Fiscal Policy and Macroeconomic Stability in South Asian Countries

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Abstract

The objective of this study is to examine relationship between fiscal policy and macroeconomic stability in South Asian countries. The study also aimed to find the channels through which fiscal policy leads to macroeconomic stability i.e. automatic stabilizers, discretionary fiscal policy and cyclical fiscal policy. For attaining these objectives the study used data from 1990 to 2014. The study used Pooled OLS and Instrumental Variable Least Square methodology. Results indicate that automatic stabilizers and discretionary fiscal policy have destabilizing impact on economy which leads to decrease in economic growth of developing economies. Cyclical policy plays an important role in stabilizing the economy and growth of a country. The study concluded that automatic stabilizers and discretionary policy are weak in developing economies. Government should use cyclical policy for macroeconomic stability in developing countries.

Keywords: Fiscal Policy, Macroeconomic Stability, Channels, Panel Data, South Asia

JEL: C23, E62, O11, O53

1. Introduction

The primary objective of any country is sustainable economic growth through effective use of policies. Fiscal policy is considered to be most vital stabilizing mechanism available to government when the economic growth is low in a country. Spending and revenues are adjusted by government in order to achieve the potential output level and effective distribution of resources and income. Debate on efficiency of fiscal policy as the stability instrument is discussed by recent studies on macroeconomic modeling and policy challenges. Fiscal policy plays significant part in economic growth of both developed as well as emerging economies. In the developed economies the objective of fiscal policy is to raise the rate of capital formation by reducing the level of consumption and increasing the marginal propensity to save. While in the developing economies, creation of equitable distribution of income and diversion of existing resources from unproductive to productive use is main target of fiscal policy (Popa and Codreanu, 2010). Sustaining aggregate demand during recession and restraining economic activity in boom leads to macroeconomic stability by fiscal policy. Fiscal Policy is used as major stability instrument by increasing number of economies when monetary policy become ineffective due to changes in monetary administration and worsening of financial condition. (Spilimbergo, 2008).

Macroeconomic stability results from three main fiscal channels which are automatic stabilizers, discretionary fiscal policy and cyclical fiscal policy. Automatic stabilizers i.e. income taxes and welfare spending are important stabilizing instrument of fiscal policy. The automatic stabilizers are considered to offset the fluctuations in the economic activity of country without interference of the government and policy makers. Income taxes and welfare spending that is used to reduce fluctuations in real GDP are feature of modern government budget. In time of recession size of budget deficit tend to increase which leads to increase in national income by maintaining aggregate demand. To reduce severity of recession this effect happens automatically depending on GDP and household income without any explicit policy action by the government. In time of booms automatic stabilizers tend to decrease in aggregate demand. Therefore fluctuations in a country's GDP tend to reduce by automatic stabilizers (Veld et al, 2010). Discretionary fiscal policy is second channel in which spending or taxes are adjusted by decision of governments in response to changes in economic activity. Cyclical fiscal policy is third channel in which

variation is occurred due to causes which are not under control of government (Debrun and Kapoor, 2010).

There has been increasing concern towards the significance of fiscal policy in setting the path of economic growth. Policy makers are more interested to find role of fiscal policy in macroeconomic stability. The literature on the fiscal policy and macroeconomic stability focused on different school of thoughts. First strand argued that there exist a negative association among the government size and macroeconomic stability (Li, 2010; Mohanty and Zampolli, 2009; Viren, 2005; Andres and Fatas, 2004; Fatas and Mihov, 1999; Gali, 1994). Koskela and Viren (2004) showed nonlinear relationship between government size and macroeconomic stability. Debrun et al. (2010) and Silgoner et al. (2003) explained that automatic stabilizers (government expenditure) are weak in developing economies and reduces the business cycle fluctuations by describing the channel (automatic stabilizers, discretionary fiscal policy and cyclical fiscal policy) through which fiscal policy contributes to the macroeconomic stability. Second strand suggested that automatic stabilizers play an important role in stabilizing output and macroeconomic stability and described that stabilization effect is larger where the social spending is higher (Furceri, 2010; Fatas and Mihov, 2012).

In sum the literature provides results for existence of both positive and negative relationships between fiscal policy and macroeconomic stability. However, there is limited research work on channels through which fiscal policy contributes to macroeconomic stability specifically in South Asian countries. The present study aims at filling this gap and providing empirical analysis of the channels through which fiscal policy contribute to macroeconomic stability. The goal of this study is to analyze the relationship between the fiscal policy and macroeconomic stability in South Asian countries from 1990 to 2014. The study has following specific objectives: to estimate the effect of major macroeconomic variables on macroeconomic stability, to analyze the following channels through which fiscal policy contribute to macroeconomic stability i.e. automatic stabilizer, discretionary fiscal policy, and cyclical fiscal policy.

The finding of this study will be useful to individual, corporate bodies, researchers and government agencies at large. The main significance of this investigation is to provide the essential evidence, information and better understanding to individual and researchers. At the level of corporate bodies it will help them to understand the way government conducts its

revenue and expenditure programs and to know how to respond to such programs and policies. It will also help the government to predict the impact of its revenue and expenditure on economy at large. It contributes to the current literature by examining the fiscal channels which leads to macroeconomic stability in South Asian countries. The main channels being studied are automatic stabilizers, discretionary fiscal policy and cyclical fiscal policy. The study is of much importance for analyzing the role of fiscal policy.

The structure of the paper is as follow: Section 2 of this study provides literature review on the fiscal policy and macroeconomic stability and channels through which fiscal policy contributes to macroeconomic stability. Model, methodology and data are discussed in section 3. Section 4 presents results. Conclusions and policy recommendations are discussed in section 5.

2. Literature Review

Theoretically and empirically fiscal policy plays an important role in development of an economy. Literature discussed the several dimensions of fiscal policy and channels through which fiscal policy contributes to macroeconomic stability. Sharp and Khan (1980) investigated the effectiveness of automatic stabilizers in United States. They used annual data from 1966 to 1975 and employed Ordinary Least Square. Results indicated that during the periods of expansion from 1966 to 1969 and 1970 to 1973 the automatic fiscal stabilizers in general made a substantial contribution to price and output stability however variations exist in the stabilizing impact of individual fiscal stabilizer. During the 1970 to 1973 expansion the automatic fiscal stabilizers behaved rather normally for offsetting price in a mild way. They concluded that it is important to separate out the effects of the automatic fiscal stabilizers on price and output especially during the periods of rising prices and falling output. Gali (1994) analyzed the association between government size and output variability in the real business cycle model. The study used annual data from 1960 to 1999 by adopting Ordinary least square regression for OECD economies. The model showed that income taxes and government purchases have destabilizing and stabilizing effect on economy respectively. He concluded that there exist negative association among government size and output volatility in real business cycle model.

Fatas and Mihov (1999) examined that whether there exist the relationship between government size and volatility of business cycle. The data used from 1960 to 1997 and employed OLS regression analysis for OECD countries. Results indicated that economy with large government

have stabilizing impact on output. This study concluded that government size and output volatility are negatively correlated.

