# Macroeconomic Policies and Business Cycle: The Role of Institutions in Selected SAARC Countries

SAMINA SABIR and KHUSHBAKHT ZAHID

## 1. INTRODUCTION

Fiscal and monetary policies are used to smooth the cyclical fluctuations in output. There is ample evidence that developed countries use counter cyclical policies in principle for this purpose [Gali and Perotti (2002); Sack and Wieland (2007)]. Indeed, OECD and other developed countries use loose monetary and fiscal policies to tackle with financial crisis of 2007 [IMF (2008)]. However situation is reverse in developing countries, they are using the pro-cyclical policies to stabilise business cycle fluctuations that results in higher output volatility [Hausmann and Stein (1996); and Kaminsky, Reinhart, and Vegh (2004)].

Theoretically, there are several factors such as limited excess to credit, poor governance and institutions<sup>1</sup> that are responsible for conduct of pro-cyclical policies in developing countries, of which institutional framework is important. A poor institution is a key factor that is responsible for the conduct of pro-cyclical policies in emerging market economies. Countries, where institutions are strong, conduct contractionary policies in boom and expansionary policies in recession while countries with poor level of institutions contract the policies in recession and expand in boom [Acemoglu, Johnson, Robinson, and Thaicharoen (2003); Calderon and Schmidt-Hebbel (2008)]. Countries with weak institutions show the strong negative relation between output and interest rate while countries with strong institutions have positive link between output and interest rate [Duncan (2012)]. That's why developing countries are pursuing tight monetary policy in recession and loose policy in boom, although little empirical literature is available on this issue [Lane (2003)]. Fiscal policies are pro-cyclical in the countries, where political system is subject to multiple fiscal veto points that results in higher output fluctuation [Stein, et al. (1999); Braun (2001)]. Indeed, rent-seeking government conducts procyclical policies.

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<sup>&</sup>lt;sup>1</sup>Acemoglu, Johnson, Robinson and Thaicharoen (2003) define poor institution as Lack of enforcement of property rights, corruption, dominance of political institution that do not restrict politician, and repudiation of contracts.

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Gavin and Perotti (1997) are the pioneers who notice that fiscal policy in Latin America is pro-cyclical. Later on it is found that fiscal policy conducted in developing countries are pro-cyclical and counter cyclical in OECD countries [Talvi and Vegh (2005); Braun (2001); Alesina, *et al.* (2008)].

A positive correlation is observed between government expenditure and gross domestic product (GDP) in 36 developing countries [Talvi and Vegh (2005)]. Procyclical fiscal policy is considered part of convention wisdom in developing countries [Ilzetzki and Vegh (2007)]. Poor macroeconomic policies results in high inflation, excessive government expenditures and overvalued exchange rate in developing or emerging market economies. In these countries, it is believed that macroeconomic instability is caused by poor macroeconomic policies due to weak institutions [Acemoglu, Johnson, Robinson, and Thaicharoen (2003)]. Furthermore procyclical policies cause further distortion in business cycle [Lane (2003)].

Regarding monetary policy, a negative relation is observed between nominal interest rate and GDP gap, which shows that the monetary authorities adopt pro-cyclical stance due to presence of weak institutions [Duncan (2012)]. No one has yet studied the impact of institution on macroeconomic policies in selected SAARC countries. In this paper, we assess the impact of institutional quality on the conduct of macroeconomic policies in selected SAARC countries.

We find out the link between macroeconomic policies i.e., monetary and fiscal policy reaction functions and institutions to study their impact on business cycle fluctuations. We use monetary policy rule defined by Taylor (1993a) and modified by and fiscal policy rule defined by Braun (2001) for this analysis. To show the impact of institutions on business cycle, we introduce the interaction term between output gap and institution quality by following the studies of Kaminsky, Reinhart, and Vegh, (2004); Ilzetzki and Vegh (2007) and Duncan (2012).

Paper is organised into five sections. In Section two, we provide theoretical rational of cyclical properties of monetary and fiscal policies. In Section three, we present the methodology and data. In Section four, we present empirical results relating to monetary and fiscal policy reaction function. Section five concludes the findings of the paper.

