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FISCAL POLICYMAKING AND THE
CENTRAL BANK INSTITUTIONAL CONSTRAINT

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Abstract

The interaction between monetary and fiscal policy is at the heart of macroeconomics, but traditional analysis often ignores the institutional aspects. In recent years a developing literature has concentrated on issues such as the influence of central bank independence on the conduct of monetary policy, and as a part of this, the extent to which the central bank accommodates government fiscal policy. Much less has been done, however, to investigate the reverse interaction: the extent to which central bank independence influences the formation of fiscal policy. This paper concentrates primarily on that channel of influence, and finds some support for the case that fiscal policies are indeed affected by the independence of the central bank. Fiscal deficits, for example, may therefore be lower in countries with more independent central banks because of the greater prospect that monetary policy will not be as accommodative of those deficits.

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1. Introduction

There is a large and expanding literature on the role that fiscal policy, in particular government budget deficits, has in determining monetary policy. Although causal influence of deficits on monetary policy is by no means universally accepted (see, for example, Dwyer, 1982) such an effect is supported in studies that include Blinder (1983), Burdekin (1986a), Laney and Willett (1983) and McMillin (1986).¹ In general, however, it is assumed (implicitly or explicitly) that there is no reverse direction of causality running from monetary policy to fiscal policy.²

Sargent and Wallace (1981), to take one popular example, primarily focus on the case where the time paths of both government spending and tax revenues are fixed -- a situation in which it is the monetary authority that, by design, must capitulate to the fiscal authority. However, the same framework is equally applicable to the case where the monetary authority moves first and sets policy independently. Here, lower rates of money growth sooner or later require lower deficits and the monetary authority imposes discipline on the fiscal authority. To take the argument one step further, if the fiscal authority faces an independent central bank committed to anti-inflationary policy, then the expectation that deficits will not be accommodated tomorrow may deter the government from running a deficit today. Therefore it is predicted that, ceteris paribus, deficit expansion should be lower in countries with more independent central banks.³

The possible importance of such a reverse direction of influence is suggested by Sargent (1985), who characterizes the combination of tight

money and large deficits promised at the inception of the Reagan administration as coordination via resort to a "game of chicken." Here, "if the monetary authority could successfully stick to its guns and forever refuse to monetize any government debt, then eventually the arithmetic of the government's budget constraint would compel the fiscal authority to back down and to swing its budget into balance" (Sargent, 1985, p. 248). It is possible that in such circumstances the monetary authority may be the one to capitulate by monetizing a large proportion of the deficit, but if it does not then fiscal policy is necessarily constrained.

The role of the monetary regime is stressed in Sargent's (1982) argument that the creation of an independent central bank, legally committed to refuse the government's demand for additional unsecured credit, was crucial in ending the hyperinflations in each of Germany, Austria, Hungary and Poland. Sargent states that "once it became widely understood that the government would not rely on the central bank for its finances, the inflation terminated and the exchanges stabilized" (Sargent, 1982, p. 89). On the other hand, the importance of an independent monetary policymaker has been examined by Banaian, Laney and Willett (1983) who obtain cross-sectional evidence for the post-1960 period suggesting that central bank autonomy exerts an independent influence on the rate of inflation. The indicated significance of dummy variables for the highly autonomous central banks of Switzerland, the United States, and West Germany also supports the Parkin and Bade (1978, 1979) finding that these banks, which are more independent of central government both in actual policymaking and in the appointment of directors, have delivered a lower rate of inflation than other less independent central banks.⁴

This paper seeks to quantify the effect independent central banks may have not just on the rate of inflation but also on the behavior of the fiscal authority. The empirical analysis uses pooled cross-section data for twelve industrialized countries over the 1960-1983 period. The international nature of the study permits the effect of different institutional arrangements to be evaluated directly.

2. Development of the Empirical Procedure

In order to isolate any effect exerted by the independence of the monetary authority, it is first necessary to jointly specify fiscal and monetary policy reaction functions. In line with the findings of Bradley and Potter (1986) and Turnovsky and Wohar (1985), fiscal policy is assumed to be chiefly directed toward the full-employment objective, and monetary policy directed toward the price-stability objective. The budget deficit is also taken to be influenced by the rate of real growth, in part due to built-in automatic stabilization. Given the high degree of monetary openness featured by many of the countries in the sample, external influence on the monetary base is also hypothesized to be important. In the absence of complete sterilization by the central bank, an inflow of foreign assets will necessarily lead to an increase in the domestic money stock. To an extent, in other words, under both fixed and flexible exchange rates the management of the monetary base is some combination of foreign and domestic portfolio decisions by the central bank. Finally, the primary hypothesis tested in this paper is whether, in addition to a possible influence of fiscal policy on monetary policy, there is also a causal effect running from monetary policy to fiscal policy.

