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Fiscal Effects of Monetary Seigniorage: A Case Study of Pakistan*

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INTRODUCTION

The effects of monetary policy on key macro variables have been studied in the literature. In Pakistan most of these studies concentrate on exploring the interdependence of money supply, national income, inflation etc.[1]

One important, but neglected issue of monetary policy, is its fiscal effects. The fiscal and monetary authorities being parts of the total economic policy machinery, the role of monetary instruments in achieving fiscal objective should not be ignored. In countries like Pakistan where the central bank is under direct control of the government, fiscal policy is often made under the assumption that the monetary policy will be adjusted accordingly.[2]

There are a number of ways in which monetary policy may lead to fulfilment of some fiscal objectives. These include devaluation, change in interest rate and change in monetary base.

Devaluation leads to an increase in the book-keeping value of the reserves of a central bank. The central bank might be asked to write up the reserves and surrender the profit to the treasury. However, in most of cases this is not the reason for devaluation. Similarly, the bank rates might be changed on the eve of a treasury

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[1]For example see Abbas (1991, 1992) and Khan and Siddiqui (1990).

[2]Recently there has been an amendment in the rules to make the State Bank more autonomous. But the legal process is not complete yet. Even where the central banks enjoy a greater degree of autonomy indirect ways might be used to persuade the monetary authorities to follow specific policies.

many ways in which such a revenue can be estimated. We are using the most common formulation for the measurement of seigniorage which is defined as the real increase in monetary base. Third, gross tax is the aggregate of explicit and implicit taxes.

The Ordinary Least Square (OLS) technique has been used to determine the effect of these measures of taxes on two macro variables, viz. the aggregate government expenditure and private consumption.

For aggregate government expenditure the following three equations are estimated.

$$G = b0 + b1EXPT \quad \ldots \quad (1)$$

$$G = b0 + b1EXPT + b2IMPT \quad \ldots \quad (2)$$

$$G = b0 + b1GT \quad \ldots \quad (3)$$

G is aggregate government expenditure;
EXPT is explicit tax;
IMPT is implicit tax which is defined as real increase in monetary base; and
GT is gross tax (*EXPT + IMPT*).

For private consumption the following two equations are estimated.

$$C = b0 + b1YD1 \quad \ldots \quad (4)$$

$$C = b0 + b1YD2 \quad \ldots \quad (5)$$

C is private consumption;

$$YD1 = GNP - EXPT$$
$$YD2 = GNP - GT$$

GNP is gross national product. *YD*1 and *YD*2 are two different measures of disposable income.

All the variables used in the equations have been taken in the form of proportionate real changes in order to eliminate the strong trend element in the variables. The data are on yearly basis, and have been collected from Government of Pakistan (Various Issues). Growth rates are applied on GNP and private consumption series to remove the inconsistency which appeared after 1987-88 due to the adoption of new methodology. The study covers the period from 1975-76 to 1990-91.

EMPIRICAL FINDINGS

The percent distribution of seigniorage to gross national product and to total tax revenue is presented in Table 1. The entire period has been divided into two subperiods. In the first subperiod (1975-76 to 1982-83) the percentage with GNP is 1.90 and it ranges from 0.89 in 1981-82 to 2.81 in 1978-79. In the same subperiod this percentage ranges from 7.17 in 1981-82 to 23.48 in 1978-79 in case of total tax revenue. In the second subperiod (1983-84 to 1990-91) the percentage with GNP is 2.01 and it varies from 1.06 in 1984-85 to 2.33 in 1990-91. Whereas the percentage with total tax revenue is 12.86 and it ranges from 9.05 in 1984-85 to 19.12 in 1990-91. On average both the percentages are found to have slightly increased in the second subperiod as compared to the first one.

Table 1

Seigniorage in Relation to GNP and Tax Revenue

(Percent)

Years	GNP	Tax Revenue
1975-76	1.79	15.36
1976-77	2.32	20.29
1977-78	1.49	13.05
1978-79	2.81	23.48
1979-80	1.72	13.39
1980-81	2.45	18.91
1981-82	0.89	7.17
1982-83	2.09	17.16
Subperiod 1	**1.90**	**12.23**
1983-84	1.39	10.97
1984-85	1.06	9.049
1985-86	1.18	9.640
1986-87	1.89	14.68
1987-88	1.91	14.67
1988-89	1.42	10.41
1989-90	1.87	14.24
1990-91	2.33	19.12
Subperiod 2	**2.01**	**12.86**
Entire Period	**1.67**	**13.21**

The empirical findings of the Equations (1) to (5) are summarised in Table 2. We can see from the table that the first equation of the government expenditure has only EXPT as an independent variable. The slope of the equation is insignificant, and the adjusted $\bar{R}^2$ is negative. However, when IMPT is included in the second equation, the coefficient of IMPT appears significant and the coefficient of explicit tax also improves a bit. Moreover adjusted $\bar{R}^2$ increases from –0.070 to 0.350.[4]

Table 2

Results from Regression Equations

Eq. No.	Dep. Var.	Cons-tant	EXPT	IMPT	GT	YD1	YD2	$\bar{R}^2$	DW
1	G	0.060	0.061					–0.070	2.38
		(3.27)**	(0.28)						
2	G	0.050	0.054	0.050				0.350	1.48
		(3.43)**	(0.32)	(3.06)**					
3	G	0.043			0.311			0.244	1.87
		(3.18)**			(2.35)*				
4	C	0.017				0.665		0.324	2.10
		(1.09)				(2.78)*			
5	C	0.018					0.648	0.409	2.11
		(1.39)					(3.27)**		

Notes: (i) The figures in parenthesis are *t*-values.
(ii) Coefficients with ** are significant at 1 percent level of significance.
(iii) Coefficients with * are significant at 5 percent level of significance.

Similarly when both explicit and implicit taxes (GT) are jointly used as an explanatory variable, it shows a significant slope and an increase in adjusted $\bar{R}^2$ compared to the Equation (1).

This implies that whether implicit tax is used as a separate variable or in aggregation with explicit tax, it is significant in explaining government expenditure.

Similar results are obtained for private consumption. In Equation (4) private consumption is regressed on *YD*1. The slope of this equation is significant

[4]The inclusion of implicit tax in Equation 1 has also been found significant when we applied *F*-test.

at the five percent level, whereas the slope of Equation (5) is significant at the one percent level, which uses *YD*2 as an explanatory variable.

Now, *YD*2 was calculated by using implicit tax as well as explicit tax, while *YD*1 was calculated by using explicit tax only. This demonstrates that implicit tax plays an important role in explaining private consumption.

Signs of all independent variables are correct, and *DW* ratio does not indicate presence of autocorrelation.[5]

CONCLUDING REMARKS

Monetary policy has a status in its own right. It has also some important fiscal implications.

1. Implicit tax amounts to about 13 percent in relation to total tax revenue, which is a big amount and cannot be ignored.
2. By printing money the government can impose an implicit tax on people. This study demonstrates that such a tax plays a significant role in the determination of government expenditure.
3. Moreover, this tax reduces the private consumption by curtailing disposable income.
4. Researchers and policy-makers should take these effects into consideration while estimating and analysing public expenditure, taxes, consumption etc.

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[5] At first sight it may appear that adjusted $\bar{R}^2$ is rather low in the above results. But the fact is that the aim of the study is not to estimate the determinants of public expenditures. Nor is this an exercise in estimating a consumption function at macro level. We just wanted to demonstrate that a monetary policy can act like a fiscal measure in affecting some macro variables.

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