# 2. THEORETICAL FRAMEWORK OF MACROECONOMIC POLICIES AND BUSINESS CYCLE

In this section, we discuss the theoretical framework to provide strength to our empirical findings. Particularly, we look at the cyclical properties of monetary policy and fiscal policy. Theory says that in counter cyclical stances, there is a budget deficit in recession and surplus in boom or good times. Therefore, it indicates the positive correlation between changes in output and changes in the fiscal balances. It may possible that cyclical behaviour of output dominates the cyclical behaviour of fiscal balances. Similarly, positive relation exists between nominal interest rate and output gap in boom and negative relation is found in recession. In developing countries fiscal and monetary authorities use expansionary policies in boom and contractionary policies in recession. Due to this controversy, we define the countercyclical, pro-cyclical and a cyclical policies.

# 2.1. Monetary Policy

It is more difficult to define conceptual framework for monetary policy due to two reasons; (1) monetary policy instruments depend on existing exchange rate regime whether it is fixed, floating or flexible; (2) outcomes of monetary policy depends on some implicit models to determine the behaviour of endogenous variables. Usually two types of exchange rate regimes exists as we defined earlier; Fixed exchange rate and flexible exchange rate.

Short term interest rate is used as policy instrument under both regimes. In case of SAARC countries call money rates and overnight interbank rates are used as policy instrument to achieve central banks main goals of inflation targeting, economic growth and output fluctuations. In flexible exchange rate regime, changes in money supply directly affect the short term interest rate. However in fixed exchange rate regime, short term interest rate is used as policy instrument by assuming imperfect substitution between domestic and foreign assets.

In principle, we observe the correlation between short run interest rate and output gap to assess that monetary policy is counter cyclical, pro-cyclical or acyclical to depict output cyclicality. Counter cyclical policy indicates that in boom, interest rate is increased whereas it is reduced in recession. Therefore, it implies the positive relation with output gap. In pro-cyclical policy, interest rate is reduced in boom and it is raised in recession. Indeed, we observe negative correlation between business cycle and short term interest rate. In acyclical situation, interest rate is not used systematically, so we observe zero correlation. We summarise all this discussion in Table 1.

Monetary Policy			
		Monetary	Growth of Central
	Short Term	Aggregates	Bank Domestic
Policies Adopted	Interest Rate	(M1 and M2)	Credit
Counter Cyclicality	+	_/+/0	_
Procyclical	-	+	+
Acyclical	0	+	0

Kaminsky, Reinhart, and Vegh (2004).

In interest rate policy, interest rate increases in good time, which has positive impact on real balance in the form of M1 and M2, whereas in bad times monetary aggregates decline. Therefore we observe positive correlation between interest rate and output cyclical. In pro-cyclical policy, interest rate reduces in good times and increases in bad times, which increases real balances, which shows negative correlation between business cycle and interest rate. However we can say that higher interest rate leads to lower money balances or even interest rate exceeds the bench mark level, then zero activity is observed in good times.

Interest rate usually used contains longer maturity, which also include endogenous variables. In fact, inflation has small but positive relation with business cycle in developed economies while reverse is true for developing economies. We usually draw

Table 1

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prejudice conclusion that monetary policy in developed countries are counter cyclical but it is pro-cyclical in developing countries. To minimise this bias, we use interbank rate as policy instrument.

Second policy instrument used is the growth of domestic credit under any exchange rate regime. In fixed exchange rate regime, according to monetary base approach to balance of payment, changes in domestic credit brings opposite changes in reserves due to perfect substitution between domestic and foreign assets. Indeed, imperfect substitution between domestic and foreign assets implies that changes in domestic credits have some impact on monetary base. Similar situation happens during dirty floating regime.

In good times, growth of domestic credit declines and it increases in bad time. This implies that growth of domestic credit in good times has positive impact on short term interest rate. Similarly, bad times imply that domestic credit raises and it reduces in bad times. Acyclical policy would not imply any systematic variation in domestic interest rate over business cycle.

