

## **Some Econometric Evidence on the Relative Importance of Monetary and Fiscal Policy in Pakistan**

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### **I. INTRODUCTION**

Economists agree that both monetary and fiscal policies can influence the pace of aggregate economic activity. However, their relative importance still remains a widely debated and complicated issue. Given the mushroom growth of different types of economic models, it seems almost impossible to decide their relative importance, at a purely theoretical level. So in this paper, we have tried to deal with this issue empirically in the context of Pakistan.

In surveying the literature, we can find a number of empirical studies on this issue, but most of them are for the developed countries. Similar studies for the developing countries are rare. We have been able to find only two such studies for Pakistan, one by Hussain (1982) and the other by Masood and Ahmad (1980).

The study by Hussain (1982) covers the period from 1949-50 to 1970-71, and the data used in this study pertain to united (East and West) Pakistan. So the results of his study can hardly be of much relevance to present Pakistan. Masood and Ahmad (1980) use data for present Pakistan from 1959-60 to 1976-77 in their study. They regress induced expenditures on autonomous expenditures and money supply and assess the relative importance of the two exogeneous variables, on the basis of t-values and beta-coefficients. Their definition of induced and autonomous expenditures seems to be a little arbitrary. Agricultural income, an independent variable in their regressions, turns out to be a dominant variable in a number of equations. The negative sign of the autonomous expenditures in some regressions is difficult to justify. Their efforts, to determine the lag structure, have also been unsuccessful. Although their data are from many individual sources, they have not applied any formal tests to check the consistency of the data and the possible structural change that might have taken place due to the separation of East Pakistan.

In the present study, we intend to improve on the previous work on several accounts. First, we shall update the previous studies up to 1984-85. Second, at PIDE,

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some studies [Fatima (1983); Kemal, Bilquees and Khan (1980)] have been undertaken to provide consistent data for present Pakistan. We plan to make use of these data in our study. Since these data, up to 1970-71, are calculated on the basis of some assumptions and there is also some possibility of structural change in the economy after 1970-71, due to the separation of East Pakistan, slope and intercept dummies will also be used to see whether these influences were statistically significant. The role of fiscal policy will be explored in greater detail and the issue of the length of lags associated with the two policies will also be probed more thoroughly.

## II. METHODOLOGY

In order to evaluate the relative importance of monetary and fiscal policies, we can start with a reduced form Anderson-Jordan type equation (Anderson and Jordan 1968) which relates monetary and fiscal policy actions to aggregate economic activity. Our dependent variable is GDP, while total government expenditures and, alternatively, narrow and broad definitions of money supply are taken as independent variables. To see whether monetary or fiscal policy alone is sufficient to explain changes in GDP simple regressions employing either monetary or fiscal variables will also be estimated. We shall compare beta-coefficients<sup>1</sup> and t-values associated with the two types of policy variables. A higher value of the beta-coefficient for a variable will imply its stronger effect on GDP, while dependability or predictability of a variable will be judged by the value of the t-statistic associated with it.

In the mixed economies of the developing countries, government expenditures are not used merely as a tool of stabilization policy. They are planned to achieve many other objectives relating to economic development. It is not only the aggregate level of government expenditures that matters but also their composition. To take care of this aspect of government expenditures, we have deviated a little from the standard Anderson-Jordan type methodology by replacing a single variable of total government expenditures with its components, namely current consumption expenditures, investment and subsidies.

The relative speed of the monetary and fiscal policies depends upon the length of lag associated with the variables representing these policies. However, the choice of appropriate lag length is a complicated matter and no simple formal statistical procedure is available for this purpose. We plan to estimate regressions with different lengths of lags and then try to choose a regression with the lowest estimated standard error, as suggested by Theil (1961). Clearly, this criterion does not guarantee the choice of a regression which makes sense in terms of the signs and the magnitudes of

<sup>1</sup> For definition see Maddala (1977).

the coefficients and the length of lag. However, for the want of any better criterion, we have to rely on it. We shall also postulate that lag effects of the two policies continue indefinitely but dampen geometrically in successive periods. A Koyck-type distributed-lag equation will be estimated to test this hypothesis, assigning some geometrically declining weights to monetary and fiscal policy variables. The Ordinary Least Squares (OLS) estimation technique will be employed throughout this study.

