

## **IMF Programs and Economic Growth Consequences in Pakistan**

Ameet Kumar and Naseem Faraz<sup>1</sup>

### **Abstract**

During the economic crisis period, the use of the IMF program is phenomenal in developing countries. The empirical evidence in a cross-country environment is well studied, limited empirical evidence is available for Pakistan as an individual participant. Pakistan is one of the frequent users of the IMF program to address the economic crisis. Focusing on the participation in last 12 IMF programs, this study investigates the effects of participation programs on the economic growth in Pakistan. We examine empirically whether the country has been successful in achieving the desired aims and objective of achieving economic growth. Our empirical approach explores the long-run relationship to assess the impact of IMF programs on fiscal indicators and economic growth. The results show that IMF programs has either insignificant or negative association with the GDP growth. Despite having long series of IMF programs, the debt trap prevails and stabilization could not achieve in Pakistan.

Key words: Economic Growth, IMF programs, Fiscal Indicators  
JEL Classifications: F43, E62, E63

### **1. Introduction**

During the economic crisis period, almost all developing countries have received IMF finance support at least once since 1980s. For instance, its role in Latin American crises in early 1980s in response of the aftershock of the oil prices shocks in late 1970s (Conway 1994, Ozturk 2008). The use of IMF funds to stabilize the currencies of countries affected by the financial crises in East Asia in 1997. Similarly, the participation of largest developing country India in 1991, and the youngest democracy Pakistan since 1989. Given the broad reach of IMF loan programs, it is important to know the consequences of these programs for

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economic growth in developing countries. Do countries benefit from access to IMF loan programs or would countries be better off if these programs did not exist?

A strand of literature has investigated the impact of the IMF programs on economic outcomes in developing countries. They have presented positive, negative and ambiguous impact of the IMF program Rozwadowski *et.al.* (1993); Schadler & Bredenkamp, (1999); Mecagni *et.al.* (2000); Ghosh *et.al.* (2005); Hajro and Joyce, (2009); Botchwey *et.al.* (1998); Gupta *et.al.* (2002); and Bird & Mosley (2005). For example, Prezworski and Vreeland (2000) argues that the stabilizing effect acquired from the money supply is not sufficient to accelerate the economic growth. On the contrary, Barro and lee (2002) stated that growth has been lowered directly and indirectly as result of participation in IMF program. Although, Bird (2005) argues that concessional programs have showed positive effect on economic growth for up to two years after agreements. Bird and Mosley (2005) suggests that the poverty reduction and growth facility (PRGF) and the enhanced structural adjustment facility (ESAF) have helped recipient countries to increase their rate of economic growth, and also to redirect government expenditure in a pro-poor way and increase social capacity. Similarly, Bal-Gnduz, *et.al.* (2013) supports the argument that long-running involvement by developing countries with the IMF, as well as short-run engagement associated with shock-related drawings, have a beneficial effect on economic growth.

The IMF program strives its objectives through four channels; First, approval of IMF program which is associated with particular amount of funds that attracts investors, enhance country's credibility for financial policies and development and enable economies to acquire private and public loans. Second, the provision of money can be viewed as an immediate, short-term solution aimed at stabilizing the economic development. Third, policy conditions attached with IMF loan Program; IMF imposes conditions that reassure the commitment to particular set of economic policies to achieve sustainable growth and solve financial crises. Fourth, IMF's policy advices to member countries, providing information through surveillance by monitoring the international monetary system, forecasting instabilities and changes in economic policies can spur economic growth. lastly, The IMF provides training and technical assistance through the IMF Institute to member countries on matters such as the operation of central banks, Finance Ministries, tax regulation etc.

Since 1980s Pakistan has participated in twelve different fund supported adjustment programs. In cross-country studies, Barro and Lee (2002) reported that Pakistan was among the five developing countries which had the highest number of professional staff at the IMF in 1999. Kemal (1994) has documented that the employment situation further worsened due to privatization, and structural adjustment (IMF funds). Bengali and Ahmad (2001) criticized on Structural adjustment program that stabilization targets were achieved by reducing developing expenditure. Gardezi (2004) argues that SAP loans have caused the state assets privatization, devaluation of currency, increase in prices of petroleum and electricity. Further, increased General Sales tax was imposed, and import duties were further reduced. Real output declined, the inflation rate increased, and the exports of goods remained insignificant during the adjustment period 1988 to 1991 but the findings show that adjustment lending enhanced investment and increased the government's current consumption (Iqbal,1999).

While a set of studies have investigated the IMF program consequences in cross countries studies, the empirical discussion of IMF programs consequences for growth limited as an individual participant. Since economic crises situations occurs for diverse reasons in individual country, the use IMF program may have differential effects on the economic growth in a developing country like Pakistan. Secondly, few studies have investigated the impact of IMF in case of Pakistan, yet literature did not comprehensively provide evidence on IMF program and its consequences for economic growth. This study attempts to analyze the effect of IMF participation programs on the economic growth in Pakistan. We look at whether the country has been successful in achieving the desired aims and objectives of achieving economic growth. The examination is based on Pakistan during 1980-2019. The ARDL approach is used to analyze and find out long run relationship between IMF programs and economic growth. The results show that IMF programs has either insignificant or negative association with the GDP growth. Despite having long series of IMF programs, the debt trap prevails and stabilization could not achieve in Pakistan.

The rest of the study is structured as follow. Literature review is discussed in second section. Section 3 explains the historical context of IMF programs. Data and variable construction is

described in section 5. Results are elaborated in section 6. Last section provides concluding remarks.

## **2. Literature Review**

Since the late 1970s, Economic growth became the key objective for directors and policy makers of the IMF Fund for sustainable development. Since then, economist emphasized their interest to explore the role of the IMF program in economic growth. A large number of studies have evaluated whether the IMF program has a positive or negative effect on economic growth (Bird & Rowlands, 2001)

### *Ambiguous effect of the IMF programs on economic growth*

Approval of the IMF program may create the false speculation that economic problems are solved. Moreover, funds received may reduce reason to reform and increase the time duration for governments to come up with concrete solutions for managing crises (Boockmann & Dreher, 2003). In fact, studies show that governments carry inappropriate policies for longer period of time than otherwise (Bandow, 1994). Further, (Aisen and Veiga, 2005) argues that IMF programs during high inflation periods, lessens the chance of stabilization, while scheduling of loan payments makes the effects of credit allocations ambiguous.

### *Negative Effect of IMF Programs on Economic Growth*

IMF Fund's loan programs may negatively affect the economic policy even before the credit is allocated. For instance, (Vaubel, 1983); (Dreher, 2006); (Stone, 2004) emphasized the IMF may verse the economic conditions if these funds are taken as subsidized income insurance against shocks, popularly known as the Moral Hazard hypothesis. This insurance may create the incentive for the borrower countries to stay on infeasible economic policies long before the loan agreement is required (Kim, 2006). Therefore, due to moral hazard countries would be dependent upon IMF program until sound policies are adopted. Several studies exist which state that the balance of payment problems which arise in borrower countries arise due to their own accord. The evidence show that economic benchmarks such as budget deficits, domestic credit and inflation rates are higher with the increase in inter-program years (Evrensel, 2002). Similarly, (Conway, 1994) argues that those countries which

have previously been borrowers of IMF funds are more likely to participate in loan programs in the future, too. (Dreher & Vaubel, 2004) explored that the availability of loans from the IMF make economic policies more expensive once it is linked with the undrawn fund's quota of the country. (Dreher, 2006) argues that economic growth may certainly reduce if the countries indulge in moral hazarding and bad economic policies. The IMF is not only know for the allocating of funds through structured loans, but also heavy economic conditionality. These conditions are tools by which IMF spurs economic growth and solves crises. On the other hand, (Barro and lee, 2003) discusses the negative effect of IMF that reduces growth directly by low investment and indirectly through lowered levels of openness and rule of law. (Feldstein, 1998) is the critics of fund's conditionality and inapt approach which is "one size fit all" would reduce economic growth. According to (Dreher, 2006), repeated government involvement and non-compliance with conditionality may certainly not have any influence on the performance of the economy. (Marchesi & Sirtori, 2011) also support the argument and further argues that IMF involvement in monetary and fiscal subjects don't necessarily set the structurally characterized problems that is faced by some of the poorer countries. Whereas, (Przeworski and Vreeland, 2000) argue that the stabilizing effect of money is not enough to push economic growth. (Easterly, 2005) critiques IMF-supported programs in the context of top 20 recipients by showing that adjustment loans in the period 1980–1999 did not have significant positive effects on either policy or growth.