In order to capture the movement of the monetary policy over the business cycle, we use Taylor rule (1993a), we specify the following equations

$$\tilde{\iota}_t = \beta_0 + \beta_1 \tilde{\pi}_t + \beta_2 \tilde{y}_t + u_t \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad (1)$$

Where  $\tilde{\iota}_t$  is the short term nominal interest rate,  $\tilde{\pi}_t$  is the deviation of actual inflation from potential inflation measured with HP filter and  $\tilde{y}_t$  is the output gap to capture business cycle. Coefficient of output gap captures the stance of monetary policy. In counter cyclical policy  $\beta_2$  is positive and significant, in pro-cyclical policy, it is negative and significant and insignificant in acyclical policy. It is a very useful reaction function to analyse the relationship between nominal interest rate and output gap by controlling the implicit inflation target of central bank. It is not necessary that central banks of SAARC countries are using the same reaction function to realise their policy objectives.

Number of the studies estimates the Taylor equation for developed countries such as Clarida, Gali and Gertler (1997) estimate it for United States, Japan and Germany and they find that Japan and Germany are pursuing counter cyclical policy while US is using acyclical policy. Moron and Castro (2000) estimate the reaction function for Peru by using monetary base as dependent variable and also include exchange rate deviation from trend as an additional control variable and observe counter cyclical monetary policy. Similarly, Corbo (2000) estimate reaction function for Chile and find acyclical policy. Malik and Ahmed (2009) estimate the same reaction function for Pakistan by controlling inflation targeting. They find that central bank of Pakistan is pursuing pro-cyclical policy in response to output fluctuations.

#### 2.2. Fiscal Policy

Now we define cyclical behaviour of fiscal policy in term of government expenditures and tax rate. In good times, government slashes their expenditures or spending and increases tax rate. Therefore, contractionary (Austerity) fiscal policy is conducted in good times to stabilise business cycle fluctuations. Furthermore expansionary fiscal policy with higher government expenditures and lower tax rates is adopted in bad times. This is all about counter cyclical fiscal policy. But if fiscal policy is pro-cyclical, then government increases their expenditures and cut down tax rate in good time and reverse is true for bad times. It is believe that this type of policy reinforce business cycle through higher output fluctuations. In case of acyclical policy, government expenditures and tax rate remain constant, so nothing happens to business cycle. All this is summarised in Table 2.

Theoretically best indicators of fiscal policy are government expenditures and tax rate but data on tax rate is usually not available, so we use government expenditures as an indicator of fiscal policy.

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Fiscal Policy				
	Govt Expenditures	Tax Rates	Tax Revenue	G/GDP
Countercyclical	_	+	+	—
Pro-cyclical	+	_	_/+/0	+//0
Acyclical	0	0	+	—

Kaminsky, Reinhart, and Vegh (2004).

We use HP filter to decompose short term interest rate, inflation, real GDP and government spending into cyclical components. After decomposition of real GDP into cyclical fluctuations, we can find the correlation between real GDP gap, monetary indicator and fiscal policy indicators.

## 3. METHODOLOGY AND DATA

In this section, we empirically test the cyclical properties of macroeconomic policies in SAARC over the period 1980–2009. Monetary policy rule introduced by Taylor (1993a) and then amended by Clarida, Gali and Gertler (1999) in new Keynesian frame work is used to capture the fluctuation in output due to changes nominal interest rate. Similarly fiscal policy reaction function by Braun (2001) is used to capture changes in output due to government spending. We introduce the interaction between output gap and institution quality in both monetary and fiscal policy reaction functions by following the studies of Duncan (2011) and Kaminsky, *et al.* (2004).