### III. DATA

The data used in this study cover the period from 1959-60 to 1984-85. The sources of data, for the two concepts of money supply, are Kemal *et al.* (1980) and various issues of the *Bulletin*, State Bank of Pakistan. The GDP deflators are used to convert these data to real magnitudes. The data on GDP and the various components of government expenditures at current and constant prices are taken from the Pakistan Economic Survey 1985-86.

### IV. RESULTS

Table 1 presents estimates of the various versions of the Anderson-Jordan type equation in nominal terms.<sup>2</sup> A comparison of simple and multiple regressions reveals that the addition of one more policy variable to a regression results in a visible reduction in the value of the estimated coefficients and the estimated standard error of the regression. This shows that both monetary and fiscal policies are effective in influencing the level of aggregate economic activity. In all regressions, both the beta-coefficients and the *t*-values, associated with the money supply variables, have larger values as compared to those of government expenditure. This leads us to conclude that the impact of monetary policy on GDP is stronger, as well as, more predictable than that of fiscal policy, though both the policies, significantly, influence the level of GDP. The regressions, estimated with all variables in real terms, give similar results which are not reported here.

The regressions with money supply and various components of government expenditures as independent variables are reported in Tables 2 and 3 in nominal and real terms respectively. Money supply is again highly significant in all these regressions. A glance at these regression results also shows that government current consumption expenditures are significant both in real and nominal terms. On the other hand, government investment outlays are significant only in the regressions

<sup>2</sup> All these equations were also estimated with slope and intercept dummies to see whether the data for pre- and post-1971 are consistent and whether structural change in the economy, due to the separation of East Pakistan, is statistically significant. These dummies turned out to be insignificant and were dropped in later analysis.

Table I  
*Regressions of GDP on Government Expenditures and Money Supply at Current Prices*

S. No.	Constant	G	M <sub>1</sub>	M <sub>2</sub>	R <sup>2</sup>	S.E.	D.W.
1.	6479.69 (3.0662)	3.7484 0.9980 (77.6331)			0.9959	7802.68	0.85
2.	1191.19 (1.1786)		3.5542 0.9985 (89.8704)		0.9969	6743.61	1.20
3.	5798.42 (3.2065)			2.2718 0.9986 (91.0090)	0.9970	6659.49	1.45
4.	3817.50 (2.4520)	1.5810 0.4209 (3.7545)	2.0607 0.5789 (5.1637)		0.9980	5424.15	1.29
5.	5906.97 (4.0392)	1.5559 0.4143 (3.7031)		1.3322 0.5856 (5.2345)	0.9980	5384.38	1.51

Notes: 1. The figures in parentheses are *t*-values. Beta-coefficients are reported just above them. The values at the top are the estimated coefficients of regression.

2. The symbols used in the Table are defined as follows:

*G* = Total government expenditures.

*M*<sub>1</sub> = Narrow money supply (currency + demand deposits).

*M*<sub>2</sub> = Broad money supply (*M*<sub>1</sub> + time deposits).

3. All variables are measured in millions of current rupees.

Table 2  
*Regressions of GDP on Components of Government Expenditures and Money Supply at Current Prices*

S. No.	Constant	GC	GI	GS	M <sub>1</sub>	M <sub>2</sub>	R <sup>2</sup>	S.E.	D. W.
1.	4052.84	2.3957 (2.8102)	1.0284 0.1122 (4.8871)	0.7483 0.0197 (0.7026)	1.9638 0.5517 (5.3223)		0.9984	4911.65	1.49
2.	5843.35	1.9553 0.2610 (3.7360)	1.6102 0.1757 (2.7966)	1.0084 0.0265 (0.8419)		1.2295 0.5404 (4.1984)	0.9989	5550.46	1.45

Notes: 1. The figures in parentheses are t-values. Beta-coefficients are reported just above them. The values at the top are the estimated coefficients of regression.