Noord (2000) analyzed the effect of macroeconomic situation on components of government budgets to smooth the business cycle in individual OECD countries in 1990 and beyond by using the mechanical and production function approach. Results showed that automatic fiscal stabilizers reduced cyclical volatility in the 1990s. He concluded that by preventing sharp economic fluctuations and avoiding frequent changes in spending or tax rates fiscal stabilizers may raise long-term economic performance. Silgoner et al. (2003) examined the impact of fiscal stabilizers on business cycle volatility. He used data of EU countries for 1970 to 1999 and employed simple regression and instrumental variable least square. Results indicated that fiscal stabilizer reduced the business cycle fluctuation, this effect is insignificant when doing instrumental variable estimation to account potential endogeneity of government size. He concluded the fact that fiscal stabilizers are smoothed by size of government. Koskela and Viren (2004) analyzed the association between government size and output volatility. They used International data set for ninety one countries from 1980 to 1999 and employed panel regression analysis. Results indicated that OECD countries have non- linear negative association between output volatility and government size. They concluded that effect of government size and output volatility is significantly negative for high and small public sector countries.

Andresa et al. (2004) examined either less volatile economies are associated with large governments. They used annual data from 1960 to 1997 of OECD countries and employed DSG model with alternative RBC models for estimation. Results indicated that there exist negative relation between government size and volatility of output in other than real business cycle model. It showed that composition effect leads to stabilizing effect and is not present in the volatility of private output. They concluded that the effects of fiscal policy on the volatility of output could be imitated by the models with Keynesian features. Viren (2005) studied association among government size and output volatility. He used annual data from 1960 to 2002 and employed OLS and cross country regression analysis. Results indicated that there is no significant association among government size and automatic stabilizers. The study concluded that there government size and output volatility has no relation. It is also observable that rather than marginal taxes government size itself is not good stabilizing factor. Khalid et al. (2007) estimated the fiscal policy transmission mechanism and fiscal policy reaction function. They

used annual data of Pakistan from 1965 to 2006 and employed VAR and GMM methods for estimation. The results indicated that in boom fiscal policy is endogenous and pro-cyclical and it is inconsequential in down turn of the economy. In the recessionary periods government expenditures are anti-cyclical but have insignificant response in booms. In boom and recessions tax policy is pro-cyclical. This study concluded vibrant effects of shocks is important in budgetary components to macroeconomic variables for improving discretionary and cyclical responses.

Vladimirov and Neicheva (2008) estimated stabilizing role of government budget of Bulgaria. They used annual data from 1998 to 2004 during EU accession and employed Hodrick-Prescott filter (HP). Results indicated that government spending and taxes have negative relation with real gdp growth rate. The results imply that in case of a large government sector balanced budget does not guarantee a growth-stimulating effect but it ensures the sustainability of public finances. Mohanty (2009) examined the relationship between government size and output volatility in OECD countries. He used annual data from 1970 to 2008 and employed panel and cross sectional regression. Results indicated that government size has negative relation with output volatility. The study concluded that government size is negatively associated with severity of recession. Baunsgaard and Symansky (2009) investigated that whether automatic stabilizers can be enhanced without increase in government size. The data of OECD countries are used in this context by using elasticity approach. The results indicated that automatic stabilizers can increase without raising the size of government by the permanent changes in taxes and spending parameters and considered to be effective and might involve adverse side-effects.

Li (2010) explored the association between output fluctuations and government. The annual data from 1994 to 2007 is used by adopting OLS regression analysis. Results indicated that output volatility is not moderated by fiscal transfers and provincial budgetary revenues under tax assignment system. It indicated that in sharp contrast with the experiences of most developed countries like China central and provincial authorities do not use public spending as a main policy tool for reducing economic shocks. Furceri (2010) investigated the role of social spending in stabilizing output shocks. The data of OECD countries are used for time period 1980 to 2005 by employing GMM and GLS for analysis. Results showed that fifteen percent of shock to GDP is able to smooth by overall social spending. The study concluded that the large governments are directly proportional to stabilization effects. Debrun and Kapoor (2010a) found the empirical

association among fiscal policy and macroeconomic stability. The study used sample of 49 emerging and advanced countries for time period 1990 to 2006 by using panel regression with period fixed effect. Results indicated that between the mid-1990s and 2006 the moderating effect of automatic stabilizers are weak in advanced economies. Automatic stabilizers do not work in developing economies. Results shows that automatic stabilizers leads to stability and growth in developed countries. This study concluded that automatic stabilizers always contributes to macroeconomic stability in developed economies.

Ali and Ahmed (2010) explored that whether macroeconomic activities are effected by dynamic effects of fiscal policy in Pakistan. They used data from 1972 to 2008 and employed ADF, PP and Ng-Perron unit root tests and auto regressive distributed lag model. Results found existence of long run relationship in Pakistan. Expansionary fiscal contraction in Pakistan is due to coefficient of fiscal deficit. The results of error correction model suggest that overall fiscal deficit exert significant impact on economic growth in short run. The study concluded that the government needs to keep its budget deficit three to four percent of GDP otherwise the unjustifiable budget deficit could have adverse macroeconomic costs in achieving macroeconomic objectives of government. Thornton (2010) studied the association between output volatility and government size for emerging economies (EME). He used data from 1970 to 2001 and adapted cross section, combined cross section and time series regression analysis. Results indicated that the positive and statistically significant association among government size and output volatility. Conclusion shows that large government appeared to have destabilizing impact on emerging economies (EME). Debrun and Kapoor (2010b) estimated the role of government as shock absorber and shock inducer in advanced and emerging economies by using ordinary least square from 1970 to 2006. Results indicated that automatic stabilizers have stabilizing effect on economy. They concluded that fiscal stabilization occurs due to automatic stabilizers but fiscal policy systematically associated with pro and countercyclical fiscal policy.

Khan (2011) determined the effect of fiscal variables on economic growth in Pakistan. He used data for 1980-2009 and employed Johansen co integration, Error Correction Model and Granger Causality. Empirical results indicated that fiscal policy significantly effect economic growth and sustainability of country. Fiscal policy is more effective in long run while in short run controlled interest rate leads to sustained economic growth. Ismail and Hussain (2012) analyzed the effect of government spending on employment, inflation and output in Pakistan by using time series

regression analysis from 1971 to 2009. The results indicated that neither development expenditure nor current expenditures are influenced by change in economic activity, that's why the government spending remained insignificant for macroeconomic variables for inflation and output employment. The study concluded that loans should not be taken without recommendation of costs and benefits analysis. Fatas and Mihov (2012) estimated the behavior of cyclical fiscal policy among 23 OECD countries. Annual data from 1960 to 2010 and OLS regression analysis is used for estimation. Results showed that when discretionary fiscal policy employed in Anglo-Saxon economies it become aggressive. Results indicated that stabilization results from automatic changes in budget balance. They concluded countercyclical discretionary policy is used where automatic stabilizers does not work.