#### *Positive Effect of IMF Programs on Economic Growth*

(Boockmann & Dreher, 2003) argue that the IMF may positively affect economic growth by advisory or technical assistance about policy implementation. According to (Fischer, 2005), IMF's added value to reform is to constantly encourage a particular way of economic policymaking. Hence, in the long term the IMF's impact can reach beyond the recent short-term effects of conditions. Therefore, Fund's advice to policymakers can have a positive effect on growth regardless of policy conditionality (Dreher, 2006). Existing cross-country literature on growth effects of IMF-supported programs provide mixed evidence. (Bird & Rowlands, 2017) examine the impact of IMF-supported programs on economic growth in LICs using the Propensity Score Matching (PSM) methodology. They find that such programs have positive impacts on growth, which were observed (relative to non-program

countries) for up to two years after the start of the program. Similarly, estimating the short- and long-term impact of IMF-supported programs on economic growth, specifically in LICs, (Mumssen, Gündüz, Ebeke, & Kaltani, 2013) highlight that longer-term (5 years or more) IMF assistance contributes to sustained growth and economic resilience. The program impact is the highest for countries that have a substantially imbalanced macro economy or are experiencing severe macro shocks. (Atoyan & Conway, 2006) show a positive effect of IMF-supported programs on growth and fiscal surplus in participant countries in developing and transition economies in the period 1993-2002. Ghosh et al., (2005) find that programs under the Poverty Reduction and Growth Facility (PRGF) helped countries reduce inflation and enhance growth in between 1995 and 2003. (Schadler & Bredenkamp, 1999) Argues that countries that implemented reforms and adjustment programs with Structural Adjustment Facility (SAF) and Enhanced Structural Adjustment Facility (ESAF) arrangements experienced improved economic outcomes during the 1986-1995 period. Dicks-(Dicks-Mireaux et al., 2000) apply a modified control-group methodology on LICs for the years 1986-1991 to estimate the impact of ESAF on output growth, inflation and external debt/service ratio. Though they find statistically significant benefits of ESAF on growth and debt/service ratio, diagnostic tests of these results cast doubt on the validity of the measured impact.

### *The Effect of IMF Programs on other Economic Variables*

IMF-supported programs have been shown to have beneficial impacts on other macroeconomic variables that are conducive to economic growth. (Al-sadiq, 2015) finds empirical evidence to indicate that countries with IMF-supported programs attract more FDI than those without such programs. (Gündüz & Crystallin, 2014) argues that IMF supported programs addressing policy or exogenous shocks have a significant catalytic impact on both the size and the modality of official development assistance. However, countries experiencing sizeable initial macroeconomic imbalances or large exogenous shocks (high propensity scores) primarily drive the results and the catalytic impact is not significant for countries with low propensity scores. Finally, (Oberdabernig, 2013) indicates a negative program effect on poverty and inequality outcomes of 86 low-and-middle income nations for the entire 1982-2009 sample, but a positive one for the 2000-2009 subsamples

In sum, the main objective of IMF loan programs is to provide funds to support economic crises in a country. In theory, these fund are supposed to increase financial stability and help to fix the economy. However, the empirical literature have found positive, negative and ambiguous effects of the IMF program on economic growth. This study adds literature on the growth effects of IMF programs in Pakistan.

### **3. Background on IMF Program in Pakistan**

#### *What Is IMF Lending?*

The IMF is an organization in constant development. According to the IMF's Annual Report (2012) various lending instruments are developed for balance of payment needs as well as the specific circumstances of its members. The concessional loan with zero interest rate is provided to support low income countries under Poverty Reduction and Growth Trust (PRGT). The Stand-By Agreements (SBAs) to rescue emerging and advanced market economies from short-term or potential balance of payment crises. Similarly, The IMF assistance by the Standby Credit Facility (SCF) facilitates low-income countries. The Extended Fund Facility (EFF) and the Extended Credit Facility (ECF) are the medium-term support to low-income countries facing balance of Payment problems. Moreover, the Flexible Credit Line (FCL) or the Precautionary and Liquidity Line (PLL) are the instrument used during periods of heightened risks to boost the market confidence.

**Table: 02 Types of Loan Programs**

Loan programs	SBA	EFF	FCL	ECF	SAF	ESF
Length (years)	1-2	Up to 3	1-2	3-5	Up to 3	1-2
Repayment (years)	3 - 5	4 - 10	3 – 5	5-10	5 - 10	5-10
Designed for	M/H countries	M/H countries	Sound institutions	LIC	LIC	LIC
Disbursements	Quarterly	Quarterly	Single	Semi-annual/ quarterly	Annual	Phased
Time period	Short-term	Medium-term	Short-term	Medium term	Medium-to long term	Short-term
Interest rate	NC	NC	NC	C	C	C

*Note:* M/H indicates middle to high income countries

LIC indicates the low income countries

NC stands for non-concessional and C denotes the concessional

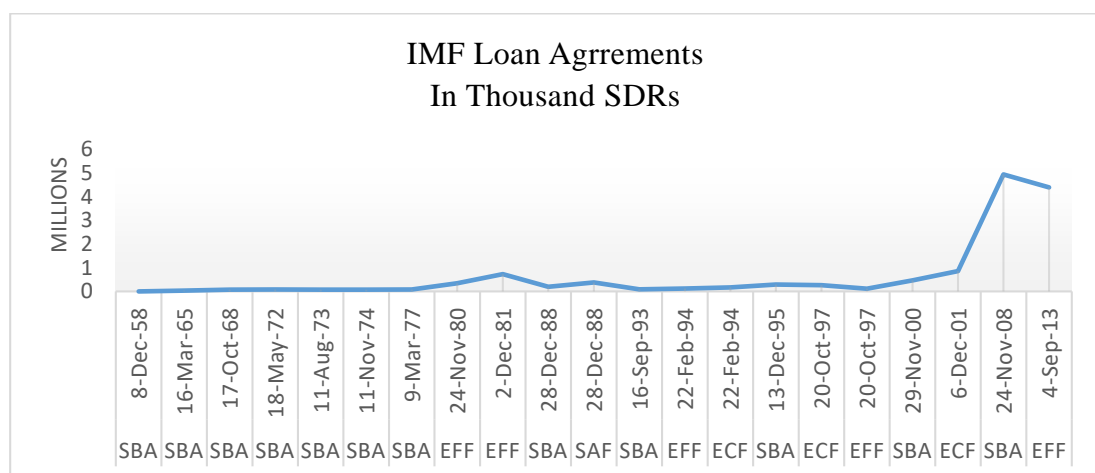
The Rapid Financing Instrument (RFI) and the Rapid Credit Facility (RCF) provide assistance to low-income countries to deal with natural disasters, domestic instabilities, commodity price shock or urgent balance of payment problems.



### 3.2 The History IMF Programs in Pakistan

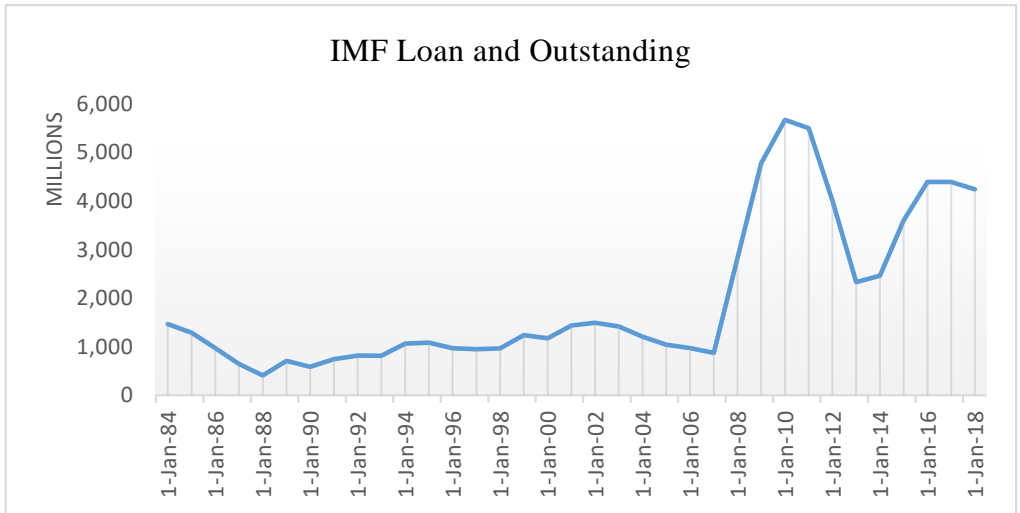
According to ministry of finance statistics, in last 3 decades heavy borrowing carried out by the government to resolve the economic difficulties. Government has borrowed \$72 billion from 1985 to 2012. Despite regular annual payments, the outstanding is \$46.4 billion. Almost each and every government accumulated debt. Zia regimes accumulated more than \$ billion from 1985 to 1988. This increased further during 1988-90 during Benazir Bhutto period. More than \$15 billion dollar during Nawaz and Benazir regimes during 1993-97. The deficit financing and balance of payment turmoil was primary reason of accumulating this debt. This unending borrowing never been stopped since then. The of program is presented in Figure 1.