2. The symbols used in the Table are defined as follows:

$G_C$  = government current consumption expenditures.

$G_I$  = government investment.

$G_S$  = government subsidies.

$M_1$  = Narrow money supply (currency + demand deposits).

$M_2$  = Broad money supply ( $M_1$  + time deposits).

3. All variables are measured in millions of current rupees.

Table 3  
*Regressions of GDP on Components of Government Expenditures and Money Supply at Constant Prices of 1959-60*

S. No.	Constant	GE	GI	GS	M <sub>1</sub>	M <sub>2</sub>	$\bar{R}^2$	S.E.	D.W.
1.	6234.14 (5.4499)	3.4184 0.5051 (4.0777)	-0.3126 -0.0291 (-0.3769)	3.5005 0.1271 (2.7026)	1.3972 0.4170 (3.6665)		0.9864	1838.41	1.45
2.	7306.37 (7.7501)	2.6649 0.3938 (3.0652)	-0.0028 -0.0003 (-0.0036)	3.4913 0.1267 (2.9588)		1.0366 0.5012 (4.3839)	0.9884	1701.31	1.55

Notes: 1. The figures in parentheses are *t*-values. Beta-coefficients are reported just above them. The values at the top are the estimated coefficients of regression.

2. The symbols used in the Table are defined as follows:

$G_E$  = government current consumption expenditures.

$G_I$  = government investment.

$G_S$  = government subsidies.

$M_1$  = Narrow money supply (currency + demand deposits).

$M_2$  = Broad money supply ( $M_1$  + time deposits).

3. All variables are measured in millions of 1959-60 rupees.

estimated with all variables in nominal terms. A possible explanation of this phenomenon would be that the supply of consumption goods is relatively flexible and government demand for goods and services does not compete with that of the private sector. On the other hand, the supply of capital goods is not so flexible and any increase in government demand for capital goods crowds out private investment. Hence, the effect of increase in government investment is reflected only in increased prices. The supply-side effects of government investment are also dubious. In previous years, the government has spent a considerable amount of its investment outlays for providing infrastructure and other facilities to stimulate private investment. But, unfortunately, owing to a number of economic and non-economic factors, these effects have not been very fruitful.

These results also provide some insight into the role of subsidies. They are insignificant when regressions are estimated in nominal terms but become significant in regressions with real magnitudes. This shows that subsidies do exert a significant positive influence on real GDP. A large proportion of government subsidies is spent on essential food items, agricultural inputs and exports.<sup>3</sup> As a result, the prices of these commodities for the consumers are reduced and, hence, their demand increases at a given price level. This explains why the coefficient of government subsidies is insignificant when the regressions are estimated in nominal terms.

To estimate the length of lag in the effect of the two policies, we started by, first, keeping government expenditures at current period and increasing the length of lags in money supply from one to five years in successive regressions. Then, the same procedure was repeated with the lags of government expenditures, keeping money supply at current period. The standard errors of both the sets of regressions, resulting from this exercise, were examined but no overall pattern seemed to emerge. After the failure of this procedure, all possible combinations of the lags of the two types of policy variables, up to five years, were tried but no sensible results could be obtained. Even, the regressions based on the Koyck-type, distributed-lag pattern, did not make much sense. Hence, our efforts to estimate the log structure associated with the two policies remained unsuccessful.

## V. SUMMARY AND CONCLUSIONS

In this paper, we have tried to find out, which one of the monetary and fiscal policies is more vigorous, more dependable and takes a shorter time in exerting its influence on GDP. We have updated and improved previous work by using a better data base, studying the role of the various components of government expenditures

<sup>3</sup> In 1984-85, the distribution of total government subsidies was 58 percent on wheat, sugar and edible oil, 22 percent on agricultural inputs, 15 percent on exports and 5 percent on other items. (Source: *Pakistan Economic Survey 1985-86*).

in influencing GDP and probing thoroughly the length of lag in the effect of monetary and fiscal policies. Not surprisingly, our results are different from those of the two previous studies.