Audu (2012) evaluated relationship between fiscal policy and economic growth in Nigeria. The data from 1970 to 2010 and co-integration error correction mechanism is used for analysis. Results showed that there exist a significant causal association among exports and gross domestic product. The study concluded that fiscal policies have a substantial effect on the output growth of the Nigeria economy. Gnip (2013) analyzed the stabilization effects of fiscal policy in Croatia. He used annual data from 1966 to 2011 and employed vector autoregressive model. Results indicated that the fiscal transmission mechanism works mainly in a Keynesian manner. This study concluded that output reacts positively to government spending shock and negatively to a tax shocks. The effect of the tax shock and government spending shock is stimulated by indirect taxes and government consumption and investment respectively and the effect of the latter is more significant when response of private consumption and private investment are observed. Risquete and Ramajo (2015) studied the fiscal policy effects on Spanish economy. They used annual data from 1978 to 2009 and employed VECM specification. Results showed that response of the Spanish real GDP to total government receipts is positive. In contrast total government expenditure is positive in the short run but negative in the medium to long run. This study concluded that government expenditure is decreased either by discretionary decision of authorities or by operation of automatic stabilizers.

Fiscal policy plays an important role in macroeconomic stability and growth of both developed and developing countries. Structures of both developed and emerging countries are different so the role of fiscal policy is also different. Objective of fiscal policy in emerging economies is diversion of existing resources from unproductive to productive. Hence fiscal policy must be

blended with planning for expansion in developing countries. Most of the literature discussed the role of fiscal policy and macroeconomic stability in both developed and developing countries. But there are limited studies on South Asian countries which discussed the fiscal policy and macroeconomic stability through channels.

3. Model, Methodology and Data

3.1 Model

According to the Keynesian theory (1936) in order to move aggregate demand curve for reducing output gap government works through taxes and government spending. Keynes assumed that for achieving the potential level of output and full employment level government intervention is necessary especially when economy operate below the potential level of output. Keynes proposed that during the period of recession the government should increase the spending and decrease the taxes not only to stimulate the growth of economy but also to provide more disposable income for household due to which aggregate demand stimulate. Structural budget deficit is a tool for measuring effectiveness of fiscal policy. According to Haavelmo theorem the fiscal multiplier is equal to one in economy with balanced government budget. Effectiveness of discretionary policy is decreased through balanced budget. So government can reduce effectiveness of discretionary policy by balancing the budget.

The IS-LM model developed by Harrods (1937), Hicks (1937), and Meade (1937) illustrates the Keynesian approach to fiscal policy. According to Keynes by removing gap between aggregate demand and supply full-employment level can be achieved. In short run decrease in demand leads to increase in unemployment of economy. On the other hand increase in aggregate demand push the economy to a high level of employment due to which IS curve shifts to the right. An increase in aggregate demand is due to increase in government expenditures. Full employment level and upward shifts in aggregate demand could be achieved more effectively by expansionary fiscal policy. Keynes suggested that relationship between government expenditure, income and employment can be explained by theory of investment multiplier. Thus Keynes encouraged intervention of government through the use of countercyclical fiscal policies. He suggested that expansionary and contractionary fiscal policy operates, when economy suffers from recession (decrease in aggregate demand causes to increase in unemployment), and economy enters in to boom (Increasing taxes and cutting back government outlays to control

inflation) respectively. He argued that in long run we all are dead so governments should solve problems in the short run rather than waiting for market forces to do it in the long run. Able and Bernanke (2008) describe the basic output as:

$$\boldsymbol{Y = C + I + G} \qquad \textbf{(3.1)}$$

Where, Y is output, C is consumption, I is investment, and G is government expenditure

Crowding out effect discussed that increase in budget deficit leads to decrease in investment. This statement is based upon the following equality:

$$\boldsymbol{DS = PI + GD + CA} \qquad \textbf{(3.2)}$$

Where, DS is domestic savings, PI is private investment, GD is government deficit, and CA is current account surplus (or minus current account deficit).

There are three channels which is discussed by fiscal policy i.e. automatic stabilizers, discretionary fiscal policy and cyclical fiscal policy. By means of demand multipliers automatic stabilizers are used to dampen the fluctuations of real GDP (Furceri, 2010; Fatas and Mihov, 2011). Automatic stabilizers i.e. taxes and transfers that are used to dampens economic fluctuations. Automatic stabilizers measure to what extent cyclical fluctuations effects public revenues and expenses. Automatic stabilizers effecting the economy through different transition mechanism (Debrun and Kapoor (a), 2010; Silgoner et al., 2003). For expanding or contracting the level of aggregate demand discretionary fiscal policy includes taxes and general government spending. Large time lags are involved in discretionary measures, which are necessary to produce decision through approval of parliament (Perotti, 2002). Cyclical fiscal policy includes variation occurred due to causes which are not in direct control of government.

3.2. Methodology

3.2.1. Econometric Model

The study has basic econometric model which is based on effect of major macroeconomic variables on macroeconomic stability. The dependent variable is output volatility which is measured by standard deviation of real gdp growth rate. A number of explanatory variables are also introduced in this model. The second econometric model is constructed to access the channels through which fiscal policy contributes to macroeconomic stability. A modified version

of basic econometric model is used for channels and list of control variables are also included in the model. The study aimed at investing three channels i.e. automatic stabilizers, discretionary fiscal policy and cyclical fiscal policy. The study used POLS and IVLS estimation techniques as methodology. The first subsection of this section describes basic econometric model and second subsection describes the econometric models for channels.

3.2.1.1. Effect of Major Macroeconomic Variables on Macroeconomic Stability

Basic model investigates effect of major macroeconomic variables on macroeconomic stability. Following Debrun and Kapoor (2010) and Mohanty (2009) the econometric model is as follows:

$$Y_{it} = \alpha_0 + \alpha_1 FD_{it} + \alpha_2 TO_{it} + \alpha_3 RGDPG_{it} + \alpha_4 CS_{it} + \alpha_5 GDPPC_{it} + \alpha_6 CTOT_{it} + \mu_{it} \quad (3.3)$$

Where, Y is output volatility, TO is trade openness, FD is financial development, CS is country size, CTOT is changes in terms of trade, GDPPC is gross domestic product per capita, RGDPG is real gdp growth rate, and μ is error term.

3.2.1.2. Model for Channels

The second empirical models are used for investigating the role of channels with the help of which fiscal policy contributes to macroeconomic stability. The variables of channels are treated as independent variable while output volatility is dependent variable. The study first investigates the effectiveness of automatic stabilizers, secondly the role of discretionary and thirdly part of cyclical fiscal policy in macroeconomic stability. Debrun and Kapoor (2010) studied association between the fiscal policy and macroeconomic stability and described the channels through which fiscal policy leads to macroeconomic stability. Fatas and Mihov (2011) analyzed cyclical behavior of fiscal policy in OECD countries. Li (2010) studied relationship between government size and macroeconomic stability. Mohanty (2009) investigated the potential role of government size in explaining the differences in output volatility in the context of last recession. Baunsgaard and Symansky (2009) studied how to enhance the role of automatic stabilizers without increasing the size of government. Nicheva and Vladimirov (2008) tested the stabilizing role of fiscal policy. Viren (2005) and Koskela and Viren (2004) studied whether there exist relationship between the government size and output volatility. Andresa (2004) studied the stabilizing role of government size. Silgoner (2003) found the smoothing impact of fiscal stabilizer on business

cycle. Fatas and Mihov (1999) studied the role of automatic stabilizers by finding the relationship between government size and volatility of business cycle. Sharp and Khan (1980) studied the effectiveness of automatic stabilizers in United States. Gali (1994) studied the effects of government size on output volatility in the context of real business cycle model. Cyclical policy has examined by Wyplosz (2006) and Fatas and Mihov (2011) in which they examined how cyclical fiscal policy serve as important channel for macroeconomic stability and analyze the empirical behavior of fiscal policy respectively.

