratio is defined as the share of young and old age population (below 15 and above 65) to working age population (between 15 and 64).
[9] A new oil producer would have higher oil infrastructure investments and imports needs, and would consequently have a worse current account position relative to a well-established oil producer. Established producers might have higher surpluses because they do not need to invest as much.

correlated with workers' remittances, domestic saving and balance of trade while negatively correlated with total consumption.

Udah (2011) investigates the financial sector, macroeconomic policy and non policy variables that influence the movement of current account balance in Nigeria by using the cointegration test, Granger causality and vector auto regressive technique. The findings indicate that the variables which influence the movement of current account balance includes; monetary policy credibility, exchange rate and budget deficit. Bidirectional causality has been found between budget deficit and current account balance while, confirm a unidirectional causality run from current account balance to exchange rate. There is no relationship is found between current account balance and financial indicator variables.

Chete (2001) investigates the variables affecting the current account balance in Nigeria by using cointegration test, Granger causality and error correction technique. Results show the positive relationship between exports, net foreign accounts and budget deficit with current account balance. Results also confirm negative association between the current account balance with relative income, inflation and degree of openness.

3. Empirical Framework

After reviewing the theoretical and empirical studies, the model to examine the factor that effect current account balance in Pakistan is given below.

$$CAD_t = \beta_0 + \beta_1 ER_t + \beta_2 ED_t + \beta_3 FD_t + \beta_3 TD_t + \beta_3 PS_t + \varepsilon_t$$

Whereas ε_t is the Error Term, *CAD* is the Current Account Deficit, *ER* is the Exchange Rate, *ED* is the External Debt, *FD* is the Fiscal Deficit, *TB* is the Trade Balance and *PS* is the Private

Saving,. Annual time series data have been used from 1976 to 2010. All data are acquired from various issues of economic survey of Pakistan and Handbook of statistics on Pakistan economy.

4. Estimations and Results

Before testing the long run relationship, it is necessary to examine the stationary properties of time series variables. Augmented Dickey Fuller (*ADF*) and Phillip Perron (*PP*) conventional unit root tests are used. Results of unit root test are given in table 4.1.

Insert table 4.1 here

Results of table 4.1 show that all the variables are stationary at first difference this implies that the series of variables may exhibit a long run relationship.

Insert table 4.2 here

Results of table 4.2 show significant negative relationship between external debt and current account deficit, which is logical because external debt (including aid and grant) is a foreign cash inflow, can automatically reduce the current account deficit.

Trade deficit shows the positive and significant relationship with current account deficit. The findings are consistent with the past studies[10] & also with the theoretical explanations because trade balance is a sub part of current account balance. If trade balance is deficit so it will move the balance of current account on deficit side. In last ten years of Pakistan more than 25% of the total imports bill paid alone on petroleum products. The oil prices are extremely increasing in international markets and the trade deficit of Pakistan is also growing every year due to raising oil import. In Pakistan revenue generated from exports is mainly based on low value added

[10] Gulzar, Feng and Yajie (2007)

products and raw material. In Pakistan around 60.72 percent of exports is consists on textile products in last decade.

Exchange rate shows the positive and significant relationship with current account deficit. The results are consistent with past studies.[11] The depreciation in the exchange rate can positively affect on country export and negatively affect on country imports. Pakistan is mostly exporting primary commodities, so depreciation in exchange rate does not affect so much the export. On the other hand, Pakistan is mostly importing necessary commodities so depreciation in exchange rate increase the import prices, leading to a worsening trade balance and this will lead to current account deficit.

