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Whether Fiscal Stance or Monetary Policy is Effective for Economic Growth in Case of South Asian Countries?

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1. INTRODUCTION

Monetary policy and fiscal policy are sister strategies that can be used alone and in combination to direct the economic goals. In the literature relative efficacy of fiscal and monetary policy has been studied extensively. Friedman and Meiselman (1963), Ansari (1996), Reynolds (2000, 2001), Chari, *et al.* (1991, 1998), Schmitt and Uribe (2001a), Shapiro and Watson (1988), Blanchard and Perroti (1996), Christiano, *et al. (*1996), Chari and Kehoe (1998), Kim (1997), Chowdhury (1986, 1988), Chowdhury, *et al.* (1986), Weeks (1999), Feldstein (2002) and Cardia (1991) have examined the impact of fiscal and monetary policies on various economic aggregates. However, the bulk of theoretical and empirical research has not reached on conclusion concerning the relative power of fiscal and monetary policy to effect economic growth. Some researchers find support for the monetarist view, which suggests that monetary policy generally has a greater impact on economic growth and dominates fiscal policy in terms of its impact on investment and growth. [Friedman and Meiselman (1963); Ajaye (1974); Elliot (1975); Batten and Hafer (1983)], while other argued that fiscal stimulates are crucial for economic growth. [Chowdhury (1986); Olaloye and Ikhide (1995)], On the other hand, according to Cardia (1991) macroeconomic activities are largely explained by some other variables.

The experiment of 1970s clearly demonstrates that a policy mix produced only stagflation. Some economist took keen interest in money by combining Keynesian neoclassical mixture which is called the "funnel" theory by James Tobin. The argument was that tax rate and money growth simultaneously leads to stagflation thus the Government could choose either fiscal or monetary policy stimulus which will enhance growth. [Reynolds (2001)].

The choice of optimal policy mix carries critical importance for economic growth of any economy. The monetarist were strongly believed that unanticipated change in

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money supply affect output and growth i.e., if the objective of the central bank is to accelerate growth in the economy it must have to increase money supply unexpectedly. But concept of liquidity trap which was introduced by Keynes clearly demonstrate that if the real interest rate falls to such a low level then an increase in money supply could not be able to accelerate output and growth, due to the fact that money supply could not decrease interest rate further which also implies that investment will also not increases due to the interest rate insensitivity.

According to Keynes stimulating demand is the accurate approach in order to curtail recession and lacklustre demand in order to control inflation, but this to do both at the same time is almost unattainable. In response to Keynes doctrine, Robert Mundell (1971) advocate monetary policy if the purpose is to control inflation that is inflation targeting while fiscal policy should be assigned to stimulate employment and enhance potential output through easy fiscal measures.

Monetary policy and fiscal policy have very different economic effects, and these differences must be reflected in their objectives [Levy (2001)]. As Keynes states that, stimulating demand and lacklustre demand curtail recession and control inflation, respectively, but mostly both objectives are not attainable at the same time. In response to Keynes, Mundell (1971) advocated monetary policy to control inflation, and suggested that fiscal policy should be assigned to stimulate employment and to enhance potential output through easy fiscal measures.

There is a general consensus among economists that policy-makers should rely on the combination of policy mix. Basically there are four alternative combinations of policy mix. If the intention is to pick up the pace of the economy, expansionary fiscal and loose monetary policy should be implemented, but if the economy is suffering from inflationary situation, then easy fiscal and tight monetary policy should be adopted. As both budget deficit and massive money supply growth in the economy accelerate growth at the cost of inflation, so the combination of these policies is productive. There are also the combinations of tight fiscal/easy monetary policy and easy fiscal/tight monetary policy, but these combinations have not provided better results throw out the history [Brimmer and Sinai (1986)].

The purpose of this paper is to empirically investigate the debatable issue that whether fiscal policy or monetary policy has significant impact on economic growth in case of four south Asian countries namely Pakistan, India, Srilanka and Bangladesh. We examine the relative effectiveness of both types of policies in the context of panel data analysis.