3.2.1.2.1. Automatic Stabilizers

The first channel that the study targets to investigate is automatic stabilizers. Automatic Stabilizers act as an important channel for macroeconomic stability. Without intervention of government and policymakers automatic stabilizers are designed to offset the fluctuation in the economic activity. However majority of studies investigated role of automatic stabilizers. Majority of literature found the relationship between the government size and output volatility. The relationship between the government size and output volatility is used as evidence for contribution of automatic stabilizers. Automatic stabilization occurs because tax revenues tend to be proportional to national income and expenditure, whereas public spending reflects the government commitments independent of business cycle specifically designed to support the spending during downturns including unemployment benefits and other component of GDP is more volatile than government consumption, composition effect of domestic expenditure contributes to output volatility by public sector.

Following Debrun and Kapoor (2010), Viren Matti (2005) and Khan (2011) the effectiveness of automatic stabilizers find by following equation:

$$\boldsymbol{Y_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 TO_{it} + \beta_3 RGDPG_{it} + \beta_4 CS_{it} + \beta_5 GDPPC_{it} + \beta_6 CTOT_{it}} \\ \boldsymbol{+\beta_7 AS_{it} + \beta_8 X_{it} + \mu_{it}} \qquad \textbf{(3.4)}$$

Where, Y is output volatility, TO is trade openness, FD is financial development, CS is country size, CTOT is changes in terms of trade, GDPPC is gross domestic product per capita, RGDPG is real gdp growth rate, AS is automatic stabilizers, and μ is error term. X is list of control variables which includes inflation (Inf), exchange rate (Exc), gross fixed capital formation (GFCF), political crises (ME) and structure of economy (SA).

3.3.1.2.2. Cyclical Fiscal Policy

The second channel of fiscal policy that leads to macroeconomic stability is cyclical policy. Changes in actual or predictable cyclical condition of economy is linked with effectiveness of fiscal policy. Cyclical fluctuation is mitigated by stabilization power of fiscal policy. But fiscal policy tends to be pro-cyclical expanding in booms and contracting in recessions in emerging economies. The actual or expected cyclical condition of economy is due to effectiveness of cyclical fiscal policy. Two dimensions of fiscal policy related to analysis is reflected by CAB (cyclical adjustment balance). Following Debrun and Kapoor (2010) and Wyplosz (2006) the cyclical features of fiscal policy can be measured by following equation.

$$\boldsymbol{CAB = \alpha + \beta y_{it} + \gamma CAB_{t-1} + \mu_{it}} \quad \textbf{(a)}$$

Deviation of actual gdp from an HP trend is used to calculate output gap y_{it}

$$\boldsymbol{CAB = b - gy} \quad \textbf{(b)}$$

Where, y is output gap in percentage of trended output y= [(Y-Y*)/(Y*)], b is the total revenue as percentage of GDP, gy is cyclical balance

The role of cyclical fiscal policy in macroeconomic stability is estimated by following equation.

$$\boldsymbol{Y_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 TO_{it} + \beta_3 RGDPG_{it} + \beta_4 CS_{it} + \beta_5 GDPPC_{it} + \beta_6 CTOT_{it} + \beta_7 cyclical_{it} + \beta_8 X_{it} + \mu_{it}} \quad \textbf{(3.5)}$$

Where, Y is output volatility, TO is trade openness, FD is financial development, CS is country size, CTOT is changes in terms of trade, GDPPC is gross domestic product per capita, RGDPG is real gdp growth rate, GS is government size, Cyclical measure is used for cyclical fiscal policy, and μ is error term. X is list of control variables which includes inflation (Inf), exchange rate (Exc), gross fixed capital formation (GFCF), political crises (M.E) and structure of economy (SA).

3.3.1.2.3. Discretionary Fiscal Policy

The third channel of fiscal policy that the study targets to explore is discretionary policy which leads to macroeconomic stability. The discretionary policy plays an important role in macroeconomic stability when the economic growth is low in the country. Discretionary policy

is examined by Debrun and Kapoor (2010) who described the relationship between the discretionary policy and output volatility.

Increased government spending leads to immediate increase in demand is advantage to use fiscal policy over monetary policy. The effect of tax cut in economy may be moderate because individuals may not spend increased disposable income immediately. Ideally fiscal policy will be used to increase aggregate demand during recessions and to confine aggregate demand during boom times. As in developing economies economic growth is low and it is always in fluctuations so discretionary policy is effective tool to increase growth in economy.

Following Debrun and Kapoor (2010) indicators of discretionary fiscal policy can be estimated by following equation.

$$\boldsymbol{CAB_{it} = \alpha + \beta y_{it} + \gamma CAB_{t-1} + \mu_{it}} \quad \textbf{(a)}$$

The variability (standard deviation) of residual is used to calculate exogenous discretionary policy:

$$\boldsymbol{u_{it} = CAB_{it} - \alpha - \beta y_{it} - \gamma(CAB_{t-1})} \quad \textbf{(c)}$$

Where, y is output gap in percentage of trended output y=(Y-Y*/Y*) , CAB = b-gy, b is the total revenue as percentage of GDP, gy is cyclical balance

The role of discretionary fiscal policy in macroeconomic stability is estimated by following equation:

$$\boldsymbol{Y_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 TO_{it} + \beta_3 RGDPG_{it} + \beta_4 CS_{it} + \beta_5 GDPPC_{it} + \beta_6 CTOT + \beta_7 Discretionary_{it} + \beta_8 X_{it} + \mu_{it}} \quad \textbf{(3.6)}$$

Where, Y is output volatility, TO is trade openness, FD is financial development, CS is country size, CTOT is changes in terms of trade, GDPPC is gross domestic product per capita, RGDPG is real gdp growth rate, Discretionary measure is used for discretionary fiscal policy, and μ is error term. X is list of control variables which includes inflation (Inf), exchange rate (Exc), gross fixed capital formation (GFCF), political crises (M.E) and structure of economy (SA).

3.2.2. Panel Data Framework

The study employs Panel data framework for several reasons. The panel data is usually preferred over time series or conventional cross sectional data because panel data estimation takes

heterogeneity into account and gives cross section specific effects. In panel data different cross section can be used for better results. In panel data large sample sizes are used which increases the reliability of results and can generate more robust estimates. Panel data is used to handle the outliers of any country due to large number of observations. More information, more variability, less co-linearity among the variables, more degrees of freedom and more efficiency are given by panel data. Dynamics of adjustments are well treated by panel data. Panel data is used to identify the effects that is ignored by cross-sections or pure time-series data. Due to all these advantages this study used panel data for estimation of models (Gujarati, 2005; Wooldridge, 2010; Baltagi 2013).

