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State Bank of Pakistan

2010

SBP Research Bulletin
Volume 6, No. 1, May, 2010

Monetary and Fiscal Policies Coordination: Pakistan's Experience

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The paper explores how the monetary and fiscal policies have coordinated with each other in Pakistan. It argues that monetary and fiscal policies have been executed independently throughout the study period that is 1964-65 to 2008-09 and there have been very few instances of coordination between the two policies while addressing prevailing economic conditions. The paper does not find any difference between the behavior of monetary and fiscal policies before and after the establishment of Monetary and Fiscal Policies Coordination Board in 1994. Whatever instances of coordination were found were clustered in military regimes; which may be one of the reasons of macroeconomic stability in such regimes.

JEL Classification: *E61, H30*
Keywords: *monetary policy, fiscal policy*

1. Introduction

Different macroeconomic policies are formulated and implemented through different institutional arrangements, though broad objective of the policies is usually the same, i.e., increasing the material welfare of the people of the country. The most dominant policy objectives are achieving high employment and low inflation. There are two major groups of policy instruments to achieve these objectives; one is related to monetary conditions, that is used by central banks with the primary objective of maintaining price stability; and the other to fiscal conditions, that is employed by the ministry of finance to improve overall economic performance. However, the objectives of fiscal policies are usually inclined towards high growth and employment even at cost of high inflation. With this dichotomy in policy objectives of monetary and fiscal authorities, there is a risk of quashing each other's actions. It warrants some sort of monetary and fiscal policies coordination with arrangement for exchange of information in timely

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manner and setting mutually agreed targets for key economic indicators. Agreement about the targets of output and inflation creates a monetary-fiscal symbiosis, yielding the ideal outcome despite disagreement about relative weights of the two objectives (Dixit and Lambertini, 2001). The coordination in this context does not put the central bank's autonomy into the shade. Instead it is to ensure effectiveness of both the policies. A non-coordinating behavior of any one party not only renders policies ineffective but also adversely affects the credibility of both the fiscal and monetary authorities.

The experience of recent global financial and economic crisis fortifies the need for coordination among macroeconomic policies to effectively address the shocks. A coordinated policy response to economic shocks increases the speed of convergence to the steady state and leads the economy closer to the planned target as compared to the outcome of the non-cooperative policy moves as noted by Tabellini (1986). Dahan (1998) also stresses on the need for the monetary and fiscal policies coordination after studying budgetary implications of central bank's actions and monetary implications of government's reactions.

The need for policy coordination also arises in the case of structural reforms and liberalization of the financial sector. Such reforms can only succeed within the framework of a supportive fiscal policy that provides macroeconomic stability, fiscal discipline, and avoidance of taxes that discriminate against financial activity. Together with improved legal, accounting and regulatory systems in the financial sector, these are the prerequisites for successful financial liberalization (World Bank, 1989). If high fiscal deficits persist while the authorities are undertaking the reforms of the financial sector, interest rates could reach very high levels and adversely affect efficiency of the financial system.

Recently the issue of monetary-fiscal policy coordination has been analyzed in a number of papers, with an explicit reference to European Monetary Union (EMU). The formation of the EMU has given rise to a debate about the appropriate relationship between centralized monetary policy on one hand, and decentralized fiscal and structural policies on the other. For instance, Catenaro (1999) argues in favor of cooperation of fiscal policy with monetary policy stance of the Union. He shows when the fiscal authorities internalize the important spillover effects originating from their excessively expansionary fiscal policies, they reduce the structural inefficiencies, inflation and spending biases. Beetsma and Bovenberg (2001) address the question whether the EMU requires coordination of fiscal policies and, if so, what form should such coordination take. They investigate how decentralized fiscal policy interacts with a centralized monetary policy and analyze cases when both monetary and fiscal authorities in EMU are unable to

commit to their policy targets. They highlight the importance of having not only an explicit target of inflations for central bank but also credible commitment from fiscal authority of reducing debt to some sustainable level and then maintaining it.