Private saving shows the negative and significant relationship while fiscal deficit have the significant positive relationship with current account deficit. Economies suffer with fiscal deficits when their government expenditures are more than their government revenues. When government expenditures are increased then government imposed more taxes and got foreign loans to cover their expenses, this lead to decreasing in the private saving. Lower savings create the investment gap in economy and for fulfilling this gap investors needs to borrow money from outside. The country also has to pay interest amount on borrowing money and that causes the current account deficit. In Pakistan saving are always less than the investment and that's always create investment gap in economy. In 1980's the average private saving was 3.67 percent of GDP, in 1990's it is increased to 8.64 percent of GDP and in 2000's it is further increased to 23.16 percent of GDP. However, in 1980's the average investment was 5.26 percent of GDP, in 1990's it is increased to 12.39 percent of GDP and in 2000's it is increased to 30.47 percent of

[11] Baharumshah and Lau (2007), Kwalingana and Nkuna (2009)

GDP. In last three decades Pakistan is continuously having problem of investment gap and this gap is fulfilled by external debt.

Insert table 4.3 here

The unit root stationary result of residuals is analyzed by using the Philiips-Perron (*PP*) and Augmented Dickey Fuller (*ADF*) tests. The results of unit root test of residuals are reported in table 4.3. Results indicate that the residuals are stationary at level and variables are stationary at first difference, hence there exist a valid long run relationship between exchange rate, external debt, fiscal deficit, trade deficit, private saving and current account deficit in Pakistan.

Insert table 4.4 here

The long run relationship between variables is estimated by using the Johansen & Jeuuselius (1990) cointegration method. Trace statistics and Maximum Eigen value statistics have been derived for cointegration test. The calculated values of these two statistics are presented in table 4.4. Results indicate the rejection of null hypothesis of no cointegration for both trace statistics and maximum eigen value at significant level of 5 percent, in favor of alternative, that there are two cointegration vectors. The existence of long run relationship between variables is suggested by both of two tests.

Hendry's (1980) general to specific modeling approach is applied to test the relationship in short run. In our error correction model we use one lag of dependent and independent variables and one lag of error correction term.

Insert table 4.5 here

Table 4.5 represents the results of error correction model. Results indicate that the coefficient of the error term for the estimated current account deficit equation is both negative and statistically significant. Results show that exchange rate, trade deficit and fiscal deficit have positive and significant impact on current account deficit of Pakistan in the short run.

Causality Analysis

The direction of causality between dependent and independent variables is analyzed by Granger (1969) Causality test. We determine the causality analysis of our current account model on lag one. Jones (1989) favors the ad hoc selection method for lag length in Granger causality test over some of other statistical method to determine optimal lag.

Insert table 4.6 here

The results of Granger causality test are reported in table 4.4. Results show the bidirectional causality between the exchange rate and external debt with current account deficit. However, unidirectional causality is found from current account deficit to external debt and fiscal deficit.

5. Conclusion and Recommendations

In recent literature, the determinants of current account deficit are widely analyzed on different economies. This study investigates the determinants of current account deficit in Pakistan by using annual time series data from the period of 1976 to 2010. Johansen & Jeuuselius cointegration test suggest the significant long run relationship between variables. Results indicate the positive significant relationship of exchange rate, fiscal deficit, and trade deficit with current account deficit, while external debt and private saving have negative significant

relationship with current account deficit. The error correction model confirms the short rum relationship of exchange rate, trade deficit and fiscal deficit with current account deficit.

The Granger-causality test shows the bidirectional causality between the exchange rate and external debt with current account deficit. However, unidirectional causality is found from current account deficit to external debt and fiscal deficit. It is recommended that government needs to be cautious in financing its fiscal deficit. The policy makers should make strategies to divert their trade balance from deficit to surplus. Savings habits should be increase to narrow the investment gap in economy.