There are three possible ways to estimate model that possesses panel data characteristics. The first method of estimation is pooled OLS (POLS) which is used in this study in which model is estimated as one grand model. The second estimation technique is fixed effect least square dummy variable model. In this estimation technique all the variables are pooled together but each cross section has its own intercept. As the model contains the time invariant variable the drawback of using this method is that it drops out time invariant variable during the estimation. As the data suffers from endogeneity and omitted variable biasedness so the fixed effect least square model does not deal with these problems. The third model that can be used for estimation is random effect model for panel data analysis. In this model cross section specific characters are assumed to be the part of random term. As the number of cross section in this study is less than number of time series so this estimation technique is not favorable.

3.2.2.1. Instrumental Variable Least Square (IVLS)

Philip G. Wright (1928) first introduced the concept of instrumental variables. IVLS is extension of OLS. It is used when there exist correlation between the dependent variable's error terms and independent variables. It is used to resolve the following problem in POLS i.e. omitted variable biasedness, simultaneous causality bias, and endogeneity. Instrumental variable is used to address the above important threats to internal validity. As the data used in the study has problem of endogeneity and omitted variable biased. Therefore estimation by POLS would yield biased and inconsistent results therefore IVLS is preferred over POLS.

3.3. Data

The study uses data for South Asian countries i.e. Bangladesh, India, Pakistan, and Sri Lanka from 1990 to 2014 at annual frequency. Due to the unavailability of data for all South Asian countries the study focuses on only four countries. The main sources of data are "International Financial Statistics Yearbook" published by International Monetary Fund, "Key indicators of Asia and Pacific" published by Asian Development Bank and "World Development Indicators" published by the World Bank and some official government data sources are used. Detailed description of variables and their sources are given in appendix A.

4. Results

4.1. Effect of Major Macroeconomic Variables on Macroeconomic Stability

The basic empirical model starts with investigating the effects of major macroeconomic variable on macroeconomic stability in South Asian countries. Table 4.1 discussed the results of Pooled OLS (POLS) in which dependent variable is output volatility while independent variables are financial development, trade openness, real gdp growth rate, country size and changes in terms of trade. Results of POLS show that country size, financial development and trade openness has positive and significant relation with output volatility, while changes in terms of trade has positive and insignificant relation with output volatility. Real gdp growth rate has negative and insignificant impact on output volatility. For checking the problem of misspecification Ramsey RESET test for omitted variable is applied. Results of Ramsey RESET misspecification test for omitted variable reject null hypothesis that there is no omitted variable in the model. The model shows the relationship between real gdp growth rate and output volatility in both directions it shows that correlation exists between independent variable and error term. So the POLS gives biased and inconsistent results. Due to problem of endogeneity instrumental variable least square is used. For checking the endogeneity, Hausman test is applied. Endogeneity (Wu-Hausman) test accept the null hypothesis that variables are exogenous. So the results of IVLS is preferred over POLS. For removing the problem of endogeneity in IVLS following instrumental variables are added i.e. changes in terms of trade, real gdp growth rate, country size, financial development, and gdp per capita are used. Results of equation 3.3 with IVLS, Wu-Hausman test and Ramsey RESET misspecification test is reported in table 4.1.

Results of IVLS shows that trade openness has positive and statistically significant effect on output volatility. Trade openness increases the output volatility in emerging economies as countries are more integrated to world economy with increasing trade. Increase in trade openness leads to greater specialization making the economy more vulnerable to external (sectoral) shocks. Therefore trade openness has destabilizing effect on the economic growth. Mohanty (2009), Viren and Matti (2005), Silgoner (2003) and Fatas and Mihov (2012) also find positive relation between trade openness and output volatility.

Table 4.1: Effect of Major Macroeconomic Variables on Macroeconomic Stability

Dependent Variable: Standard Deviation of Real GDP growth rate		
Independent Variables	**POLS**	**IVLS**
Constant	-1.686562 (1.274854)	2.946958*** (0.506605)
Trade Openness	1.584763*** (0.295891)	0.602749*** (0.200620)
Financial Development	1.027030*** (0.348315)	0.121469 (0.111403)
Changes in terms of trade	0.294912 (0.405366)	-0.015262 (0.100179)
Real GDP growth rate	-0.034557 (0.026194)	- 0.010719* (0.006356)
Country Size	0.213784* (0.124212)	- 0.142710*** (0.048761)
R-squared	0.358270	0.965844
Ramsey RESET Misspecification Test	5.68 [0.0013]	…….
Wu-Hausman Test	……..	0.269417 [0.6050]

*Note: Standard errors are reported in parenthesis. ***, ** and * represents 1%, 5% and 10% significance level respectively. P-values are reported in brackets [ ].*

Results show that financial development has statistically insignificant and positive relation with output volatility. This suggests that despite the rise in degree of legal independence, inflationary credentials take time to build. So the financial development is unrelated to stabilize the economy. Changes in terms of trade has negative and insignificant relation with output volatility. This negative impact might be the result of large quantities of imports compared to the quantity of exports to and from the developing countries. Changes in terms of trade has stabilizing effect on economy also found by Mohanty (2009). Real gdp growth has negative and significant relation with output volatility and have stabilizing effect on economy. Decrease in investment leads to

decrease in economic growth which is due to the increased uncertainty about future returns associated with output volatility. Decreasing economic growth leads to increase in output volatility. Koskela and Viren (2004) and Debrun and Kapoor (2010) also found negative relationship between real gdp growth rate and output volatility. Results show that country size has negative and significant relation with output volatility. The stabilizing effect of country size on economy is also found by Debrun and Kapoor (2010).

4.2. Results of Models for Channels

The study further investigates the channel that are medium through which fiscal policy contributes to macroeconomic stability. The first channel is automatic stabilizers the second channel is cyclical fiscal policy and third channel is discretionary fiscal policy. The models for channels are formulated on the basis of basic model by taking desired channel under consideration as independent variable.

4.2.1. Role of Automatic Stabilizers

The first channel of fiscal policy which leads to macroeconomic stability is automatic stabilizers. Table 4.2 discussed the results of POLS in which dependent variable is output volatility while government size (proxied for automatic stabilizer), country size, trade openness, political crisis, gdp per capita, financial development, real gdp growth rate, share of agriculture and changes in terms of trade is incorporated as independent variable. . Results of POLS shows that country size, political crises, gdp per capita, financial development, structure of economy and automatic stabilizers has statistically significant and positive impact on output volatility while real gdp growth rate has positive and insignificant impact on volatility. Changes in terms of trade and trade openness has stabilizing impact on economy and negative relation with output volatility. For checking the problem of misspecification Ramsey RESET misspecification test for omitted variable is applied. Results of Ramsey RESET misspecification test for omitted variable reject null hypothesis that there is no omitted variable in the model. The model shows the relationship between trade openness and output volatility in both directions which shows that error term and independent variable are correlated. So the estimation by POLS would yield biased and inconsistent estimates of the structural parameters. IVLS is used for removing the problem of endogeneity. For checking the endogeneity Hausman test is applied. P-value of endogeneity (Wu-Hausman) test suggested to accept null hypothesis that variables are exogenous. So the

results of IVLS is preferred over POLS. In IVLS for removing the problem of endogeneity instrumental variables inflation, official exchange rate, gross fixed capital formation and changes in terms of trade are added. The list of control variables i.e. political crisis, structure of economy, inflation, official exchange rate and gross fixed capital formation are also added in this model. Table 4.2 reports the results of equation 3.4 with IVLS, Wu-Hausman Test, Ramsey RESET misspecification test.