In case of Pakistan, there is hardly any study on the topic except Hanif and Arby (2007). While Hanif and Arby (2007) give a theoretical account of monetary and fiscal policies coordination and present a description of the institutional arrangements for policy coordination in Pakistan, this paper attempts to explore the nature of the relationship between monetary and fiscal policies. In the next section, we give a methodology of testing coordination and in section 3 results are presented. The last section concludes the paper.

2. Methodology

The question of coordination between monetary and fiscal policies arises only if the two institutions are independent, at least operationally. If moves of any one institution depend on the actions of or direction from the other, then coordination is inherently ensured. A general perception in case of a central bank in developing country like Pakistan is that it is subservient to fiscal authority. It may be true in the context of institutional set up; however, the actual execution of monetary policy may still be independent of fiscal obligations. Before we examine the extent of coordination, it makes sense to test empirically the independence of the monetary policy from the fiscal policy.

As tests of independence, we apply Granger causality test on indicators of monetary and fiscal policies and also explore the existence of co-integration between the two indicators. While the Granger causality test determines the impact of past information in one variable on the current value of the other, the cointegration test establishes if there is an equilibrium relationship between the two variables over the long run. The two institutions are considered independent if there is no cointegration and no pair-wise causality in the indicators of their respective policy stances.

For Granger causality, we take high-power money to GDP ratio (h) as an indicator of monetary policy and budget deficit to GDP ratio (d) as an indicator of fiscal policy. Tests of unit root show that both the indicators are zero-order integrated. We also apply the test of causality on changes in high-power money and budget deficit as an alternative form of monetary and fiscal policies indicators[1]. For test

[1] Results of unit root tests are not reported in the paper and can be obtained from the authors.

of cointegration, we apply single equation residual based Phillips-Ouliaris (1990)[2] test on high-power money (*H*) and budget deficit (*D*), both being integrated of order one.

Once the independence between the two institutions is observed, the next step is to determine the extent of coordination between them given different economic shocks. We define coordination as follows.

Box 1. Macroeconomic environment matrix

		Inflation	
		Positive	Negative
Growth	Positive	PP	PN
	Negative	NP	NN

The growth and inflation are the manifestation of the economic performance. We therefore, focus on shocks to inflation and growth to which a policy response is needed. The matrix in box 1 gives four possible combinations of shocks to growth and inflation, where P and N represent positive and negative shocks. Thus PP means positive shocks to both growth and inflation, PN represents a positive shock to growth and a negative shock to inflation, and so on. Given these shocks, a coordinating behavior could be as given in the policy response matrix (Box 2).

Box 2. Policy response matrix

		Monetary policy	
		Contraction	Expansion
Fiscal policy	Contraction	CC	CE
	Expansion	EC	EE

If there is positive shock to both growth and inflation then not only monetary policy should be contractionary to curb inflation but fiscal policy should also follow suit or at least should not be expansionary. We define this policy combination as CC, and one should observe it if there is policy coordination. On the other hand, if both growth and inflation are hit by negative shocks then both monetary and fiscal policies should be expansionary in their stance in case of coordination. This policy combination is denoted as EE in the box 2.

The box 1 has been constructed on the basis of growth and inflation data of Pakistan for a period of 1965 to 2009[3]. The shock to growth is deviations of real

[2] Since Phillips-Ouliaris (1990) tests are based upon adjusting the conventional statistic using Newey-West estimator of error variance, these are robust to serial correlation and (time dependent) heteroscedasticity.

GDP growth from sample average and shock to inflation is defined as difference between observed inflation from threshold level of inflation for Pakistan as worked out by Mubarik (2005).

The monetary policy and fiscal policy stance are defined as change in high power money and change in budget deficit respectively, both adjusted for changes in real GDP and prices. A positive change represents an expansionary stance and a negative change a contractionary stance.

Each cell of the macroeconomic environment matrix and policy response matrix contains a set of those years in which the given combinations of shocks and policy stance have been observed. The extent of coordination (ρ) is then defined as the following:

$$\rho = \omega / \sigma \qquad (1)$$
$$\omega = \text{n(PP} \cap \text{CC)} + \text{n(PN} \cap \text{CE)} + \text{n(NP} \cap \text{EC)} + \text{n(NN} \cap \text{EE)}$$

σ is total number of years in the study.