**Figure 1: The History of IMF loan Agreements with Pakistan**



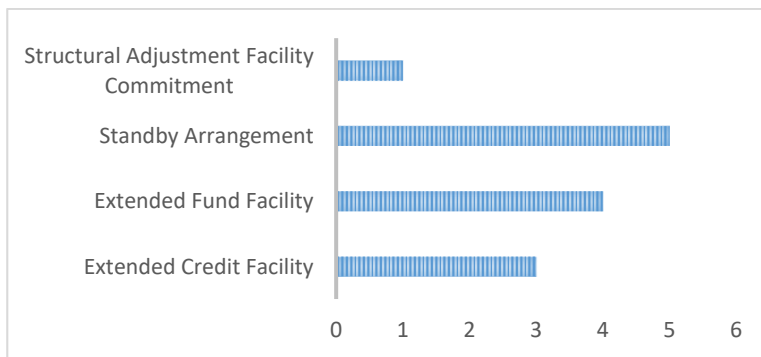
Source IMF

**Figure 2: Total Number of Loan Outstanding to Pakistan.**



Source IMF

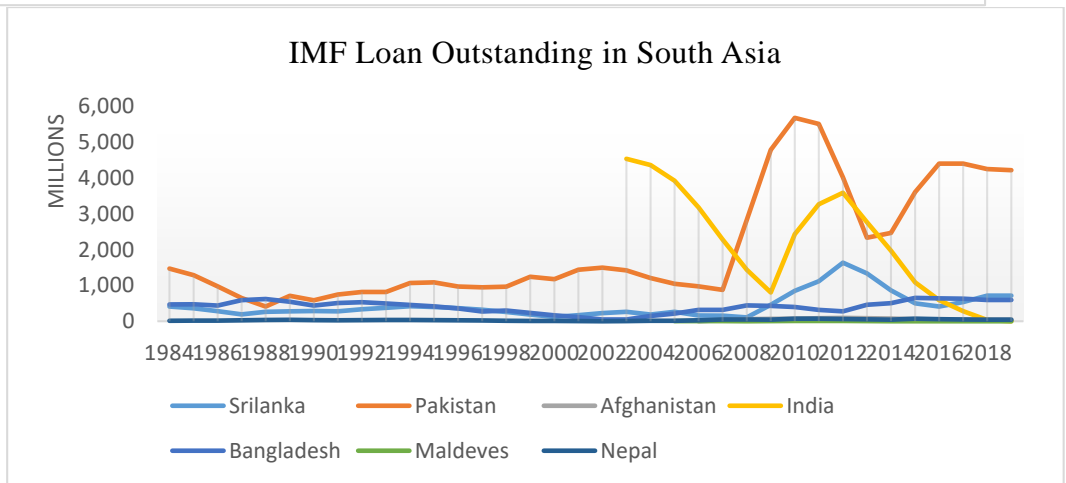
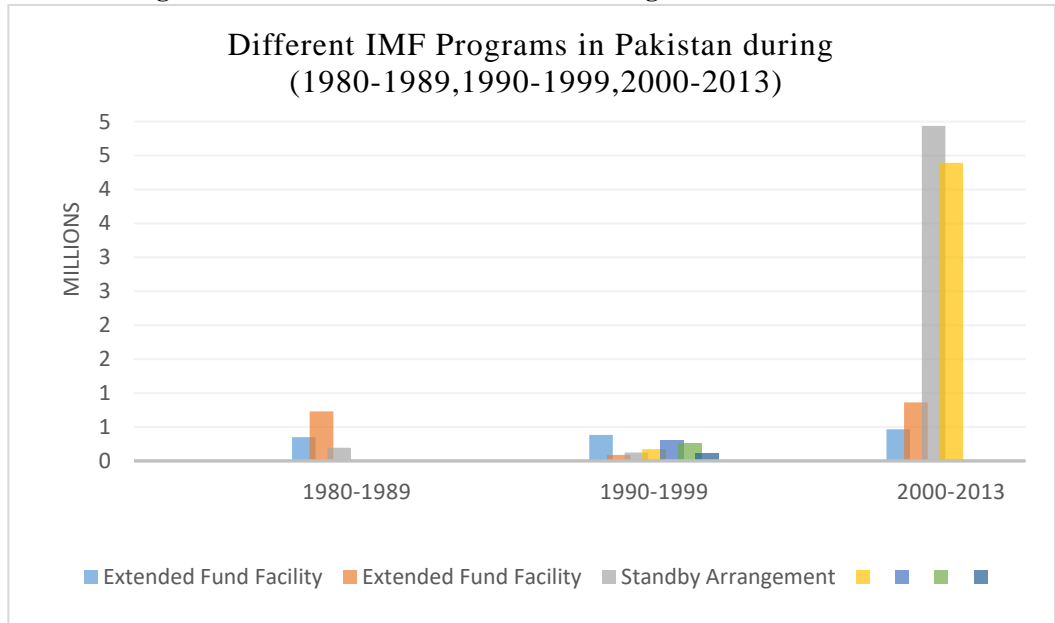
**Figure 3: Different Loan Programs to Pakistan during 1980-2013**



Source IMF

**Figure 4: Decade-wise Number of IMF Programs**

**Figure: 05 Total IMF Loan Outstanding in South Asian Countries**



#### 4. Methodology

As discussed earlier, Fund program’s immediate goal is to help the member’s countries to achieve sustainability in economic growth. IMF lending comes with set of conditionalities

to make it sure to attain vivid macroeconomic outcomes and economic growth. These conditionalities follows a mechanism consist of complex and multiple policy measures such as an increase in domestic interest rates, fiscal atrocity driven by government, spur investment, and trade liberalization. The following specification (Equation 1) is used to examine whether Fund lending effectively reduce the budget deficit, government revenue, and expenditure and increase the economic growth of Pakistan or not.

$$Y_t = \alpha_0 + \alpha_1 IMF_t + \alpha_2 CAD_t + \alpha_3 Trade_t + \alpha_4 Domestic\_Credit_t + \alpha_5 INF_t + \alpha_6 Unemp_t + \alpha_7 Real\_ER_t + \alpha_8 Govt\_Exp_t + \varepsilon_t$$

(1)

Here the dependent  $Y_t$  is the budget deficit (% of GDP), revenues (% of GDP), government expenditures (% of GDP) and Growth (% change in GDP). Whereas  $IMF$  is the binary variable that takes value 1 for the years of arrangement and zero otherwise.  $CAD$  is the current account balance (\$ million),  $Trade$  is the total trade as percentage of GDP.  $Domestic\_Credit_t$  denotes the domestic credit to the private sector. Conditionalities often influence the price level, we also include this variable,  $INF$  represents the inflation level in a particular year.  $Unemp$  is included to incorporate the changes in unemployment rate, the inflow of foreign currency affect the exchange rate, we include this variable to flut

Equation (1) is used to estimate the effects on budget deficit, revenues, government expenditures and economic growth overall. Mireaux *et.al.* (2000) and Arjumand *et.al.* (2016) used budget deficit as the dependent variable in their study in which they analyze the growth, productivity, and role of the budget deficit. Fiscal and monetary variables are key to determine economic stability in the foreign sector. The other control variables are the current account balance ( $CAD$ ), inflation ( $INF$ ), domestic credit ( $Domestic\_credit$ ). The variables added in the model are directly or indirectly related to the budget deficit. Chaudhary and Shabbir (2005) investigate the macroeconomic impact of budget deficit by using money supply, the balance of payment, price level, and private credit ratio. Makochekanwa (2008) used inflation as a dependent variable and show that the significant inflationary effects are found for increases in the budget deficit. Beetsma *et.al.* (2008) used budget deficit and trade balance in their study, Kim and Roubini (2008) used in their study the budget deficit,

exchange rate and suggest that in the US an expansionary fiscal policy shock and government budget deficit shock, expand the current account and devalue the real exchange rate.