In democratic regime, institutions are strong and it is expected that the behaviour of fiscal and monetary policies are counter cyclical and vice versa is true for poor institutions. To capture cyclical stance, we specify monetary and fiscal policy reaction functions as

 $\tilde{\iota}_{it} = \beta_i + \beta_1 \tilde{\iota}_{i,t-1} + \beta_2 \tilde{\pi}_{i,t} + \beta_3 \tilde{y}_{i,t} + \beta_4 \tilde{y}_{i,t} Q_{i,t} + u_{i,t} \qquad \dots \qquad (2)$ 

$$\tilde{g}_{i,t} = \gamma_i + \gamma_1 \tilde{g}_{i,t-1} + \gamma_3 \tilde{y}_{i,t} + \gamma_4 \tilde{y}_{i,t} Q_{i,t} + v_{i,t} \qquad \dots \qquad \dots \qquad (3)$$
  
$$i = 1,2,\dots,N \qquad t = 1,2,\dots,T$$

Where '*i*' is the number of number of countries or cross section units and – '*t*' is the time period,  $\beta_i$  and  $\gamma_i$  are unobserved country effects that introduce unobserved heterogeneity in the model.  $\tilde{\tau}_{i,t}$  is the deviation of nominal interest rate from trend,  $\tilde{\pi}_{i,t}$  is the deviation of actual inflation from trend path,  $\tilde{y}_{i,t}$  is the real GDP gap to capture business cycle fluctuations,  $Q_{i,t}$  is the proxy of institutional quality known as ICRG index,  $\tilde{g}_{i,t}$  is the

government expenditures gap measured as deviation of expenditures from trend path. u and v are white noise terms or idiosyncratic errors that contain the omitting variables and vary across 't' and 'i'. Both white noise terms have normal distribution with zero mean and constant variance respectively i.e.,  $u_{i,t} \sim iid(0, \delta_u^2)$  and  $v_{i,t} \sim iid(0, \delta_v^2)$ 

We expect that coefficients of lagged nominal interest rate ( $\beta_1$ ) and government expenditure ( $\gamma_1$ ) lie between 0 and 1. Coefficient of inflation gap would be positive and greater than 1.  $\beta_3$  and  $\beta_4$  are expected to be negative and positive. High (low) value of ICRG index implies high (low) level of institutional quality and central bank conducts counter cyclical (pro-cyclical) policy to stabilise business cycle fluctuations. In fiscal policy reaction function, coefficient of output gap ( $\gamma_3$ ) would be positive and coefficient of product of ICRG index and output gap would be negative. High quality institution setup implies the conduct of counter cycle policy to smooth business cycle fluctuations.

We can derive the degree of cyclicality by using Equations 2 and 3. For this purpose, differentiate Equation 2 w.r.t  $\tilde{y}_t$  and equate to zero.

$$\frac{\partial \tilde{l}_{i,t}}{\partial \tilde{y}_t} = \beta_3 + \beta_4 Q_{i,t} = 0 \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad (4)$$

This implies that

$$Q_{i,t}^{*} = -\frac{\beta_3}{\beta_4}$$
 ... ... ... ... (5)

Equation 5 implies the threshold level of institution quality. Nevertheless, it is cleared that conduct of monetary policy depends on the observed level of institutional quality.

If  $Q > Q^* = -\frac{\beta_3}{\beta_4} > 0$ , => counter cyclical policy for business cycle stablisation  $Q < Q^* = -\frac{\beta_3}{\beta_4} < 0$ , => pro – cyclical policy for business cycle stablisation  $Q = Q^* = -\frac{\beta_3}{\beta_4} => \frac{\partial \tilde{i}_{i,t}}{\partial \tilde{y}_{i,t}} = 0$ , => acyclical policy for business cycle stablisation

Similarly, we can derive threshold level of institutional quality from Equation (3). We use OLS method to estimate Equations 2 and 3, if basic time series properties are satisfied. If we use OLS method to capture the impact of GDP gap on fiscal policy instrument, then it results in biased estimator that might capture the influence of size of fiscal multiplier rather than reaction functions [Alesina, *et al.* (2008)]. We use GMM fixed effect model to control endogeneity problem caused by regressors to avoid biased and inconsistent results. We measure deviation in dependent variables from trend path by using Hedrick Prescott (HP) filter method. We use alternative instruments for the estimation of monetary and fiscal policy reaction functions through GMM.