For the present cross-country study the variables in the reaction functions are primarily drawn from OECD (1984). The stance of fiscal policy is measured by the level of the budget deficit relative to GDP. The stance of monetary policy is measured by the rate of growth of the monetary base. Data for twelve industrialized countries are used for the analysis, and the data are pooled using average values of each variable over the four time periods of 1960-1967, 1968-1973, 1974-1979 and 1980-1983. The list of countries comprises Australia, Belgium, Canada, France, Italy, Japan, Netherlands, Sweden, Switzerland, United Kingdom, United States and West Germany. As discussed earlier, Switzerland, United States and West Germany are the three countries considered to possess independent central banks. Canada's central bank is also classed as independent for the 1960-1967 period, following which the Bank of Canada Act 1967 for the first time gave the Minister of Finance the power to issue directives to the bank.

The four time periods can be said to correspond to four very different historical episodes. The 1960-1967 period was one in which most countries enjoyed relatively stable price levels under a fixed exchange rate regime. The 1968-1973 period marked the break-up of Bretton Woods and the outbreak of problems with stagflation. The 1974-1979 covers the early experience with floating exchange rates, and includes the episodes of upward energy price shocks. Finally, the 1980-1983 period covers the years in which there were significant moves toward stricter monetary control by the world's major central banks (including the October 1979 announced change in operating procedures by the Federal Reserve Board).⁵

The model to be estimated is set out below. The first two equations are, respectively, the fiscal policy and monetary policy reaction functions discussed above. Given that the inflation variable is to be treated as an endogenous variable in the analysis, an inflation equation is specified in addition to the two policy reaction functions. The inflation equation reflects the simple quantity theory approach that inflation will be a positive function of the rate of monetary expansion and a negative function of the rate of real output growth. Allowance is made in the model for independence dummies set equal to one for the three countries with independent central banks, plus Canada (1960-1967).⁶ Finally a series of 'shift' dummies are specified in order to test for structural breaks across the different time intervals included in the regression analysis.

We have:

$$DEF = a_0 + a_1 DMB + a_2 UN + a_3 DY + a_4 D_I + u_1 \quad (1)$$

$$DMB = b_0 + b_1 DEF + b_2 DP + b_3 FA + b_4 D_I + b_5 D_S + u_2 \quad (2)$$

$$DP = c_0 + c_1 DMB + c_2 DY + c_3 D_I + c_4 D_S + u_3 \quad (3)$$

$$a_1, a_2 > 0; a_3, a_4 < 0; a_0 \geq 0$$

$$b_1, b_3 > 0; b_2, b_4 < 0; b_0, b_5 \geq 0$$

$$c_1 > 0; c_2, c_3 < 0; c_0, c_4 \geq 0$$

Endogenous: DEF, DMB, DP

Exogenous: UN, DY, FA, D_I , D_S

where DEF is the budget deficit divided by GDP,

DMB is the rate of growth of the monetary base,

UN is the unemployment rate,

DY is the percentage change in real GDP,

DP is the percentage change in the GDP deflator,

FA is the rate of growth of foreign assets of the central bank

D_I is the central bank independence dummy,

D_S is a shift dummy defined for the different sub-periods,

u_1 , u_2 , u_3 are error terms.

The model thus consists of three exactly-identified equations with three endogenous variables. Given that the observations are averages taken over periods of several years, it seems reasonable to take the unemployment rate as being exogenous, which also accords with the natural rate hypothesis. Foreign assets in the central bank's portfolio and the rate of real growth are also exogenous. The period shift dummy is excluded from the deficit equation because monetary policy and inflation rates are seen as being more directly affected by such events as the switch to floating exchange rates and the move toward stricter monetary control after 1979.

3. Estimation Results

Each equation is estimated by two-stage least squares, using the excluded exogenous variables as instruments. The model was estimated with the shift dummy defined, first, for the 1960-1967 period, and then for each of the

other three sub-periods in turn. Here, the 1980-1983 dummy alone was significant at better than the five percent level in the monetary policy equation. (No shift dummy was significant in the inflation equation.) Accordingly, the results reported in Table 1 are for D_S set equal to one for the 1980-1983 period and zero elsewhere.

The results reveal each of the variables in the monetary and fiscal policy equations to be of the expected sign. The fiscal policy reaction function features a strong and highly significant countercyclical response to unemployment. Use of fiscal policy as a stabilization tool is further suggested by the negative response to the real growth variable, DY -- the coefficient on which, while not significant at the ten or five percent levels, at least exceeds its standard error.⁷ The positive response to monetary base growth, and negative sign on the independence dummy, each is consistent with the hypothesized reverse direction of causality running from monetary to fiscal policy. Given the insignificant coefficient on the monetary base, however, it appears here that the question of central bank independence aspects may be more important than observed rates of monetary expansion.