There would be perfect coordination if the four quadrants of macroeconomic environment matrix and policy response matrix are congruent (or equivalently $\rho = 1$) and no coordination if $\rho = 0$. Interestingly, this definition of coordination does not necessarily require existence of a formal institutional set up of the kind Monetary and Fiscal Policies Coordination Board (MFCB) of Pakistan. It is a sort of revealed coordination which may or may not be an outcome of formal consultation between the two institutions.

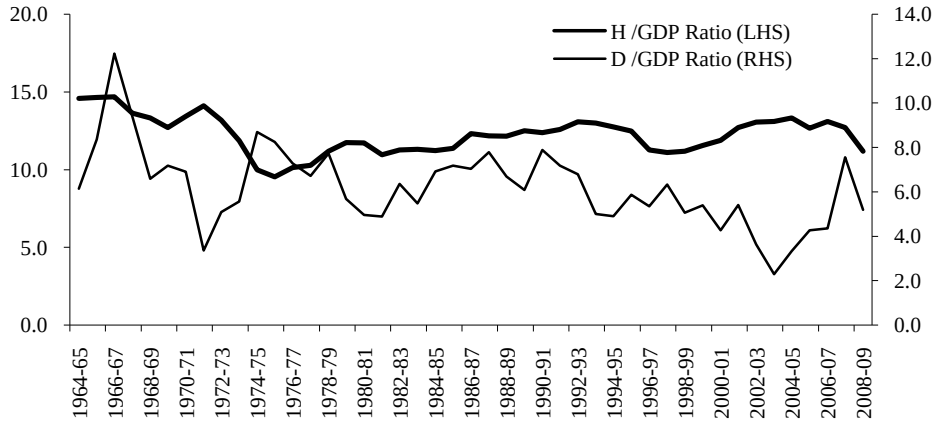
3. Empirical evidence

A visual of the two series of high power money and budget deficit as given in figure 1 shows that there is no clear co-movements of the two variables. Although it can be conjectured in case of a developing country like Pakistan that high budget deficit could be associated with high budgetary borrowing from the central bank, as a monetary policy stance what matters is the overall movement in the reserve money. Interestingly, a zero correlation is observed between overall reserve money and budget deficit, both adjusted for real output and prices during

[3] Data limitation prevented us from going further backward. The data on high-power money and M2 is average of twelve months figures of both the variables which have been obtained from International Financial Statistics, IMF.

the period from 1965 to 2009. This implies that monetary and fiscal policies remained independent of each other in Pakistan.[4]

Figure 1. Trend of High power money / GDP ratio and Budget deficit / GDP ratio



A similar conclusion is drawn from the results of Granger causality and Phillips-Ouliaris cointegration tests. The pair-wise Granger test of causality as reported in table 1 shows that neither the ratio of high power money to GDP (*h*) caused budget deficit/GDP (*d*) nor budget deficit /GDP caused it. Similarly, growth rates of high power money and budget deficit also do not cause each other.

Table 1. Pair-wise Granger causality tests

Sample: 1965 2009

Number of Observations = 43, Lags: 2

Null Hypothesis:	**F-Statistic**	**Prob.**
h does not Granger Cause *d*	0.971	0.388
d does not Granger Cause *h*	0.803	0.455
Δlog(H) does not Granger Cause Δlog(D)	0.624	0.541
ΔLog(D) does not Granger Cause ΔLog(H)	0.814	0.451

The result of Phillips-Ouliaris (single equation) cointegration test, reported in table 2, also supports this outcome. With the null hypothesis of no cointegration, both the test statistics (tau and z) show that the series of high power money and budget deficit are not cointegrated. It confirms our earlier conclusion that monetary and fiscal policies in Pakistan have been independent of each other

[4] A multivariate normality test shows that *h* and *d* are multivariate normal. Thus zero correlation between them implies their independence.

irrespective of the institutional standing of the State Bank of Pakistan vis-a-vis ministry of finance.