We use panel data from 1984–2009 on call money rates (short term interest rate) for India, Pakistan and Sri Lanka and discount rate for Bangladesh, inflation, real GDP and government expenditures. We take data on these variables from International finance Statistics (IFS) for SAARC countries (Bangladesh, India, Pakistan and Sri Lanka). Data of Bhutan, Maldives and Nepal is not available. Therefore we exclude these countries from this analysis.

Data on institutional quality is taken from International Country Risk Guide (ICRG) complied by PRS group. We take the sum of twelve components to obtain institutional quality index such as government stability, socio-economic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucracy quality. Index ranges from 0 to 100; 0 shows lower quality of institutions and 100 indicates higher quality of institutions. Inflation is calculated from percentage growth from annual GDP deflator.

Data on consumption expenditures are taken for this analysis instead of aggregate government expenditures. Output gap is estimated by taking deviation of real GDP from time trend by using HP filter. Similarly, we estimate inflation gap, government expenditure gap and nominal interest rate gap respectively.

## 4. RESULTS AND DISCUSSION

We present the estimated results of monetary and fiscal policy reaction functions for SAARC countries over the period 1984–2009. Basic purpose of this empirical exercise is to test whether conduct of macroeconomic policies depend on quality of institutions. Before proceeding for estimation, descriptive statistic of key variables used in monetary and fiscal reaction functions is presented in Table 3.

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Descriptive Statistics					
	Government				
	Interest Rate	Expenditure	GDP	Inflation	ICRG(Q)
Mean	10.82	7.16	10.13	7.93	49.33
Maximum	23.17	13.60	14.92	13.32	65.50
Minimum	4.68	3.19	7.45	4.42	28.58
Std. Dev.	5.16	2.82	2.61	2.16	9.96
Observations	104	104	104	104	104

### 4.1. Monetary Policy and Institutional Quality

First we estimate the Taylor rule by using simple least square dummy variable (LSDV) method on fixed effect model and Generalised Least Square method (GLS) on random effect model. Regarding fixed effect method, we assume that all other factors affecting short term rate are same. Column 1 of Table 4 shows that there exist positive and significant tradeoff between inflation and nominal interest rate. This implies that increase in interest rate leads to increase inflation proportionally or disproportionally. GDP gap has negative impact on nominal interest rate. This implies that monetary policy in SAARC countries is pro-cyclical.

Theoretically, monetary authorities cut down the nominal interest rate either there is a positive change in inflation targeting or output growth targeting due to pro-cyclical response [Malik and Ahmed (2009)]. Although coefficient of inflation is very small as compare to Taylor (1993). To see the impact of institutions on macroeconomic policies, first we estimate monetary reaction function given in Equation (2) by using least square

dummy variable method on fixed effect method and GMM fixed effect method. The results with fixed effect model are presented in column 1 of Table 4.

Coefficient of lagged nominal interest rate has positive effect on nominal interest rate. Inflation rate de-trended by HP filter has also positive and significant impact on nominal interest rate with coefficients ranging from 0.07 to 0.18. This implies that an increase in short term interest rate drags the prices in upward direction.

In developing countries, monetary authorities use policy instrument to crab inflation rather than to control output gap. There exists a negative relation between product of output gap and monetary policy instrument. This shows that an increase in nominal interest rate leads to decrease in the output gap. Opposite situation happens if monetary authorities reduce interest rate. Results obtained from random effect model are similar to FEM and presented in column 2 of Table 4. However, this indicates that there is unobserved heterogeneity in the model.

Monetary Policy Reaction Function				
Variables	FEM	REM	GMM	
constant	6.875**	-3.066***	-7.182**	
	(0.000)	(0.004)	(0.000)	
i(-1)	0.933**	0.605*	0.916**	
	(0.000)	(0.000)	(0.000)	
inflation	1.08***	2.184***	2.077***	
	(0.003)	(0.002)	-(0.007)	
GDP gap	-3.1420	-2.710*	-2.824**	
	(0.000)	(0.000)	(0.000)	
GDP gap*Q	-0.046**	-0.055	-0.057**	
	(0.000)	(0.192)	(0.000)	
R <sup>2</sup>	0.996	0.996	0.995	
Q*	68.739	2.910	49.544	
sigma_u	12.4955	0.000		
sigma_e	1.2326	1.233		
rho	0.9904	0.000		
F-stat	2744.123**	49.150	49.544	
	(0.000)	(0.000)		
Model effect	Yes	No		
Group effect	Yes			
Time effect	No			
Hausman test	128.71			
	(0.000)			
Sargent test			7.646	