Our second outcome of interest is total revenue earned. In this model total revenue is used as the dependent variable and on the other side, the main variable is IMF, and control variables included inflation, government consumption expenditures, the balance of payment, and domestic credit. All these variables have some impact on total revenue; we will find the relation in this study. The Ojong *et.al.* (2016) used the revenue in their study and check their relationship with economic growth. Jin and Zou (2005) also used revenue and expenditure in their study. Agbeyegbe *et.al.* (2006) used to trade and revenue in their study and results show that trade and revenue are not strongly linked. The inflation rate is higher than the revenue-maximizing rate, as discussed by Friedman (1971) in their study. In another study, Koitsiwe and Adachi (2015) investigate the relationship between revenue, government consumption, exchange rate, and economic growth in Botswana.

Third, the resources collected and shared by public actions including all the revenue modalities. In 5<sup>th</sup> model, the total expenditures are the dependent variable and analyze the impact of inflation, the balance of payment, IMF, and exchange rate on it. The main variable is IMF which is used as a dummy variable and the control variables are a balance of payment, inflation, government consumption, real effective exchange rate trade, and domestic credit to the private sector. Greytak *et.al.* (1974) used inflation and total expenditures in their study and showed that inflation effect the total expenditures in New York. The exchange rate also affects expenditures, Galstyan and Lane (2009) discussed the exchange rate spending in their study, government total consumption, and government spending have distinction effects on the real exchange rate and the relative price of non-tradable goods.

Last, the above model also shows the growth model equation. Where GDP is used as dependent variable in per capita form and independent variables are IMF, balance of payment, real effective exchange rate, unemployment, domestic credit and government consumption expenditures.

## **5. Data and Variable Construction**

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Since the last three decades, Pakistan had signed many IMF agreements because it faced various economic challenges such as the high budget deficit, large current account deficit, balance of payment problems, and low economic growth. A wide amount of research is found which illustrates the different effects of IMF lending on economic growth. Moreover, this study begins from cross country to country-specific analysis.

Pakistan is one of the developing countries also facing the problem of the budget deficit. Time series data for Pakistan has been taken for the years 1980-2019 from different sources. The main source of data extraction is world development indicators, Pakistan economic survey, and the International Monetary Fund.

### ***5.1 Description of Variables***

Several studies have explored the economic variables that influence IMF program participation such as Przeworski and Veerland (2000), Barro and Lee (2005), Knight and Santaella (1997), and Cho (2009) Al Sadiq (2015), Bal gunduz (2016) and Bird and Rowland (2017). These variables GDP per capita, Growth of Total revenue, Growth of total expenditures, Growth of budget deficit, Imf, Balance of payment, Domestic credit to private sector, Trade, General Government final consumption expenditures, Inflation, Unemployment, and Real effective exchange rate.

### ***5.2 Dependent Variables:***

The study focuses on the analysis of how IMF lending programs affect the most important economic benchmarks- fiscal balance, government revenue, expenditure, and economic growth. Therefore, the dependent variables of the study are Budget balance, government expenditure, revenue, and real GDP growth.

### ***5.3 IMF program participation:***

The main independent variable in the study is the selection of IMF programs. 1 for year conditioned IMF agreement, 0 otherwise is used as a dummy variable. The study does not differentiate with other lending programs offered by the IMF because each of these programs has the same fiscal objective.

#### ***5.4 Independent Variables:***

There are several other variables on the regressor side that may affect the budget deficit; revenue, expenditure, and economic growth are included.

##### ***Inflation Rate:***

The inflation rate is measured as the growth rate of consumer price index. It records the percentage change in the cost of goods and services. Anecdote suggest that the rise in inflation rate have increased the probability of seeking IMF assistance.

##### ***Balance of Payments:***

A country is likely to go IMF for financial assistance if it faces Balance of Payment difficulties. The variable uses the balance of Payment as a percentage of GDP. The excess amount in balance of payment is a good sign for the country because it can improve budget balance and the country can have higher international reserves and spend the money on the development of the economy. On the other hand, a country that faces a balance of payment crises is the cause of the depletion of international reserves and devaluation and lower economic growth. Investment plays an important role in the economic well-being of the country. Countries with low investment are likely to seek IMF assistance because the low investment is directly proportional to government revenue.

##### ***Trade:***

According to the definition of WDI “Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product”. Trade may benefit the country through different channels, i.e. technology transfers, economies of scale, and comparative advantage. Coe and Helpman (1995) say that trade is the main source of international technology spillover. This variable trade openness (as a percentage of GDP) is included because trade taxes are relatively easy to collect (Clist and Morrissey 2011) is suggested by the economic growth theory of Mankiw, Romer, & Ball, (1992), and Barro, (2003) that

explain economic growth. Trade openness is a non-fiscal variable that is measured by summing up export and imports and dividing it with GDP at a constant price.

The trade ratio is defined as the ratio of imports plus exports to that of GDP. This ratio is also used to measure trade openness. Arif *et. al.* (2017) used the trade ratio of GDP as a proxy for trade. Therefore, this study has taken time series data of trade to % of GDP for the years 1980 to 2016 from world development indicators.

***Unemployment:***

The unemployment is used as control variable. It is simply the share of the labor force participation.

***Real effective exchange rate:***

The real exchange rate is also used as independent variables. The exchange rate instability is strongly correlated with the IMF program participation in Pakistan. The real effective exchange rate is measured as the nominal effective exchange rate divided by a price deflator.

***Foreign direct investment:***

The foreign direct investment records the inflow and outflow of the foreign investment. The net inflow of foreign investment navigates the situation of balance of payment. The negative net inflow requires more debt to stabilize the balance of payment in Pakistan.

***Domestic credit to the private sector:***

The domestic credit to the private sector is measured as the financial resources provided to the private sector through the banking channel.

***Government Expenditures:***

According to the definition of WDI “General government, final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes



most expenditure on national defense and security but excludes government military expenditures that are part of government capital formation”. Glomm and Ravikumar (1997) explored the relationship between productive government expenditures and long-run economic growth. In another study, Bader and Qarn (2010) have checked causality for government expenditures, military expenditures, and economic growth. Olulu *et. al.* (2014) explores the impact of government expenditures on economic growth. General government final consumption expenditure is used as a proxy for Government expenditures. Wu *et. al.* (2017) used this proxy in his study to explain the relationship between government expenditures, corruption, and factor productivity. Therefore, this study has taken time series data of general government final expenditures for the years 1980 to 2016 from world development indicators.

### 5.5 Data Sources

Variable	Obs	Mean	Std. Dev.
GDP per capita	40	2.1086	1.8858
Growth of Total revenue % of GDP	40	14.1825	6.0117
Growth of total expenditures % of GDP	40	13.965	7.08871
Growth of budget deficit % of GDP	40	15.7847	25.407
IMF	40	.25	0.4385
Domestic credit to private sector % of GDP	40	22.8968	3.9472
Trade % of GDP	40	32.5896	3.4817
Gen. Govt. final consumption expenditures % of GDP	40	11.1737	2.1165
Inflation rate %	40	8.1237	3.8024
Unemployment rate %	40	3.9078	2.0988
Real effective exchange rate	40	1.2614	0.3832
<b>Foreign Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>

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Trade % of GDP	40	32.5896	3.4817
Gen. Govt. final consumption expenditures % of GDP	40	11.1737	2.1165
Inflation rate %	40	8.1237	3.8024
Unemployment rate %	40	3.9078	2.0988
Real effective exchange rate	40	1.2614	0.3832
Foreign Direct Investment % of GDP	40	0.9001	0.7922

The importance of descriptive statistics is that the study enabled us to find the mean of variables. Furthermore, we enable us to know about the average value of our variables. Another important aspect of descriptive stats is to check the normality of data. This section will discuss the general characteristics of the variables used in the study. The descriptive statistic includes mean value, standard deviation, of all variables. Table 5.1 shows that GDP per capita growth is around 2 percent in the historical context. Inflation is around 8 percent in last decade which is little higher than a good representative inflation in a country.