Table 2. Results of Philips-Ouliaris test of cointegration[5]

Null hypothesis: No Cointegration between Log(H) and Log(D)
Deterministic variables: intercept, Δlog(Y), Δlog(P)

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
LOG(H)	-3.600	0.200	-20.943	0.159
LOG(D)	-3.685	0.175	-21.817	0.133

*MacKinnon (1996) p-values.

Given the independence between the indicators of monetary and fiscal policies used in this study, the extent of revealed coordination is measured by the ratio defined in equation (1) which is based upon the empirical information on macroeconomic environment and policy response matrices. As already mentioned, each cell of the tables represents a set of years in which the given combination of shocks and changes in policy indicators was observed. For example, in box 1a, the top-left cell shows the years when real GDP growth was above the sample average (5.2 percent) and inflation was higher than the threshold level for Pakistan (9 percent) as determined by Mubarik (2005). The bottom-left cell shows the years when real GDP growth was below sample average and inflation was above the threshold. Similarly, in box 2a, the top-left cell shows the years when the value of both the fiscal and monetary policy indicators decreased showing contractionary stance of both the policies. The bottom-left cell shows the years when the value of the fiscal policy indicator increased while that of monetary policy indicator decreased.

Box 1a. Macroeconomic environment matrix of Pakistan

numbers represent end of fiscal year

		Inflation (deviation from threshold)	
		Positive	Negative
Growth (deviation from mean)	Positive	73, 74, 80, 81, 82, 92, 96, 05	66, 68, 69, 70, 78, 79, 83, 84, 85, 86, 87, 88, 04, 06, 07
	Negative	75, 76, 77, 89, 91, 93, 94, 95, 97, 08, 09	67, 71, 72, 90, 98, 99, 00, 01, 02, 03

[5] The test was also applied with (a) only intercept as deterministic variable and (b) intercept and deviation of real GDP growth from sample average and inflation from threshold level; yet the outcome remained the same that is we failed to reject the null hypothesis.

Box 2a: Policy Response Matrix of Pakistan

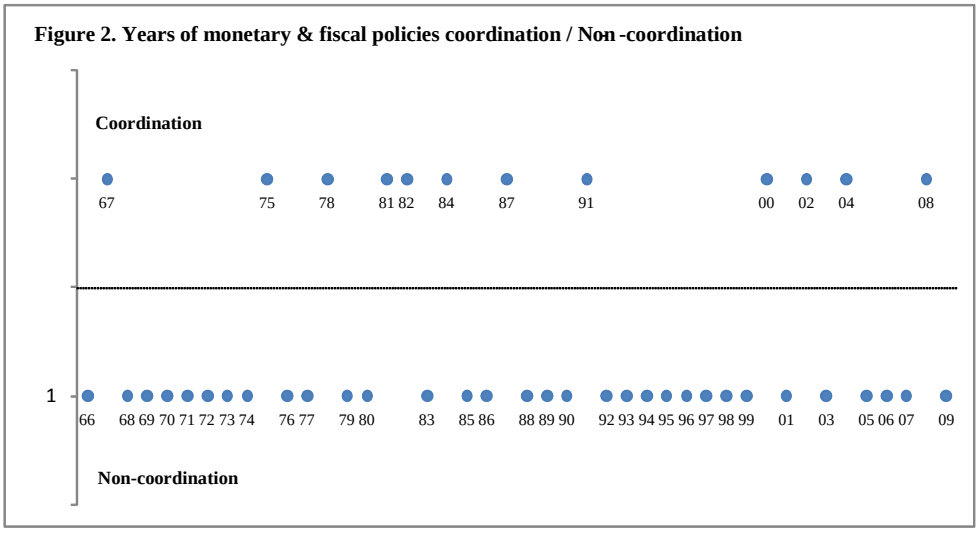
numbers represent end of fiscal year

		Monetary policy	
		Contraction	Expansion
Fiscal policy	Contraction	68, 69, 76, 81, 82, 89, 94, 95, 97, 09	71, 72, 77, 78, 80, 84, 87, 90, 92, 93, 99, 01, 03, 04
	Expansion	70, 73, 74, 75, 85, 88, 91, 96, 98, 06, 08	66, 67, 79, 83, 86, 00, 02, 05, 07