Table 4

\*\*\*, \*\* Shows the significance level at 10 percent and 5 percent. We use i(t-2), infl(t-1), GDP(-1), GDP(-2), Q(-1) and Q(-2) as instrument for GMM. P-values are reported in parenthesis.

On the basis of Hausman test we are able to accept the alternative hypothesis and conclude that fixed effect method is more appropriate for estimation. To check, whether time variant fixed effect model is essential for estimation or not, we perform Parm test by taking null hypothesis that all years dummies are equal to zero. Test results reveal that time variant fixed effects are not required for estimation. All this exercise ends with the fact that selected SAARC countries adopt pro-cyclical policies to smooth cyclical fluctuations in output gap due to the presence of weak institutions.

In order to control endogeneity and other variable bias problem, we use dynamic panel data method known as GMM method and results are presented in column 3 of Table 4. It reveals that coefficient of product of GDP gap and Q is negatively associated with nominal interest rate. We use Sargent test to check the validity of instruments used in GMM technique. Moreover, we estimate the threshold level of institutional quality which lies above zero but below 100. This implies that monetary policy is pro-cyclical because these countries exhibit lower level institutions. Among SAARC countries, India has remarkably improved its ICRG political risk index from 51 in 1984 to 62 in 2007 institutions over the past 26 years as compared to other member countries. After India, Sri Lanka has shown the improvement and rest of the countries deteriorated their quality regarding institutions. However Pakistan risk index was 39 in 1984 and 45 in 2007.

All this analysis shows that the monetary authorities conduct pro-cyclical monetary policy in selected SAARC countries. This implies that monetary policy instrument increases the distortions in output gap rather to reduce it. Overall findings of this section are consistent with the study of Kaminsky, *et al.* (2004) for low income countries.

### 4.2. Fiscal Policy and Institutional Quality

Now we estimate fiscal policy reaction function by using LSDV on fixed effect model, GLS on random effect model and GMM technique on fixed effects and results are reported in Table 5.

In column 1 of Table 5, we estimate the impact of fiscal policy instrument i.e., government consumption expenditures on GDP gap measure of business cycle. We estimate panel fixed effect regression by using LDVM. The coefficient of government consumption expenditure (g) turns out to be negative and significant at 5 percent that implies the pro-cyclicality of fiscal policy in SAARC countries. This also predicts that weak institutions prevail in SAARC region.

In fact we are not interested to check the impact of fiscal policy instrument on GDP gap but rather in interaction term, namely, how institutions impacts the level of procyclicality. In this perspective, government consumption spending is a valid instrument to test model predictions. As compare to social planner, government with weak institution should conduct more pro-cyclical policies.

Coefficient of lagged dependent variable reveals that lagged government consumption expenditures have positive and one to one relation with current expenditures. REM estimates displayed in Column 2 of Table 5 shows that the coefficient of GDP gap has negative and significant impact on government consumption expenditures. This implies that fiscal authorities conduct pro-cyclical fiscal policy in SAARC countries to stabilise output gap. Hence, government spending goes down with GDP gap, corresponding to a more pro-cyclical fiscal policy. Sabir and Zahid

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Fiscal Policy Reaction Function				
Variables	FEM	REM	GMM	
constant	-15.459 **	0.690**	0.581**	
	(0.000)	(0.000)	(0.000)	
g(-1)	0.093 **	0.324**	1.043**	
	(0.000)	(0.000)	(0.000)	
GDP gap	-2.163**	-0.751***	-0.729	
	(0.000)	(0.000)	(0.247)	
GDP gap*Q	-0.03***	-0.0123**	-0.012**	
	(0.015)	(0.007)	(0.019)	
$R^2$	0.935	0.809	0.900	
Q*	72.1	61.06	60.83	
F-stat	463.52**	3321.04**		
	(0.000)	(0.000)		
sigma_u	3.687599	0.000		
sigma_e	0.254	0.254		
rho	0.995	0.000		
Model effect	Yes	No		
Group effect	Yes			
Time effect	No			
Sargent test			15.907	