### 5.7 Correlation Matrix

This table is going to represent the correlation matrix among the variables used in this study

	1	2	3	4	5	6	7	8	9	10	11	12	13
GDP per capita	1.0000												
Growth of Total revenue	0.2943	1.0000											

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% of GDP													
Growth of total expenditure % of GDP	-0.2121	0.8564	1.0000										
Growth of budget deficit	0.0469	-0.0146	-0.0097	1.0000									
IMF	0.2222	-0.3549	-0.4896	-0.2512	1.0000								
Balance of payment % of GDP	0.1582	0.3237	0.2398	0.1028	-0.2338	1.0000							
Domestic credit to private sector % of GDP	0.3329	0.3840	0.2281	0.3239	-0.0740	0.5206	1.0000						
Trade % of GDP	0.0726	0.0971	0.0491	0.0415	-0.0130	0.1992	0.4739	1.0000					
Gen. Govt. final consumption expenditure % of GDP	0.2197	0.4446	0.3845	0.4586	-0.1957	0.2109	0.6235	0.1251	1.0000				
Inflation rate %	-0.2987	-0.3470	-0.2345	0.0231	-0.0531	-0.0137	-0.2382	-0.3503	-0.4136	1.0000			

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Unemployment %	0.2100	0.0855	-0.0423	0.1164	-0.0265	0.3181	0.2235	0.2249	-0.0779	-0.0103	1.0000		
Real effective exchange rate	0.3408	0.0629	-0.1340	-0.0723	0.0037	0.1117	-0.1151	-0.0315	-0.2587	0.1010	0.4243	1.0000	
Foreign direct Investment % of GDP	0.1737	0.4371	0.4006	0.0077	-0.0810	0.3053	0.1622	-0.2426	0.3686	-0.3701	-0.4540	-0.1499	1.0000

## 6. RESULTS

This chapter reports and explains the results of our models used in this study. First, the results of a unit root and bound test is discussed in section 6.1. The stationary level of variables will be checked, and lag length selection have discussed in this sections. Section 6.2 explains the empirical results in detail.

### *6.1 Unit Root Test*

This section would discuss the result of the unit root test. This study has applied Augmented Dicky Fuller (ADF) and Phillips Perron (PP) to check for the variable's stationarity. The unit root test results are shown in Table 6.I and Table 6.II and 6.III in Appendix.

First, the stationary of the data is tested using Augmented Dicky Fuller (ADF) and Phillip Perron (PP). The variables trade, domestic credit, unemployment, real effective exchange rate, and government final expenditure are investigated. The unit root tests are not stationary at trend level and intercept at a significance level of 5 percent. Thus, it can be assumed that there is a unit root or that variables are not stationary on the ground. Only total budget growth, overall spending growth, overall revenue growth, IMF dummy, the balance of payments, and inflation are stationary on the ground (see Appendix I).

However, the ADF and PP tests were applied to verify the stationarity of variables at the first difference with trend and intercept. At first-order difference, all variables were stationary at a 5% level of significance. After taking 1st difference with the trend and intercept the p-value is 0.0000 and it is less than 5 percent hence this variable is stationary to integrated order 1. Furthermore, domestic credit to the private sector, unemployment, real exchange rate, and government final consumption expenditure are integrated of order 1. Initial measurements are the criteria of knowledge or lag duration if the selection of lags is made in the time-series study. Furthermore, the length of the lag depends on the number of observations. Where measurements are less than 60 AIC and SC are more appropriate. In the table above this analysis, the AIC and SC details were used to select a suitable lag time for the models used in the analysis (see Appendix I)

With the help of the Schwartz-Bayesian Criteria and the Information Criteria of Akaike, the model can choose. AIC suggests 3 lag lengths and SIC suggests 1 lag for model 1, respectively. In addition, the lag length suggested for Models 2 and 3 according to AIC, and SC is 3 (see Appendix I).

Model 1 tells us about the impact of balance of payment, trade, domestic credit, inflation, unemployment, real exchange rate, and government final consumption on-budget deficit. Besides, Model 2 explores the impact of the variables mentioned on total revenue. Moreover, Model 3 looks at the impact of the variables cited on total expenditure. The Bonded test results are shown in Table 8 below

Model 1, represents the effect on the budget deficit of independent variables. Since the value of upper bound 3.39 is lower than the value of f-statistics 9.551. This means that the variables are bound between them. While the effect of exogenous variables on total revenue is reflected in Model 2 the F-statistic value 5.709 is higher than the upper limit value 3.39. In addition, Model 3 sightseeing on total

expenditure. Since the upper limit value is 3.39 which is less than the F-statistics value of 4.160 at 5 percent and the sensed amount at 10 percent, it reflects that there is a bound between variables, respectively. So, a co-integration exists between the variables.

## 6.2 Empirical Results

### *Budget Deficit*

This section explores the impact of the IMF program on budget deficit. It explores the long-run elasticities of this program. The results are interpreted considering the short run impact through error correction model (see appendix).

Variable	Model 1		Model 2	
	Coefficient	Prob.	Coefficient	Prob.
IMF Dummy	-20.622***	0.001	-33.938***	0.000
Balance of Payment % of GDP	-0.005***	0.000	-0.003***	0.009
Trade % of GDP	1.552**	0.023	----	----
Inflation Rate %	1.113*	0.088	-1.081*	0.064
Real Exchange Rate %	0.214	0.776	3.277***	0.001
Unemployment Rate %	-4.734***	0.001	3.374**	0.034
Domestic Credit % of GDP	-0.252	0.957	16.927***	0.009
Government Final Expenditures % of GDP	-2.292***	0.007	2.421***	0.008
FDI	----	----	19.471**	0.002
C	-10.615	0.393	-59.059***	0.003

Note: 1% (\*\*\*), 5% (\*\*), and 10% (\*) significance level

The first model discusses the long-term impact on the budget deficit of various variables for the period 1980 to 2019. The value of the coefficient IMF suggests an inverse relationship between the IMF program and the budget deficit as the sign of the coefficient is negative. It is statistically significant. The negative association between budget deficit and IMF programs implies overall deficit may fall due to participation in IMF programs because the objective of the program is to create fiscal discipline through fiscal consolidation. The value of the coefficient balance of payment is -0.0048 and P-value is 0.0001 implies that there exists a negative relationship between BOP and Budget deficit. The negative association is because, in the case of Pakistan, imports are less than exports which mean governments pay less than it receives and falls into surplus and vice versa. Controlling for the trade openness through *Trade* elaborate a positive association between the trade deficit and budget deficit. The positive association of trade is because in case of Pakistan, imports are greater than exports which means governments pays more than it receives and falls into deficit.

The IMF program also comes through the credit channel. Availing IMF program strengthen the credit provision in the credit market. It means that the credit provided domestically increases will lead to increase the budget deficit. The variable inflation plays a key role in determining the budget deficit. Inflation has an insignificant impact on budget deficit depicted by a positive sign. Periods of high inflation have coincided with low growth spells, while high growth episodes tend to be associated with a low inflation environment. Inflation makes domestic goods expensive and gives rise to demand of imports, making a way to bad balance of payments account.

The value of the exchange rate is -0.2515 and P-value is 0.956. The exchange rate calculates the price of the currency of a nation in terms of one unit of the currency of another country. It indicates that it has an insignificant effect on TBDG. Moreover, the shortfall in the budget is adversely linked to the exchange rate. There is a need to balance the domestic currency to reduce the budget deficit. Finally, the government's final consumption expenditure value is -2.2915 having a P-value of 0.0067. It means that it has a significant and negative effect on-budget deficit. The greater shortfall in the budget is followed by higher interest rates, large rises in money supply inflation and higher costs. A 1% change in government final consumption expenditure will decrease the budget deficit by 2.29%.

### ***Growth of Total Revenue***

Here we explore the long run relations of IMF programs and growth in total revenue. The results are interpreted considering the short run impact through error correction model (see appendix).