From the distribution of years as given in boxes 1a and 2a, the extent of coordination between the monetary and fiscal policies conditional upon the specific economic environment can be worked out as follows:

$$
\begin{aligned}
&n(PP \cap CC) / n(PP) = 2 / 8 = 0.25 \\
&n(PN \cap CE) / n(PN) = 4 / 15 = 0.27 \\
&n(NP \cap EC) / n(NP) = 3 / 11 = 0.27 \\
&n(NN \cap EE) / n(NN) = 3 / 10 = 0.30 \\
&\rho = 0.27
\end{aligned}
\qquad (2)
$$

Figure 2. Years of monetary & fiscal policies coordination / Non-coordination



The results show that the extent of monetary and fiscal policies coordination as revealed by changes in policy indicators conditional upon economic shocks has only been 0.27 during the sample period. The coordination between the two policies was the lowest (0.25) when both the real GDP growth and inflation were

high while it was the highest (0.3) when both growth and inflation were low. The revealed behavior of the two policies as observed during 1965 to 2009 is depicted in figure 2. The points above the line show the years when the coordination between monetary and fiscal policies was observed, whereas the points below the line show the years when the movements in two policy indicators were not in line with economic circumstances.

Thus it is hard to regard monetary and fiscal policies moves as coordinated moves in Pakistan. It is also interesting to note that the extent of coordination does not improve even after the establishment of Monetary and Fiscal Policies Co-ordination Board in 1994 through an amendment in Section 9B of the State Bank of Pakistan Act, 1956. [6]

The distribution of years in which coordination was observed into political and SBP governors' regimes gives some interesting insights in behavior of the two policy institutions as given in table 3.

Table 3. Distribution of instances of coordination in different regimes

		Total years in a regime	Years of coordination
Political regimes			
1966-71		6	1
1972-77		6	1
1978-87		10	5
1988-99		12	1
2000-08		9	4
SBP Governors *			
Mahbubur Raschid	(1968-71)	4	1
Ghulam Ishaq Khan	(1972-75)	4	1
S. Osman Ali	(1976-78)	2.5	1
A.G.N. Kazai	(1979-86)	8	3
V. A. Jafarey	(1987-88)	2	1
I. A. Hanfi	(1989-93)	5	1
Muhammad Yaqub	(1994-99)	6	0
Ishrat Hussain	(2000-05)	6	3
Shamshad Akhtar	(2006-09)	3	1

* SBP governors with three or more years of service have been included.

[6] This exercise was repeated with primary deficit as fiscal policy indicator. The key findings remain the same.

It appears that generally in military regimes, the two policies had coordinated moves; this could be one of the reasons for better economic performance, at least in terms of growth and macroeconomic stability, during such regimes.[7]

4. Conclusion

The paper explores the existence of coordination between monetary and fiscal policies in Pakistan in addressing macroeconomic imbalances. Contrary to general perception, the paper establishes that monetary policy has been independent of the fiscal policy in Pakistan. Given the independence of the policies, the paper then works out the extent of coordination through movements of policy indicators in different economic scenarios during the period from 1965 to 2009. Four scenarios have been built up, viz. (a) high growth and high inflation, (b) high growth and low inflation, (c) low growth and high inflation and (d) low growth and low inflation. We postulate that monetary and fiscal policies would be coordinating when both are contractionary if scenario (a) prevails, expansionary if scenario (d) prevails and move in opposite directions if scenarios (b) and (c) prevail. With this set up, we have found that during the last 44 years, coordinating behavior of monetary and fiscal policies was observed only in 12 years. Thus in Pakistan, monetary and fiscal policies hardly coordinated each other to address economic issues. Even the establishment of Monetary and Fiscal Policies Coordination Board, through amendments in SBP Act in 1994 could not change the behavior of the two institutions. Interestingly, we could not observe even a single instance of coordination during late 1990s. The coordination between the two policies was relatively high during military regimes compared with democracies that could be another reason for usually echoing better economic performance in such regimes.

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[7] We have also tracked the coordination years with the years when Pakistan was under IMF programs. It is found that overall coordination slightly increased from 0.27 to 0.3 with IMF programs.

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