Table 1 show the selected economic indicators of South Asian Countries. Pakistan and Bangladesh are facing same annual average growth rate of real GDP during 1990s and 2000-07, whereas, India is enjoying the highest GDP growth, conversely, Sri Lanka is facing low Growth performance. With regard to fiscal balance although all south Asian countries are improving fiscal balance, the pace of improvement of Pakistan is much better probably because of use of IMF suggested policies and repercussions of implicating structural adjustment programme (1988, SAP). Among the region money supply in Indian economy has surged with greater pace depicting the implication of expansionary monetary policy. It is clear from Table 1 that these emerging economies have a high growth rate of money supply and fiscal balance.

Table 1

Economic Indicators

Economic Indicators		Pakistan	India	Bangladesh	Sri Lanka
GDP	1990s	3.9	5.6	4.8	5.3
(% Growth)	2000-05	4.6	7.0	5.5	5.1
Fiscal Balance	1990-95	–6.05	–6.4	0.5	–8.3
(% of GDP)	2000-05	–4.9	–4.7	0.05	–8.9
Money Supply	1990-95	41.8	48.5	25.9	31.5
(% of GDP)	2000-05	43.5	71.2	37.5	40.5

Source: World Development Indicators (2008).

2. MODELING DATA AND METHODOLOGICAL FRAMEWORK

To capture the impact of policy variables on economic growth (measured by GDP growth rate), the empirical equation is being modelled as below:

$$Y_{it} = \alpha + \beta_0 FB_{it} + \beta_1 M2_{it} + \mu_{it} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Where as,

Y = GDP growth rate
FD = Fiscal deficit
$M2$ = Broad Money

Following Legrenzi, *et al*. (2002) we used nominal values in order to avoid the difficulty of identifying an appropriate deflator for the series of variables. We utilised a balanced panel of four south Asian countries, namely Pakistan, India, Bangladesh and Sri Lanka, for 17 years, from 1990 to 2007, and collected from different sources as World Development indicators (2007) and International financial Statistics (2007).

2.1. Panel Unit Root Tests

We concentrate, Levin, Lin, and Chu and Im, Pesaran, and Shin panel unit root test.

2.1.1. *Levin, Lin, and Chu*

Levin, Lin, and Chu (LLC) test assume that there is a common unit root process. The test considers the following fundamental ADF specification:

$$\Delta y_{it} = \alpha y_{i,t-1} + \sum_{j=1}^{p_i} \beta_{i,j} \Delta y_{i,t-j} + X'_{it}\delta + \varepsilon_{it} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

Where Δy_{it} is the differenced term of corresponding panel data series, $\alpha = \rho - 1$, p is the lag order for Δy_{it} that can rise and fall for cross-sections and X' is the exogenous variable in the model. It is assumed that the t-statistics is normally distributed.

$$t^*_{\alpha} = \frac{t_{\alpha} - (N\tilde{T}) S_N \hat{\sigma}^{-2} se(\hat{\alpha}) \mu_{m\tilde{T}^*}}{\sigma_{m\tilde{T}^*}} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

2.1.2. *Im, Pesaran, and Shin*

The Im, Pesaran, and Shin panel unit root test allows for individual unit root procedure. This test combine individual unit root tests to derive a panel-specific result. The W-statistics to test the panel data series of the variable based on individual unit root test system is given below, where "W" is assumed to be normally distributed.

$$W_{\bar{t}_{NT}} = \frac{\sqrt{N}\left[\bar{t}_{NT} - N^{-1}\sum_{i=1}^{N} E(\bar{t}_{iT}(p_i))\right]}{\sqrt{N^{-1}\sum_{i=1}^{N} Var((\bar{t}_{iT}(p_i))}} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

2.2. Testing For Panel Cointegration: The ARDL Bounds Testing Approach

To test the long run relationship we use the robust econometric technique Autoregressive Distributed Lag model (ARDL) popularised by Pesaran, Pesaran and Smith (1998), Pesaran and Shin (1999) and Pesaran, *et al.* (2001).