\*\*\*, \*\* Shows the significance level at 10 percent and 5 percent. We use g(t-2), GDP(-1), GDP(-2), Q(-1) and Q(-2) as instrument for GMM. P-values are reported in parenthesis.

However, coefficient of interaction term between GDP gap and ICRG index has negative impact on government expenditures. This finding is consistent with our prediction that weak institution is the factor that causes pro-cyclicality of fiscal policy in low income countries of SAARC countries. Results of this section are consistent with the study of Alesina, *et al.* (2008) on OECD and non-OECD countries.

On the basis of Hausman test we are unable to reject alternative hypothesis that FEM is more appropriate and consistent for model specification. Similarly, FEM estimated by employing LSDV method cleared diagnostic tests of heteroscedasticity and autocorrelation.

To control endogeneity problem created by output gap, we use GMM technique and results are displayed in column 3 of Table 5. Coefficient of lagged consumption expenditure is positive and significant. However, coefficient of GDP gap is negative and insignificant. But the interaction term shows the negative and significant impact on 'g'. To sum up, government consumption expenditure increases during boom in low income countries increases due to weak institutional factor. This implies the pro-cyclicality of fiscal policy in low income countries. Estimate of threshold level of institutional quality depicts

In summary, LSDV and GMM techniques confirm that government spending is pro-cyclical in SAARC that displays the weak levels of institutions. But question is why authorities whether monetary or fiscal, conduct pro-cyclical policies to stabilise output gap, which create macroeconomic instability? It may be due to fact that in recessions, developing countries cannot borrow at very high interest rate and therefore cannot run deficit. Indeed, government cuts down its spending in bad times. However, in boom government can easily make borrowing at lower interest rate and hence as a result increases its expenditures. All this happens due to insufficient supply of credit [Alesina, *et al.* (2008)].

## 5. CONCLUSION

In this paper, we empirically examined the impact of institutions on macroeconomic policies in SAARC countries. We observed that monetary and fiscal policies are pro-cyclical in response to weak institutions. During good time of economic activities, monetary authorities increase the interest rate to reduce monetary base while in bad times interest rate reduces. We estimated the Taylor equation by using LSDV method on fixed effect and GLS method on random effect panel regressions. However, these methods estimate monetary multiplier effect rather than reaction function. Therefore we use GMM method to estimate Taylor equation in the form of panel regression. We found a positive relation between inflation and de-trended nominal interest rate. However we found a negative relation between GDP gap and policy instrument. This verified the conduct of pro-cyclical policy in SAARC countries. Moreover we also found the negative relation between the coefficient of product of GDP gap and institutional quality. This implied that the countries with strong institution use contractionary policy during boom and expansionary policy during recession to crab business cycle fluctuations. Hence SAARC countries have poor quality institutions, so pro-cyclical monetary policy is conducted there.

To measure the impact of institution on fiscal policy reaction function, we estimated it by LSDV, GLS and GMM techniques. Three estimation methods provide the evidence that negative relation exists between GDP gap and government consumption expenditure. This implied the conduct of pro-cyclical fiscal policy due to weak institutions. However, we also got negative relation of interaction term between GDP gap and institutions and government expenditure.

All this analysis revealed that pro-cyclical policies are conducted in SAARC countries, which increase the distortion in output fluctuation and instability. The main factor behind the implementation of pro-cyclical policies in developing countries particularly in SAARC countries is the low levels of institutional quality, which creates further distortion in an economy. This problem cannot resolve until and unless we improve the quality of our institutions. All the efforts made by fiscal and monetary authorities to crab output fluctuation is in vain in the presence of poor institutions.

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