Variable	Model 1		Model 2	
	Coefficient	Prob.	Coefficient	Prob.
IMF Dummy	3.852**	0.021	3.528**	0.027
Balance of Payment % of GDP	0.001***	0.003	0.001***	0.003
Trade % of GDP	-1.662***	0.008	----	----
Inflation Rate %	1.565***	0.004	0.486**	0.027
Real Exchange Rate %	0.637**	0.026	-0.177	0.403
Unemployment Rate %	-1.398***	0.006	-1.491***	0.002
Domestic Credit % of GDP	0.409	0.301	1.535	0.418
Government Final Expenditures % of GDP	1.086**	0.012	-0.206	0.393
FDI	----	----	0.757	0.498
C	21.403	0.006	9.631	0.025

Note: 1% (\*\*\*), 5% (\*\*), and 10% (\*) significance level

The results in Table 6.2 explore the nexus of IMF program and growth and total revenue. The value of the coefficient IMF dummy is positive and statistically significant at 1% level of significance. It implies

that there is a positive relationship between the IMF program and total revenue. The value of the coefficient balance of payment is 0.0008 and P-value is 0.0035 implies that there exists a positive relationship between BOP and growth of total revenue. It implies that when the BOP is favorable and exports are greater than imports, the country revenue will increase because of higher exports. While the variable trade value is negative which implies that there exists a negative relationship between them. If the value of trade is increased by one percent, then the dependent variable growth of total revenue decreased by .5 percent. The negative effect is because often trade is not beneficial to the economy, there is already a trade imbalance due to high income elasticity of import demand. If imports are higher than exports, gross sales would decrease as a result.

The coefficient of domestic credit shows that that is there is a positive relationship as the sign of the coefficient is positive and significant. If the credit provided at domestically increases at lower interest rate it will lead to increase different investment opportunities, starting of different new projects will result in generating employment opportunities and better living standards and thus result in increased in government revenue. The variable inflation plays a key role in determining the growth of total revenue. Inflation has a significant impact on the growth of total revenue depicted by the positive sign. The value of the real effective exchange rate is 0.4091 and P-value is 0.30009. It indicates that it has an insignificant effect on the growth of total revenue. Finally, the government's final consumption expenditure value is 1.0863 having a P-value of 0.0117. It means that it has a significant and positive effect on the growth of total revenue. The increase in final expenditure by the government would result in multiplier effect, as government spending generates extra money to families, contributing to higher consumer spending. That in turn leads to increased business revenues, production, capital expenditures and employment opportunities which stimulate the economy and thus increased the GDP.



*Growth of Total Expenditure Growth*

Table 6.3: Long run Results for Total Expenditure Growth				
Variable	Model 1		Model 2	
	Coefficient	Prob.	Coefficient	Prob.
IMF Dummy	-3.414*	0.050	-9.115**	0.000
Balance of Payment % of GDP	0.000	0.135	-0.001***	0.001
Trade % of GDP	1.849***	0.006	----	----
Inflation Rate %	-0.443**	0.020	-0.421*	0.050
Real Exchange Rate %	-0.529	0.176	1.455***	0.000
Unemployment Rate %	-2.191***	0.003	0.424	0.280
Domestic Credit % of GDP	2.575*8	0.029	7.937***	0.002
Government Final Expenditures % of GDP	-1.961***	0.003	-0.325	0.294
FDI	----	----	3.274*	0.051
C	-4.638	0.273	2.317	0.644
Note: 1% (***), 5% (**), and 10% (*) significance level				

The table 6.3 determine the effects of IMF program on growth of total expenditure in Pakistan. The coefficient of IMF reflects the negative effect of total expenditures. It highlights an important factor of uses of IMF program. The government expenditure might reduce as fund program may be utilized for the previous repayments.

*IMF program and Economic Growth*

Independent Variables	Dependent Variable: GDPPC			
	Model 1		Model 2	
	Coefficient	Probability	Coefficient	Probability
IMF Dummy	-1.468**	0.015	-1.154**	0.038
Balance of Payment % of GDP	0.001***	0.000	0.001***	0.003
Trade % of GDP	0.062	0.216		
Inflation Rate %	-0.176***	0.004		
Real Exchange Rate %	0.927	0.088	2.371***	0.006
Unemployment Rate %			0.119	0.207
Domestic Credit % of GDP			-0.122**	0.020
Government Final Expenditures % of GDP			-0.046	0.608
C	0.610	0.612	1.893	0.608
Note: 1% (***), 5% (**), and 10% (*) significance level				

Table 6.4 elaborates the most important aspect of economic growth. The results in this table show the long run effects of participation in IMF program. Results support the literature that discuss the negative effects of IMF program (Conway (1994), Barro and Lee (2005), Hardoy (2003), Hakro & Ahmad (2006), Ozturk (2008), Binder, and Bluhm (2010)). The participation in IMF program to stabilize the economic could not achieve. On average we see a negative growth in this regard. The results in previous section provided evidence that the availing of Fund program do not increase the total expenditures significantly. The effects on the economic growth is consistent with the theory that, the use of funds is not productive. It might have been use mostly repayments by federal government or wasted in unproductive projects which eventually could not achieve the stabilization objective. Another explanation could be like this relationship can also be related to conditionalities linked to IMF policies that have a detrimental effect on economic development.

## 7. Conclusion

The study uses time series data to analyze the IMF program impact on the budget deficit, government revenue, expenditure and economic growth in Pakistan over the time period of 1980 to 2019. For this purpose the time series techniques are implied. Our findings in this study suggest that the coefficient of IMF dummy in the entire model is negative and statistically significant. Based on these analytical observations, the net impact of the IMF policy on Pakistan's economy is a decline in growth rate, indicating that Pakistan may have had a higher growth rate in the absence of the IMF. Explanation of this negative relationship can also be related to conditionalities linked to IMF policies that have a detrimental effect on economic development. It might have been use mostly repayments by federal government or wasted in unproductive projects which eventually could not achieve the stabilization objective. Another explanation could be like this relationship can also be related to conditionalities linked to IMF policies that may have adverse effect on economic growth.

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## APPENDIX

## Appendix I

**Table 6.I: Unit Root Test Results (AIC)**

Variable	ADF		P.P		Integrated Order
	Level	1 <sup>st</sup> difference	Level	1 <sup>st</sup> difference	Decision
TBDG	0.0000	0.0000	0.0000	0.0000	I(0)
TRR	0.0000	0.0000	0.0000	0.0000	I(0)
TEG	0.0003	0.0001	0.0003	0.0000	I(0)
IMF	0.0001	0.0007	0.0001	0.0000	I(0)
BOPCF	0.0005	0.0001	0.0000	0.0000	I(0)
TRADE	0.2753	0.0000	0.2552	0.0000	I(1)
DCREDIT	0.1074	0.0008	0.2919	0.0008	I(1)
INF	0.0096	0.0000	0.1338	0.0000	I(0)
UNE	0.4484	0.0000	0.4067	0.0000	I(1)
REX	0.5786	0.0230	0.8557	0.0000	I(1)
GFCEXP	0.5801	0.0016	0.6459	0.0015	I(1)
GDPPCG	0.0084	0.0004	0.0085	0.0000	I(0)
FDI	0.1069	0.0137	0.6355	0.0272	I(1)

5% and 10% significance level, respectively.

## 6.2 Lag Length Criterion

**Table 6.II: Lag Length Criteria**

Lag Length	Model 1		Model 2		Model 3	
	AIC	SIC	AIC	SIC	AIC	SIC
0	43.09939	43.79601	43.45595	44.15256	43.09003	43.78664
1	36.10703	39.59009*	36.63768	40.12074	36.33483	39.8179
2	35.51391	41.78343	36.05708	42.3266	35.76407	42.03359
3	30.91559*	39.97156	31.00764*	40.06361*	30.32291*	39.37888*

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
F-statistics	9.551	7.759	4.160
Lower bound I (0)	2.22	2.22	2.22
Upper bound I (1)	3.39	3.39	3.39
Cointegration	Yes	Yes	Yes
5% and 10% significance level			

### **Error Correction Model**

Following table 6.6 is showing the error correction models' table.

Variable	Coefficient	T-Statistics	Prob.
CointEq(-1)	-1.9503	-8.6038	0.0000
At 5% (**) and 10% (*) significance level			

Firstly, we look at the value of the error correction coefficient to explain the effects of short-run cointegration. This coefficient should be negative and meaningful, so we can assume that our independent and dependent variables are related for a long time. It means that there exists a long-run association between our independent and dependent variables.