ARDL has several advantages. The ARDL method can make a distinction between ragressond and regressors. To be sure, one of the imperative advantages of ARDL procedure is that the estimation is possible even when the explanatory variables are endogenous [Pesaran and Shin (1999); Pesaran, *et al.* (2001)]. Another important advantage of this technique is that it can be applied irrespective of whether the variables are *I* (0), *I* (1) or fractionally co integrated [Pesaran and Pesaran (1997)]. So keeping in view, all the above mentioned points, we also use ARDL system for cointegration analysis and the follow-on ECM. The error correction version of panel ARDL model is given below for the above given Equation (1).

$$\Delta Y_{it} = \alpha + \beta 1\sum_{i=1}^{p} \Delta Y_{i,t-i} + \beta 21\sum_{i=1}^{p} \Delta FB_{i,t-i} + \beta 3\sum_{i=1}^{p} \Delta M2_{i,t-i} + \delta_1 Y_{i,t-1} + \delta_2 FB_{i,t-1} + \delta_3 M2_{i,t-1} + \mu_{it} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5)$$

Where β_0 is drift component and μ white noise. Furthermore the term with summation sign represent the error correction dynamics. While the second part of the equation corresponds to long run relationship. In the ARDL model testing system first we estimate the Equation (4) by ordinary least square and get the F-statistics value.

The null hypothesis in the equation is:

$$H0: \sum \delta_{it} = 0$$

This implies that the long run relationship does not exist. While the alternative is:

$$H1: \sum \delta_{it} \neq 0$$

The calculated *F*-statistics value is compared with two sets of critical values are specified by the Pesaran, *et al.* (2001) and Paresh Kumar Narayan (2005). Two well known Criteria for the selection of the modal are Schawrtz Bayesian Criteria (SBC) and Akaike's Information Criteria (AIC).[2]

[2]We used AIC for lag length selection.

If there is evidence of long-run relationship in the model then in order to estimate the long run coefficients, the following long-run model will be estimated,

$$Y_{it} = \alpha + \beta 1 \sum_{i=1}^{p} Y_{i,t-i} + \beta 2 \sum_{i=1}^{p} FB_{i,t-i} + \beta 3 \sum_{i=1}^{p} M2_{i,t-i} + \mu_{it} \quad \ldots \quad \ldots \quad \ldots \quad (6)$$

If we find the evidences of long run relation then in the 3rd step we utilise the following equation to estimate the short run coefficients:

$$\Delta Yit = \alpha + \beta 1 \sum_{i=1}^{p} \Delta Yit-i + \beta 2 \sum_{i=1}^{p} \Delta FBit-i + \beta 3 \sum_{i=1}^{p} \Delta M2it-i + \eta ECit-i \quad \ldots \quad \ldots \quad (7)$$

η is the error correction term in the model indicates the pace of adjustment reverse to long run equilibrium following a short run shock.

3. ESTIMATION RESULTS

3.1. Testing of the Panel Unit Root Hypothesis

To test the unit root hypothesis to all variables, Im, Pesaran and Shin W-Stat (IPS) and Levin, Lin and Chu t-Stat (LLC) tests were applied. A summary of these test results is provided in Table 2. First, these tests were applied with the variables in levels, followed by their first difference form.

Table 2

Panel Unit-Root Test Estimation

Variables	Im, Pesaran and Shin (W-Stat)	Lags	Levin, Lin and Chu (t-Stat)	Lags
Y	–2.03**	0 to 1	–4.39*	0 to 1
ΔY	–1.60**	0 to 3	–2.81*	0 to 3
FD	–4.14*	0	5.22*	0
ΔFD	–5.64*	0 to 3	–3.71*	0 to 3
M2	–0.41	1	–0.78	1
ΔM2	–2.58**	1	–7.39*	1

Notes: *Represents significant only at 1 percent, ** Represents significant only at 1 percent.

Results show that the variables are having different order of integration which enables us to apply Auto Regressive Distributive Lag Modal (ARDL).

3.2. Panel Autoregressive Distributed Lag Model (ARDL) Lag Selection

The order of lag length is usually obtained from unrestricted vector autoregressive (VAR) via Schwartz Bayesian Criteria and Akaike Information Criteria. The progression of lag selection on the basis of ARDL gives the following results:

Table 3

Lag length Selection and Bound Testing for Panel Cointegration

Lags Order	AIC	HQ	SBC	F-test Statistics
0	24.14	24.17*	24.24*	11.91*
1	24.13*	24.29	24.53	4.77*
2	24.14	25.02	25.02	1.86
Short-run Diagnostic Test-Statistics				
Serial Correlation LM, F = 0.68 (0.51)		Hetroscdasicity Test F= 1.83(0.23)		
Ramsey RESET Test F= 0.62 (0.32)		Normality J-B Value = 28.63(0.01)		