The main finding of this study is that monetary impulses have greater leverage and are more dependable. However, these results may, by no means, be taken to imply that fiscal policy should be discarded altogether in favour of monetary policy. Our regression results show that fiscal policy can still be used as a second tool of stabilization policy along with monetary action.

A close look at the role of different components of government expenditures, by regressing them on GDP along with money supply, has uncovered some interesting aspects of fiscal policy. While current consumption expenditures are very effective in influencing GDP both in real and nominal terms, the effect of government investment is mainly felt on prices. This highlights the need for restructuring the government's investment policy. On one hand, resources should be diverted towards the capital goods industry in order to make the supply of capital goods more flexible and thus curb the crowding-out effects of government investment, while, on the other hand, steps should be taken at the political, social and economic levels to induce private investors to utilize the infrastructure and other facilities provided through government investment. This will enhance the supply-side effects of government investment.

The role of government subsidies also deserves attention. Most of the government subsidies are given on essential food items, agricultural inputs and exports. This increases demand for these items at a given price. As subsidies result in an increase in real GDP, without pushing up prices, so they can be used as an anti-inflationary expansionary policy tool.

As regards the shape of the lag structure of the fiscal and the monetary policy variables, our results indicate that there is no systematic pattern of lags associated with the two types of variables. It is likely that quarterly data could help in resolving this issue, but for most of the variables used in this study, such data are not available.

In conclusion, this study shows that monetary policy is more effective and more dependable, compared to fiscal policy, as a tool of influencing GDP, though fiscal policy is important in its own right. It has also shed light on some interesting policy implications of the composition of government expenditures. The choice of an optimal combination of the two policies is, of course, left to the policy-makers.

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**Comments on  
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Not being an econometrician, I have to confine my comments to the problems of general macro-economic policy questions, which are raised by the authors, sometimes *inter alia*, sometimes explicitly.

- (1) One can only agree with the authors' view, that the question of the relative importance of monetary and fiscal policy, on the pace and level of general economic activity of a country can only be decided by empirical research. No doubt, the well known “golden rules” (formulated, for instance, by Howard S. Ellis in 1951) on the relative importance of the two groups of policy tools must always be interpreted according to the macro, micro and (last, but not the least) the institutional conditions of the country we are dealing with.
- (2) The present study is a good first step in elucidating this problem in the light of Pakistani conditions: First, a comprehensive set of statistical data on the relevant macro-economic variables has been prepared. And second, certain instrument variables have been specified. But it seems that the authors have not gone far enough in this respect. For instance, one could question, if under the conditions of the Pakistani monetary system, one can really rely on the definition of textbook variables such as  $M_1$  or  $M_2$  and government expenditure in toto as independent instruments. On the contrary, under the special circumstances prevailing in this country (i.e. with weak connection between the Government and the Monetary Authorities), the interdependence of the two policy instruments may be a substantial one. In this case, several of the authors' findings must be read with caution.
- (3) The results presented in this paper raise several questions:
  - Could it be that the stronger impact of monetary policy, which the authors have detected, is only a superficial impression, because the value of the fiscal deficit is implicit in the development of the monetary variables?

- Could it be that the authors' contention, that global government investment has a very small impact on general economic activity derives from the fact that the authors did not disaggregate this variable far enough?

For, we know, that the multiplier of infrastructural investment is very low and implies long lags, whereas the multiplier of government investment, in directly productive activities, is comparatively high and works in short periods. Could it be proven that most government investment in Pakistan consists of infrastructural activities. The authors' crowding-out argument (which in the case of Pakistan is not very convincing) appears to be superfluous.

- (4) Finally, the question may be asked, if the authors' correlation study could not be read the other way round. For, if we assume that the Government, with its policy instruments, is reacting to the development of GNP over time – be it in an automatic or in a discretionary manner – the policy variables are the dependent ones. Whether this problem is relevant or not can only be decided on the basis of better knowledge about the institutional background of Pakistan's economic policy system. Therefore, it would be very expedient, if the authors could widen the scope of their study by adding a discussion on the institutional background of monetary and fiscal policy in Pakistan.

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