Table 4.2: Role of Automatic Stabilizers

Dependent Variable: Standard Deviation of Real GDP growth rate		
Independent Variables	**POLS**	**IVLS**
Constant	-4.147151*** (0.539553)	-3.235985** (1.255052)
Country size	0.392560*** (0.046830)	0.439016*** (0.117781)
Trade Openness	-1.186158*** (0.219892)	-0.414596*** (0.127786)
Political crisis	8.921801*** (1.375613)	-215.0933 (156.1215)
GDPPC	0.009879** (0.004082)	-0.016831*** (0.004465)
Financial Development	0.699408*** (0.133075)	9.668622* (5.489792)
Real gdp growth rate	4.60E-06 (0.009523)	-0.001726 (0.003806)
Structure of Economy	0.011736* (0.006568)	0.009178*** (0.002974)
Automatic Stabilizers	8.084429*** (0.486779)	1.544934** (0.684086)
Changes in terms of trade	-0.392036 (0.146408)	-0.000754 (0.000565)
R- Squared	0.923835	0.993067
Ramsey RESET Misspecification Test	102.36 [0.0000]	……
Wu-Hausman Test	……..	1.96254 [0.1647]

*Note: Standard errors are reported in parenthesis. ***, ** and * represents 1%, 5% and 10% significance level respectively. P-values are reported in brackets [ ].*

Basic model is parsimonious version. This section expanded the basic model to include the key determinants of fiscal policy which lead to macroeconomic stability. Due to the presence of missing variables contradictory results are obtained than the basic model. Results of IVLS shows

that Country size, financial development, structure of economy and automatic stabilizers has positive relation with output volatility. While trade openness, Political crisis, GDP per capita, real gdp growth rate and changes in terms of trade has negative relation with output volatility. Results of IVLS shows that due to the effect of automatic stabilizers trade openness has negative relation with output volatility. Trade openness stabilize economy due to the ever growing importance and magnitude of financial inflows. More open economies might be less credit constrained and therefore be able to smooth fluctuations more easily in economy. Negative relation between trade openness and output volatility is also found by Li (2010) and Silgoner (2003).

Results shows that automatic stabilizers has destabilizing effect on the output volatility. Theory suggests that without intervention of policy makers automatic stabilizers are used to offset the fluctuation in economic activity. When there is fluctuation in economy then automatic stabilizers immediately respond without intervention of government. But the results shows that automatic stabilizer increases output volatility and have destabilizing impact on growth. It means that automatic stabilizers are weak to stabilize developing economy. When automatic stabilizers work in developing countries it hurts economic growth and increases the fluctuation in the economy. Thronton (2010) and Noord (2000) also found positive relation with automatic stabilizers and output volatility. Structure of economy has statistically significant and destabilizing impact on output volatility. The destabilizing impact of structure of economy is also found by Viren and Matti (2005) and Koskela and Viren (2004). Results show that GDP per capita plays significant role in stabilizing the economy. Debrun and Kapoor (2010) also find the negative association between gdp per capita and output volatility. Results show that political crises has negative effect on output volatility and have stabilizing impact on economy.

4.2.2. Role of Cyclical Policy

Cyclical policy is second channel which leads to macroeconomic stability. It deals with changes in expected or cyclical condition of economy. Variable which has no variation is time invariant. Cyclical policy is time invariant variable and remains constant for the period under discussion. Cheng and Wall (2005) proposed a method to measure time invariant variable. It can be made possible only by bringing individual effect in to use. The fixed effect model gives country specific individual effects covering all factors remaining constant over time. The study implies

additional Regression for including time invariant variable in estimation. The idea is to regress the individual country effect on time invariant variable.

Table 4.3 discussed the results of equation 3.5 with POLS and IVLS. In POLS the dependent variable is output volatility and independent variables are gdppc, real gdp growth rate, financial development, country size, and changes in terms of trade, political crises, trade openness, cyclical policy, and official exchange rate. While in IVLS inflation, structure of economy is treated as instrumental variables.

Table 4.3: Role of Cyclical Policy

Dependent Variable: Standard Deviation of Real GDP growth rate		
Independent Variables	**POLS**	**IVLS**
Constant	8.055403*** (0.837538)	-24.01001** (9.549945)
GDP Per Capita	0.016373*** (0.004778)	-0.090192*** (0.030962)
Real GDP growth rate	-0.003207 (0.009622)	-0.011171 (0.009388)
Financial Development	-0.346701** (0.145925)	-0.171372 (0.202920)
Country Size	-0.649160*** (0.074539)	2.534356*** (0.937396)
Changes in terms of trade	0.002904** (0.001452)	-0.000449 (0.001457)
Political Crisis	-16.63887*** (2.457730)	5.090228 (4.376751)
Official Exchange Rate	-8.30E-05 (0.001327)	-0.007057** (0.002867)
Trade Openness	0.018447*** (0.001296)	-0.023967** (0.009187)
Cyclical Policy	-1.697510*** (0.092437)	-0.586696** (0.270302)
R-square	0.922532	0.930380
Ramsey RESET Misspecification test	52.38 [0.0000]	---------
Wu-Hausman	----------	18.848 [0.0000]

*Note: Standard errors are reported in parenthesis. ***, ** and * represents 1%, 5% and 10% significance level respectively. P-values are reported in brackets [ ].*

Results of POLS shows that real gdp growth rate, financial development, political crisis, official exchange rate, country size and cyclical policy has negative relation with output volatility while changes in terms of trade and trade openness has positive relation with output volatility. Results

of POLS shows that there exist the problem of omitted variable biasedness. For checking the problem of misspecification Ramsey RESET test for omitted variable is applied. Results of Ramsey RESET misspecification test reject null hypothesis that there exist no omitted variable in the model. The model indicates the relationship between trade openness and output volatility which shows that correlation exist between independent variable and error term. So POLS gives biased and inconsistent estimates of parameters. For checking the problem of endogeneity Hausman is applied which accept null hypothesis that variables are exogenous. So results of IVLS is preferred over POLS. In IVLS for removing the problem of endogeneity instrumental variable inflation and structure of economy is added. Results of Wu-Hausman Test and Ramsey RESET misspecification Test is reported in table 4.3.

Results of IVLS shows that gdp per capita, financial development, real gdp growth, changes in terms of trade, official exchange rate, trade openness and cyclical policy has negative relation with output volatility while political crisis and country size has positive relation with output volatility and have destabilizing impact on economy. Political crisis has positive relation with output volatility and have destabilizing impact on economy. Financial development has stabilizing impact on economy. Increase in financial development leads to decrease in fluctuation of output which cause to increase in growth of economy. Cyclical policy has negative relation with output volatility. When the variation is occurred in economy which is not under the control of government then fluctuation in output volatility decreased which causes to increase the economic growth. Debrun and Kapoor (2010) also find negative relationship between cyclical policy and output volatility.