*Significant at 5 percent level according to Pesaran, *et al.* (2001) and Narayan (2005).[3]

Lag length is selected on lowest value of Akaike information Criterion (AIC) on the basis of unrestricted vector autoregression (VAR) for the overall model. The results of bound testing approach show that calculated F statistics is 4.77 at lag 1, which is higher than upper bound critical value at 1 percent level of significant implying that there is certainly a co integration relationship among the variables in the model. Having found a long run relation relationship we applied the ARDL method to estimate the long run and short run coefficients. Given the maximum lag order for the model, next we find out the individual lag order through unrestricted vector auto regression (VAR) at which the corresponding AIC is minimum.

Table 4

Lags Defined Through VAR-AIC (0, 0, and 1) and SBC (0, 0, and 0)

Lag Selected through VAR-AIC and SBC								
	0		1		2		Selected Lags	
Lag	AIC	SBC	AIC	SBC	AIC	SBC	AIC	SBC
Yit	4.13*	4.16*	4.16	4.29	4.16	4.40	0	0
FD it	13.93*	13.96*	14.03	14.16	14.13	14.37	0	0
M2 it	6.05	6.08*	6.00*	6.13	6.11	6.35	1	0

Notes: * Indicates minimum SBC and AIC.

Long run results are shown in Table 5. To test the percentage increase or decrease of change, we regressed the GDP growth rate on linear term of Fiscal deficit and money supply.

Table 5

Long Run Results using the Panel ARDL Approach[4]

Dependent Variable Yit		
Regressors	Coefficient	P-value
FDit	–0.01	0.62
M2it	0.11	0.02
M2i, t–1	–0.01	0.77
R2 adjusted = 0.93		
F-statistics = 3.72		

[3]Critical values are obtained from Pesaran, *et al.* (2001) and Narayan (2005).

[4]ARDL(0, 0, 1) selected based on Akaike Information Criterion.

As it is seen from Table 6, that M2 is important factor contributing to economic growth. The coefficient of M2 indicates that in long run M2 accelerate economic growth by 11 percent. Our results indicate that monetary policy is an effective tool to accelerate economic growth in the long run. The coefficient of FD insignificant means that fiscal policy is completely ineffective to effect economic growth in the long run.

Table 6

Error Correction Representation of Panel ARDL Model[5]

Dependent Variable ΔY_{it}		
Regressors	Coefficient	Prob-value
ΔFD_{it}	0.01	0.82
$\Delta M2_{it}$	0.08	0.05
$\Delta M2_{i, t-1}$	–0.05	0.22
CE(-1)	–0.70	0.00
R-Bar-Squared = 0.85	F-statistics = 9.75[.000]	

The estimated lagged error correction term ECt–1 is negative and highly significant. These results supporting the cointegration among the variables represented by Equation 1. The feed back co efficient is –0.70 suggests that about 70 percent disequilibrium is corrected in the current year. The result also suggests in the short run change in variable FD have insignificant impact on GDP growth, while money supply has significant impact on Economic growth.

4. CONCLUSION

This paper examines the relative effectiveness of both types of policies in the context of modern time series econometrics in case of South Asian countries Pakistan, India, Sri Lanka and Bangladesh during the period from 1990 to 2007, using autoregressive distributed lag (ARDL) approach in order to test the Monetarist and Keynesian claims and to find out that whether the effective policy instruments have a significant relationship with economic growth. The results clearly demonstrate that there is long run relationship among the variables under consideration. Money supply appeared as a significant variable in both short run as well as in long run, while Fiscal deficit is insignificant in short run as well as in long run. The results show that monetary policy is a powerful toll than fiscal policy in order to enhance economic growth in case of south Asian economies. The feed back coefficient is negative and significant suggesting that about 72 percent disequilibrium in the previous period is corrected in current year.

The effectiveness of policies mainly depends on the internal and external condition of economy. Hence the over emphasise on single policy whether monetary of fiscal may lead to some undesired economic phenomenon. Although monetary policy has proved to be more effective in case of south Asian countries, a sophisticated use of fiscal policy with more development expenditure rather than non development expenditure can also improve economic indicators. A careful amalgam of the two policies can provide better results if implemented properly to increase growth momentum.

[5]ARDL(0, 0, 1) selected based on Akaike Information Criterion.

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