The ECM value shows us the speed of the adjustment to the equilibrium change. In the view of a few studies, the ECM value should be between 0-2 but most studies suggest its value 0-1. The EC value should also be significant. Additionally, the error correction model should be negative. The EC value of the above model is negative and significant at 5%. Its probability value is 0.0000. From the above table we can interpret our result as the rate of change from the previous year of disequilibrium to the equilibrium of the current year is 195% percent and it is significant at the level of 5%.

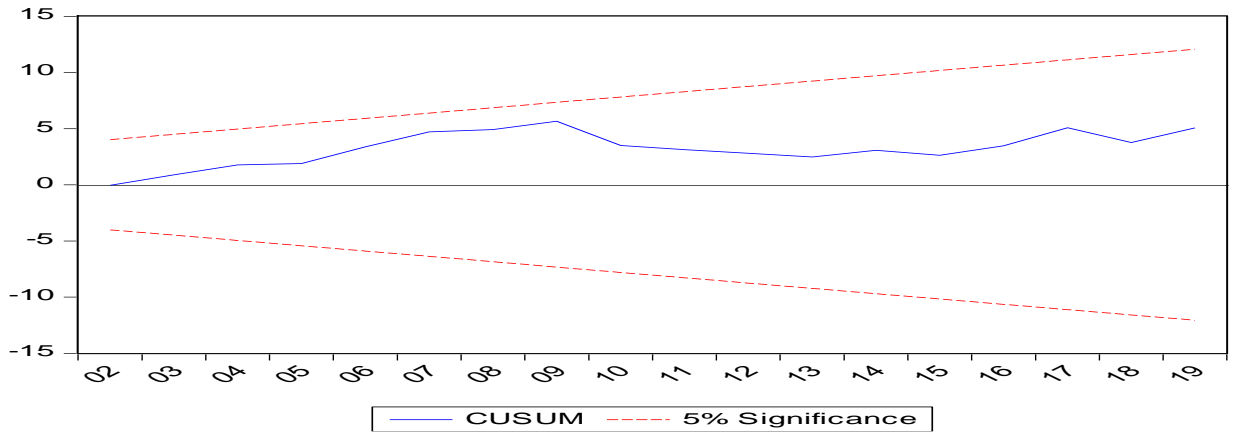
**Appendix II: Stability Test**

For stability CUSUM and CUSUMSQ tests have been applied in the study.

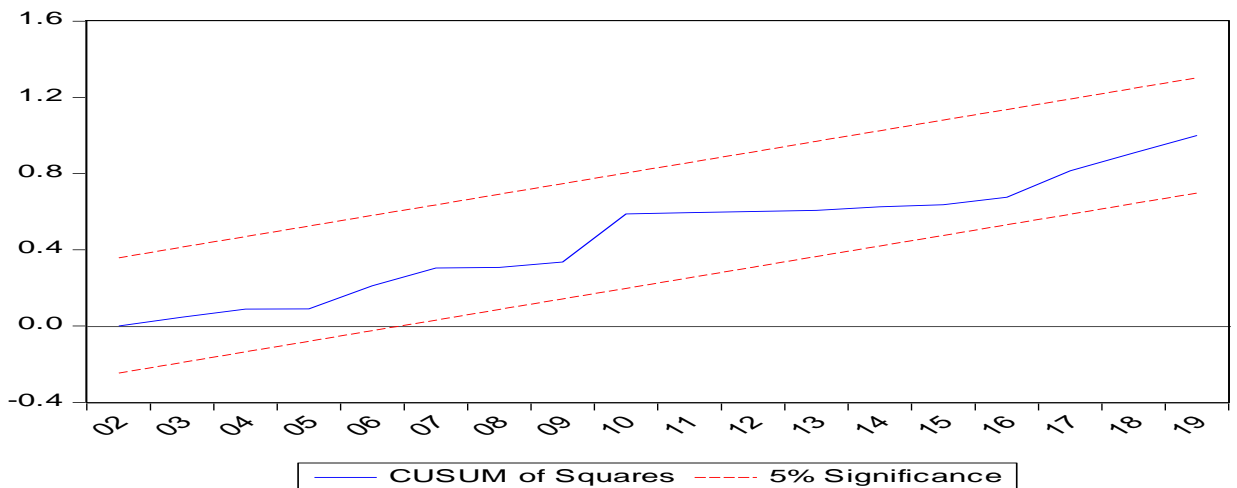
**CUSUM and CUSUMSQ TESTS**

Following figures 2 and 3 show the results of CUSUM and CUSUMSQ tests.

*Figure 1 CUSUM Result for Budget Deficit*



*Figure 2 CUSUMQ Result for Budget Deficit*



Brown et al first familiarized the CUSUM AND CUSUMSQ tests for stability parameters in econometric works. Al. (2007). First, we set the regression model's hypothesis for the correct specification. Test CUSUM and CUSUMSQ tell us about variables stability. It also tells us about whether there are structural breaks in the data or not. The findings suggest that the CUSUM and CUSUMSQ lie within the critical bound range of % significance level.

**Error Correction Model**

Following table 6.8 is showing the error correction models' table.

Variable	Coefficient	T-Statistics	Prob.
CointEq(-1)	-1.9835	-6.7399	0.0000
At 5% (**) and 10% (*) significance level			

In the above results, the rate of change from the previous year of disequilibrium to the equilibrium of the current year is 198% percent and it is significant at the level of 5%. The EC value of the above model is negative and the probability value is 0.0000.

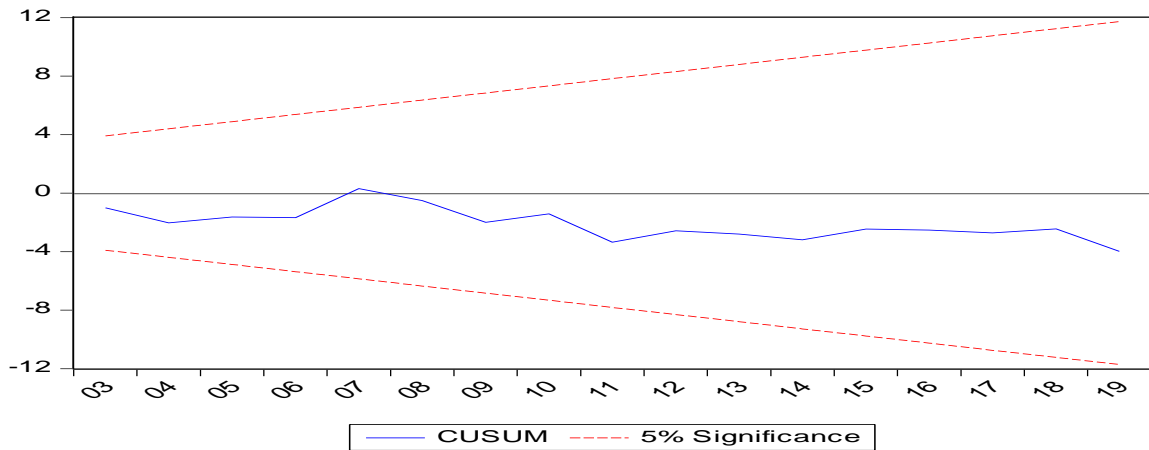
**Appendix III: Stability Test**

For stability CUSUM and CUSUMSQ tests have been applied in the study.

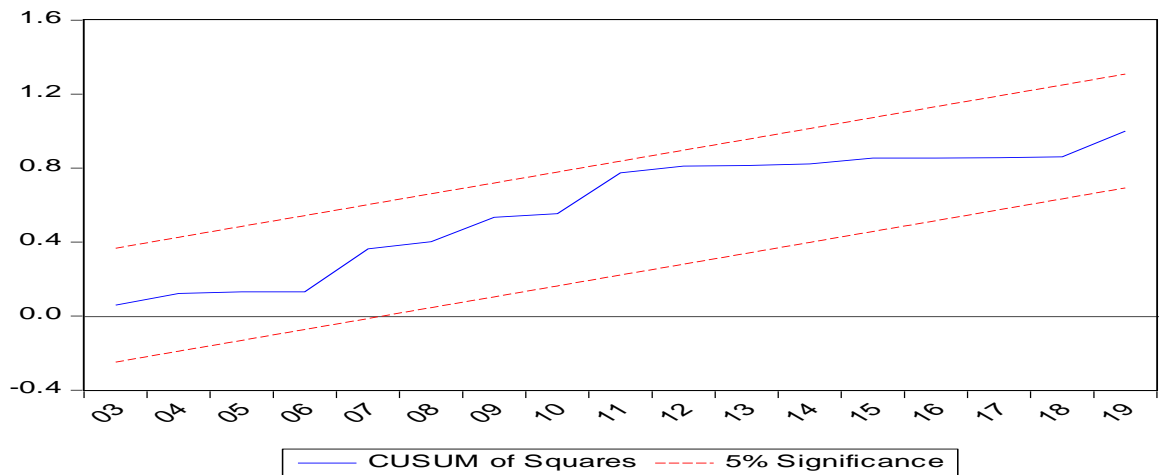
**CUSUM and CUSUMSQ TESTS**

Following figures 3 and 4 show the results of CUSUM and CUSUMSQ tests.