4.2.3. Role of Discretionary Policy

The third channel which is incorporated as important channel for macroeconomic stability is discretionary fiscal policy. Table 4.4 shows the results of equation 3.6 with POLS in which dependent variable is output volatility while independent variable is gdp per capita, trade openness, political crisis, financial development, real gdp growth rate, official exchange rate, changes in terms of trade and discretionary policy Results of POLS shows that gdp per capita, financial development, real gdp growth rate and official exchange rate has negative relation with output volatility while changes in terms of trade, country size, discretionary policy, political crises and trade openness has positive relation with output volatility.

For checking the problem of misspecification Ramsey RESET test for omitted variable is applied. Results of Ramsey RESET misspecification test for omitted variable reject null hypothesis that there is no omitted variable in the model. The model shows the relationship between trade openness and output volatility in both directions which shows that error term and independent variable are correlated. So the estimation by POLS would yield biased and inconsistent estimates of the structural parameters. For checking the endogeneity Hausman test is applied. Endogeneity (Wu-Hausman) test accept null hypothesis that the variables are exogenous. So the results of IVLS is preferred over POLS. In IVLS for removing the problem of endogeneity instrumental variables inflation, gross fixed capital formation and structure of economy are added. Results of IVLS shows that gdp per capita, real gdp growth rate, financial development, changes in terms of trade, official exchange rate and trade openness has negative relation with output volatility while discretionary policy, country size and political crisis has positive relation with output volatility and have destabilizing impact on economy. Results of IVLS, Wu-Hausman Test and Ramsey RESET misspecification test is reported in table 4.4.

Results of IVLS shows that due to the discretionary policy financial development become negative and insignificant. Financial development reduces the output volatility. Despite of risk efficient financial sectors would be able to fund a large number of high productivity projects causes to reduce output volatility and increase in growth of economy. More efficient financial sector would be able to fund a larger number of high-productivity projects, despite their riskiness, and will reduce output volatility and increase economic growth. Portfolio diversification leads to decrease in aggregate risk and higher productivity of projects and lower risk encourages the investors due to which economic growth increases. Impact of real sector shocks decreased due to advanced financial system and thus causes to decrease in economic growth. Stabilizing effect is due to highly volatile discretionary fiscal policy in the economy.

In developing economies discretionary fiscal policy leads to increase in volatility of output due to which economic growth decreases. When government actively decides to increase tax rate for starting new projects and increasing the growth rate then the fluctuation in output increases due to which growth rate in developing economies decreases.

Table 4.4. Role of Discretionary Policy

Dependent Variable: Standard Deviation of Real GDP growth rate		
Independent Variables	**POLS**	**IVLS**
Constant	-7.407131 (1.33208)	-20.83598*** (6.08528)
GDPPC	-.000029 (.000095)	-0.079767*** (0.019477)
Trade Openness	1.585032*** (.2524468)	-2.030234*** (0.604673
Political Crisis	17.58376*** (2.689375)	5.097716 (3.420183)
Financial Development	-.2767926 (.2926033)	-0.142897 (0.162035)
Country Size	.6866405*** (.1193756)	2.209490*** (0.598492)
Real GDP growth rate	-.0137466 (.0183702)	-0.011164 (0.008363)
Official exchange rate	-.0019842 (.0025363)	-0.005921*** (0.002216)
Changes in terms of trade	.3905435 (.280048)	-0.035138 (0.130589)
Discretionary Policy	.6670353*** (.1271825)	0.073395 (0.076307)
R-square	0.7183	0.944989
Ramsey RESET Misspecification test	84.47 [0.0000]	----------
Wu-Hausman	----------	13.6881 [0.0004]

*Note: Standard errors are reported in parenthesis. ***, ** and * represents 1%, 5% and 10% significance level respectively. P-values are reported in brackets [ ].*

5. Conclusion

The goal of this study is to estimate the relationship between fiscal policy and macroeconomic stability in South Asian countries. The study also aims to find the channels through which fiscal policy contributes to macroeconomic stability. The data is used from 1990 to 2014 at annual frequency. Instrumental variable least square (IVLS) and Pooled Ordinary Least Square (POLS) are used to accomplish the objectives. Due to the problem of endogeneity and omitted variable biasedness, the study preferred IVLS over POLS. The study has used only limited countries of South Asia due to data limitations.

The study has used basic Keynesian model as theoretical model which states in order to move aggregate demand for minimizing output gap government operates through taxes and spending. The study has used panel data framework because the panel data estimates are better than cross section and time series data. Panel data framework increases the efficiency of econometric estimates by reducing collinearity among independent variables through large degree of freedom. (Gujarati, 2003).

The basic model found the impact of major macroeconomic variables on output volatility. The other model described the channel through which fiscal policy contributes to macroeconomic stability. Results indicated that macroeconomic variables play an important role in macroeconomic stability. Trade openness, financial development have destabilizing effect on economy of South Asian countries while real gdp growth rate, country size and changes in terms of trade have stabilizing impact on economy. Results also discussed that fiscal policy leads to macroeconomic stability through three main channels i.e. automatic stabilizers, cyclical fiscal policy and discretionary fiscal policy. Results shows that automatic stabilizers are weak in developing economies and have destabilizing impact on economy. When the automatic stabilizers become active, it causes to decrease in macroeconomic stability in developing economies. Discretionary policy has also destabilizing impact on economy. Cyclical policy has stabilizing impact on developing economies which leads to increase in macroeconomic stability and economic growth. Thornton (2010), Noord (2000), Debrun and Kapoor (2010) also find same results.

Theory suggests that there is always fluctuation in growth of developing economies so increase in the fluctuation causes to increase in growth of developing economies. Fluctuation in developed economies leads to decrease in the economic growth, because there is stabilized growth in developed countries.

In the light of current findings the study suggests following policy recommendations:

- Automatic stabilizer has weak impact on developing economies due to weak market mechanism. Government could increase share of income tax for enhancing the role of automatic stabilizers.
- Discretionary policy could also lead to stabilization when government actively decides to adjust spending or taxes in response to changes in economic activity.

- Cyclical policy plays important role in stability and growth of an economy. So government actively use cyclical policy in developing economies to increase prosperity.

References

Ali, S., & Ahmed, N. (2010). The Effects of Fiscal Policy on Economic Growth: Empirical Evidences Based on Time Series. *The Pakistan Development Review, 49*(4), 497-512.

Abel , A. B., & Bermmke , B. S. (2008). *Macroeconomics.* Prentice Hall.

Andresa, J., Domenecha , R., & Fatas, A. (2004). The Stabilizing Role of Government Size. *University of Valancia Working Paper*, 1-23.

Audu, N. P. (2012). The Impact of Fiscal Policy on the Nigerian Economy . *International Review of Social Sciences and Humanities , 4*(1), 142-150.

Baunsgaard , T., & Symansky, S. A. (2009). Automatic Fiscal Stabilizers. *International Monetary Fund Working Paper*,2-26.

Baltagi, B. H. (2013). Econometric Analysis of Panel Data. John Wiley &Sons,Inc.