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Table 4.1: Unit Root Estimation

Variables	ADF test statistics				PP test statistics			
	I(0)		I(1)		I(0)		I(1)	
	C	C&T	C	C&T	C	C&T	C	C&T
CAB	-1.378	-2.474	-6.326	-6.205	-2.027	-2.413	-9.070	-8.884
ER	2.227	-1.128	-3.893	-4.472	1.897	-1.343	-3.893	-4.472
ED	2.036	0.003	-3.762	-4.643	0.256	0.979	-3.622	-4.263
FB	1.541	-1.168	-3.909	-4.004	1.721	0.866	-5.700	-6.708
TB	-0.058	-1.839	-4.567	-4.666	-0.045	-1.571	-4.758	-4.740
PS	2.235	0.413	-3.555	-7.769	2.113	0.194	-5.902	-7.564

Note: The critical values for ADF and PP tests with constant (c) and with constant & trend (C&T) 1%, 5% and 10% level of significance are -3.711, -2.981, -2.629 and -4.394, -6.612, -3.243 respectively.
Source: Author's estimations.

Table 4.2: Long Term Determinants of Current Account Balance

Variables	Coeff.	t-stats	Prob.
C	-0.553	-0.890	0.381
ER	0.174	5.973	0.000
ED	-0.006	-5.629	0.000
FB	0.005	3.533	0.001
TB	0.474	2.623	0.014
PS	-0.002	-2.145	0.040
Adj. R^2	0.823		
D.W stats	1.833		
F-stats (prob.)	32.722 (0.000)		

Source: Authors' estimation.

Table 4.3: Unit root test for Residuals

	Without Trend	With Trend
ADF Test	-5.238	-5.174
PP Test	-5.238	-5.174
1% Critical Value	-3.639	-4.253
5% Critical Value	-2.951	-3.548
10% Critical Value	-2.614	-3.207

Source: Author's estimations.

Table 4.4: Cointegration test results

Null Hypothesis No. of CS(s)	Trace Statistics	5% critical values	Max. Eigen Value Statistics	5% critical values
None	162.4236	107.3466	68.94123	43.41977
At most 1	93.48234	79.34145	43.02042	37.16359
At most 2	50.46193	55.24578	22.06871	30.81507

Source: Authors' estimation.

Table 4.5: Results of Error Correction Model

Variable	Coefficient	t-Statistics	Prob.
C	-0.0806	-0.5489	0.5892
D(CAB(-1))	0.2947	1.3998	0.1769
D(ER)	-0.1295	-1.5705	0.1320
D(ER(-1))	0.2379	2.6288	0.0161
D(ED)	-0.0014	-0.5213	0.6079
D(ED(-1))	-0.0011	-0.5611	0.5810
D(FB)	0.0037	2.2722	0.0343
D(FB(-1))	0.0006	0.1787	0.8600
D(TB)	0.8625	3.1053	0.0056
D(TB(-1))	0.2475	0.8400	0.4108
D(PS)	-0.0003	-0.2368	0.8153
D(PS(-1))	-0.0016	-1.5177	0.1447
RES(-1)	-0.6511	-2.6950	0.0139
Adj. R^2	0.8670		
D.W stats	2.0914		
F-stats (prob.)	10.8811 (0.0000)		

Source: Authors' estimation.

Table 4.6: Results of Granger Causality Test

Dependent Variables	CAD	ER	ED	FD	TD	PS
CAD		5.941	4.548	0.051	0.495	1.050
		(-0.021)	(0.040)	(0.823)	(0.486)	(0.313)
ER	12.857		5.765	1.468	2.109	6.670
	(0.001)		(0.022)	(0.234)	(0.156)	(0.014)
ED	8.608	4.116		3.490	2.733	14.934
	(0.006)	(0.051)		(0.071)	(0.108)	(0.000)
FD	0.286	34.113	100.835		0.005	0.211
	(0.596)	(0.000)	(0.000)		(0.944)	(0.649)
TD	8.714	8.942	9.540	10.503		5.474
	(0.005)	(0.005)	(0.004)	(0.002)		(0.025)
PS	3.963	1.935	7.815	6.221	8.127	
	(0.055)	(0.174)	(0.008)	(0.018)	(0.007)	

Note: The lag length of all focus variables is 1.
Source: Authors' estimations.