**Figure 3 CUSUM Results for Growth of Total Revenue**



**Figure 4 CUSUMQ Results for Growth of Total Revenue**



Tests CUSUM and CUSUMSQ are used to check the model's stability. Also, it helps one to check if the model has any structural break or not. If we look at the above disequilibrium to the equilibrium curves, all plots remain at a 5% significance level in critical boundaries. Hence, we can say whether the model is stable structurally or not.

**6.8 Cointegration Results for TEG**

This section explores the cointegration results for the Growth of total expenditure. Section 6.6.3.1 discusses long-run elasticities. Furthermore, 6.6.3.2 discusses the error correction model. Lastly, 6.6.3.3 elaborates on the stability test.

**Error Correction Model**

Following table 6.10 is showing the error correction models' table.

Variable	Coefficient	T-Statistics	Prob.
CointEq(-1)	-1.7296	-9.5790	0.0024
At 5% (**) and 10% (*) significance level			

The result indicated that the rate of change from the previous year of disequilibrium to the equilibrium of the current year is 172% percent and it is significant at the level of 5%. The EC value of the above model is negative and having probability value is 0.0024

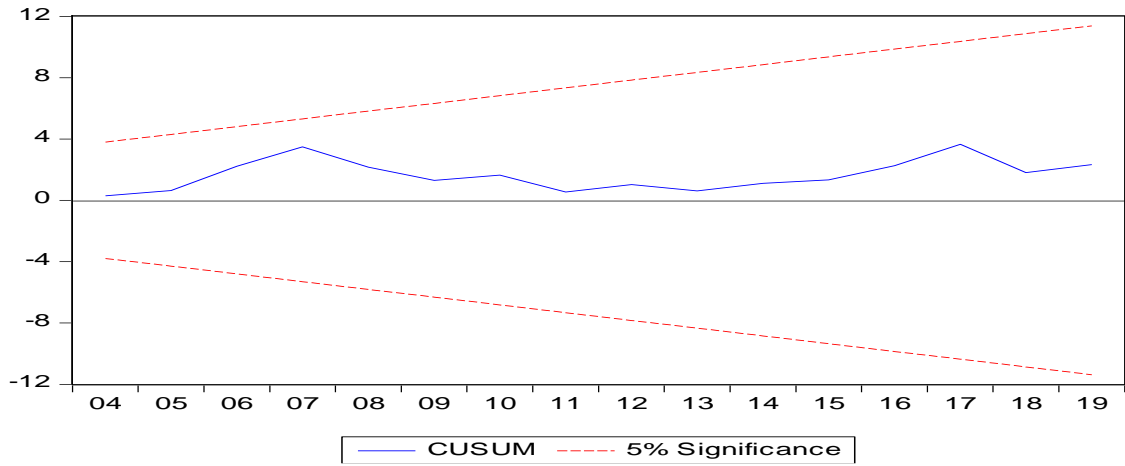
**Appendix IV: Stability Test**

For stability CUSUM and CUSUMSQ tests have been applied in the study.

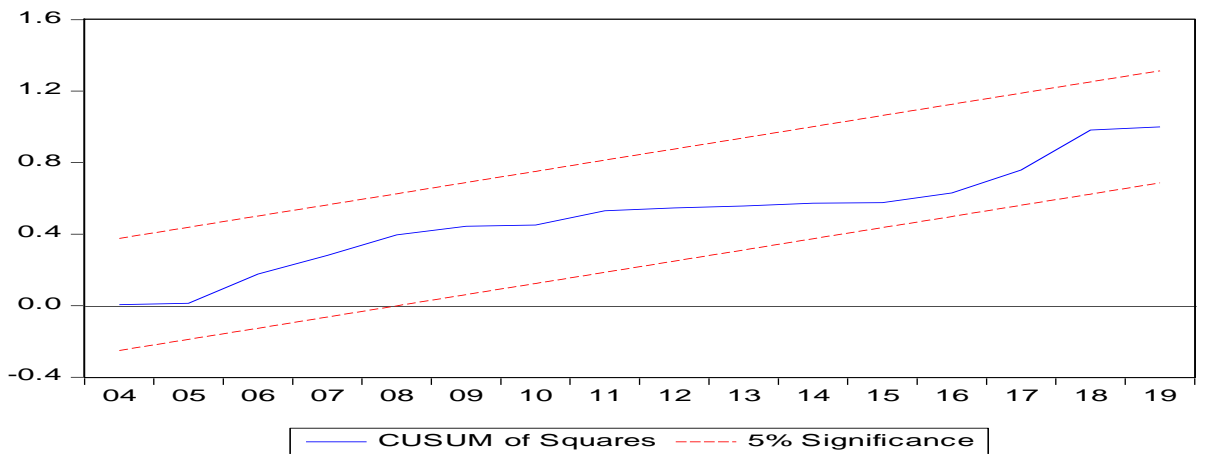
**CUSUM and CUSUMSQ TESTS**

Following figures 2 and 3 show the results of CUSUM and CUSUMSQ tests.

**Figure 5 CUSUM Results for Growth of Total Revenue**



**Figure 6 CUSUMQ Results for Growth of Total Revenue**



**6.9 Summary of ARDL Result**

This section explores the cointegration results of IMF on GDP per capita. The impact of the IMF program on GDP per capita growth is discussed in this section. Through the ARDL model. The Bound test result is as follows.

<b>Table 6.11: Bound Test Result</b>			
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
F-statistics	9.551	7.759	4.160
Lower bound I (0)	2.22	2.22	2.22
Upper bound I (1)	3.39	3.39	3.39
Cointegration	Yes	Yes	Yes
5% and 10% significance level			

Variable	Definition IMF Programs and Economic Growth Consequences in Pakistan	Source
Unemployment, total (% of the total labor force) (national estimate) (UNEMP)	“Unemployment refers to the share of the labor force that is without work but available for and seeking employment. Definitions of the labor force and unemployment differ by country”	International Labour Organization, ILOSTAT database. Data retrieved in March 2017.
GDP per capita growth (annual %)	“The annual percentage growth rate of GDP per capita is based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources”	World Bank national accounts data, and OECD National Accounts data files.
Inflation, consumer prices (annual %) (INF)	“Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used. “	International Monetary Fund, International Financial Statistics, and data files.
Balance of Payment (% of GDP)	“The current account balance is the sum of net exports of goods and services, net primary income, and net secondary income.”	International Monetary Fund, Balance of Payments Statistics Yearbook and data files, and World Bank and OECD GDP estimates.
Real effective exchange rate index (2010 = 100) (REX)	“The real effective exchange rate is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs.”	International Monetary Fund, International Financial Statistics.
Total expenditure as a percentage of GDP (TEGDP)	“TEGDP includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security but excludes government military	Economic Survey of Pakistan, Various issues



	expenditures that are part of government capital formation. Data are in constant local currency.”	
Trade (% of GDP)	“Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.”	World Bank national accounts data, and OECD National Accounts data files.
Domestic credit to the private sector by banks (% of GDP)	“Domestic credit to the private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit-taking corporations except for central banks), such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises.”	International Monetary Fund, International Financial Statistics, and World Bank and OECD GDP estimate.
Foreign direct investment, net inflows (% of GDP)	“Foreign direct investment is the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors and is divided by GDP.”	International Monetary Fund, International Financial Statistics and Balance of Payments databases, World Bank, International Debt Statistics, and World Bank and OECD GDP estimates.