Cheng , I. H., & Wall, H. J. (2005). Controlling for Heterogeneity in Gravity Models of Trade and Integration. *Federal Reserve Bank of St. Louis Review, 87(1),* 49-63.

Debrun, X., & Kapoor, R. (a) (2010). Fiscal Policy and Macroeconomic Stability: Automatic Stabilizers Work Always and Everywhere. *International Monetary Fund Working Paper*,1-45.

Debrun, X., & Kapoor, R. (b) (2010). Fiscal Policy and Macroeconomic Stability:New Evidence and Policy Implications.Revista de Economia y Estadistica,48(2),69-101.

Fatas, A., & Mihov, I. (1999). Government Size and Automatic Stabilizers: International and Intranational Evidence. *Conference Paper for Lessons from Intranational Economics for International Economics,* 1-26.

Fatas, A., & Mihov, I. (2012). Fiscal Policy as a Stabilization Tool. *The B.E. Journal of Macroeconomics, 12*(3), 1-66.

Furceri, D. (2010). Stabilization Effects of Social Spending: Empirical Evidence from a Panel of OECD countries. *North American Journal of Economics and Finance, 21*, 34-48.

Gali, J. (1994). Government Size and Macroeconomic Stabiltiy. *European Economic Review, 38*, 117-132.

Gujarati, D.N. (2005). Panel Data Regression Models. *In Basic Econometrics* (4th ed.). New York: McGraw-Hill.

Gnip, A. G. (2013). Empirical Assessment of Stabilization Effects of Fiscal Policy in Croatia. *Working Paper Series by University of Zagreb, 13*(6),4-33.

Harrod, R. (1937). Keynes and Traditional Theory. *Econometrica, 5*, 74-86.

Hicks, & John, R. (1937). Mr Keynes and Classics :A Suggested Interpretation. *Econometrica, 5*, 147-59.

Ismail, M., & Hussain, F. (2012). Fiscal Discretion and Its Impact on Pakistan Economy. *The Pakistan Development Review, 51*(4), 339-362.

Kakar, Z. K. (2011). Impact of Fiscal Variables on Economic Development of Pakistan. *Romanian Journal of Fiscal Policy, 2*(2), 1-10.

Keynes, J. M. (1936). The General Theory of Employment Interest and Money. *Macmilian Cmbridge University Press*,1-472.

Khalid, M., Malik, W. S., & Sattar, A. (2007). The Fiscal Reaction Function and the Transmission Mechanism for Pakistan. *The Pakistan Development Review, 46*(4), 435-447.

Koskela, E., & Viren, M. (2004). Government Size and Output Voltality :New International Evidence. *Working Paper of Government Institute of Economic Research*,1-17.

Li, C. (2010). Government Size and Macroeconomic Stability: Sub-National Evidence from China. *Munich Personal Repec Archive Working Paper*, 1-32.

Meade, J. E. (1937). A Simplified Model of Mr.Keynes System. *Review of Economic Studies*, 4, 98-107.

Mohanty, M. S., & Zampolli, F. (2009). Government Size and Macroeconomic Stability. *BIS Quarterly Review*, 55-68.

Noord, P. v. (2000). The Size and Role of Automatic Fiscal Stabilizers in the 1990s and Beyond. *Economics Departmnet Working Paper (3)*, 230.

Perotti, R. (2002). Estimating the Effects of Fiscal Policy in OECD Countries. *ECB Working Paper*, 1-59.

Popa , I., & Codreanu, D. (2010). Fiscal Policy and Its Role in Ensuring Economic Stability. *MPRA Working Paper*, 1-8.

Ricci-Risquete, A., & Ramajo, J. (2015). The Effect of Fiscal Policy on Spanish Economy:Keynesian or Non-Keynesian Behavior. *Journal of Policy Modeling, 37*, 1019-1048.

Sharp, A. M., & Khan, M. (1980). Automatic Fiscal Policy. *Nebraska Journal of Economics and Business, 19*(3), 5-20.

Silgoner, M. A., Reitschuler, G., & Cuaresma, J. C. (2003). Fiscal Smile:Effictiveness and Limits of Fiscal Stablizer. *International Monetary Fund Working Paper*, 2-29.

Spilimbergo, A., Symansky, S., Blanchard, O., & Cottarelli, C. (2008). Fiscal Policy for Crisis. *International Monetary Fund Working Paper*, 2-34.

Thornton, J. (2010). Government Size and the Stability of Output : Evidence from Emerging Economies. *Applied Economics Letters, (17)*, 733-736.

Viren, M. (2005). Government Size and Output Volatility: Is There a Relationship? *Bank of Finland Research Discussion Paper*, 3-24.

Vladimirov, V., & Neicheva, M. (2008). The Stabilizing Role of Fiscal Policy: Theoretical Background and Empirical Evidence. *IBSU Scientific Journal, 2*(1), 7-22.

Veld , J., Larch, M., & Vandeweyer, M. (2010). Automatic Fiscal Stabilisers: What they are and what they do. *Working Paper no 452*, 1-21.

Wright, P.G. (1928). The Tariff on Animal and Vegetable Oils. New York: The Macmillan Company.

Wyplosz,Charles (2006).European Monetary Union:The Dark Sides of Major Success.*Economic Policy, 2*1, 207-61.

Wooldridge, J. M. (2010).Econometric Analysis of Cross Section and Panel Data.The MIT Press

Appendix A

Variable	Description	Sources
GDP	Gross Domestic Product measured in millions of US$ at current price.	WDI
Y	Output volatility measured by standard deviation of real gdp growth rate with average of ten years	WDI
Automatic Stabilizers	Government Final Consumption Expenditure (proxy for automatic stabilizers) as ratio of GDP at current prices.	Data for Bangladesh, India and Pakistan is from WDI. Data for Sri Lanka is from Central Bank of Sri Lanka
RGDPG	Growth rate of real gross domestic Product in million US$ at constant prices.	WDI
GDPPC	Per capita gross domestic Product as ratio of GDP in US$ at current prices.	WDI
CS	Log of gross domestic product (proxy for country size) in million US$.	WDI
TO	Trade Openness measured by trade as ratio of GDP at current prices.	Data for Bangladesh, India and Pakistan is from WDI. Data for Sri Lanka is from World Bank Integrated Trade Solution
CTOT	Average Changes in terms of trade is measured by initial value of term of trade-Previous value of term of trade/Previous value of term of trade as ratio of GDP.	Data for Bangladesh, India and Pakistan is from WDI. Data for Sri Lanka is from World Bank Integrated Trade Solution
Political Crisis	Military Expenditure(proxy for political crisis) as ratio of GDP	WDI
GFC	Gross Fixed Capital Formation at current prices	Data for Bangladesh, India and Pakistan is from WDI.Data for Sri Lanka is from World Bank national accounts data, and OECD National Accounts data file
Inf	Inflation expressed in annual %.	WDI
FD	Broad Money Supply (proxy for financial development) as ratio of GDP.	Data of Bangladesh is from IFS Data for India, Bangladesh and Pakistan is from Asian Development Bank Data for india is from Reserve Bank of India
OE	Official Exchange Rate measured in Local currency unit per US $.	WDI
SA	Share of Agriculture (proxy for structure of economy) as % of GDP	WDI