The negative coefficient on the independence dummy in the fiscal equation suggests that, after taking account of other factors, deficits are lower in countries with an independent central bank than in countries in which the central bank is more under the control of government. The independence dummy is weakly significant, at the ten percent level, perhaps not so disappointing in light of complex institutional factors involved. In further analysis, the independence dummy was redefined so that it was

set equal to one only for Switzerland and West Germany. Unlike the United States and Canada (1960-1967), the Swiss and West German central banks are independent of government not only in policymaking but also in the appointment of the Governor and members of the central bank policy board (see Parkin and Bade, 1978). However, the sign and significance of the coefficient on the independence dummy was unchanged by this redefinition -- and the same was true for the coefficients on the other variables in the fiscal equation.⁸

The monetary policy equation shows a countercyclical negative response to inflation that is significant at the ten percent level. There is also a highly significant positive response to changes in foreign assets of the central bank. The foreign assets result is symptomatic of monetary policy interdependence across countries, and suggests an important role for inflows of high-powered money from abroad. (Successful sterilization of such flows by the central bank would lead to a negative coefficient on the foreign assets variable, but it is conventionally accepted that official international reserve flows are not completely sterilized.⁹) The negative effect of the 1980-1983 shift dummy is consistent with the findings of Laney (1985), and with the international moves toward monetary tightening in that period. Interdependence between monetary and fiscal policy is supported by the positive and significant coefficient on the deficit. The independence dummy, however, while having the expected negative sign, has a standard error larger than the coefficient, perhaps because the effects of such independence are captured elsewhere in the equation.

The results for the monetary policy equation suggest that, over the full sample, there is a tendency for central banks to accommodate government budget deficits. Even though the insignificance of the independence dummy in the monetary policy equation is somewhat surprising, the fiscal policy results nevertheless suggest that central bank independence has discouraged deficit expansion in Switzerland, the United States, West Germany and Canada (1960-1967). Thus, despite the burgeoning deficits in the United States, the results suggest these deficits might have been larger still had the Federal Reserve not been independent of government.

Central bank independence is also found to play a significant negative role in the inflation equation. The inflation equation otherwise shows the expected positive effect of monetary base growth and negative effect of real output growth. The finding that countries with independent central banks tend to have lower inflation rates may well be strongly influenced by the implications of central bank independence for fiscal policy. Given the two-way causality suggested in the results, it indeed appears that lower deficits imply reduced pressure for monetary accommodation -- a pressure which eventually determines the inflation rate. Even nominally independent central banks, such as the Federal Reserve, may still be subject to this pressure in at least some degree.¹⁰

5. Conclusions

Results presented here indicate that an independent monetary policymaker can exert a significant influence on the course of fiscal policy, and also

on the inflation rate. Cross-country analysis suggest that, when both fiscal and monetary policy are treated as endogenous variables, two-way causality between fiscal and monetary policymaking is found to be important. Central bank independence is indicated to have retarded the expansion of government budget deficits in Switzerland, the United States and West Germany, and this independence also appears to have exerted a negative effect on the inflation rate.

TABLE 1

Results for the Model of Fiscal and Monetary Interdependence

$$\begin{aligned} \text{DEF} &= -0.56 + 0.11 \text{ DMB} + 0.76 \text{ UN} - 0.29 \text{ DY} - 1.39 \text{ D}_I \\ &\quad (1.46) \quad (0.14) \quad (0.16)** \quad (0.26) \quad (0.87)* \\ \bar{R}^2 &= 0.54 \end{aligned}$$

$$\begin{aligned} \text{DMB} &= 10.89 + 0.87 \text{ DEF} - 0.91 \text{ DP} + 0.26 \text{ FA} - 1.02 \text{ D}_I - 5.42 \text{ D}_S \\ &\quad (3.03)** \quad (0.59)* \quad (0.64)* \quad (0.09)** \quad (1.96) \quad (2.24)** \\ \bar{R}^2 &= 0.25 \end{aligned}$$

$$\begin{aligned} \text{DP} &= 5.53 + 0.75 \text{ DMB} - 1.44 \text{ DY} - 1.68 \text{ D}_I + 0.87 \text{ D}_S \\ &\quad (1.88)** \quad (0.17)** \quad (0.29)** \quad (1.06)* \quad (1.33) \\ \bar{R}^2 &= 0.51 \end{aligned}$$

Note: Standard errors are in parentheses,

** and * denote five and ten percent levels of significance for a one tail test.

Footnotes

1. See Barth, Sickles and Wiest (1982) for a comprehensive list of earlier studies of U.S. monetary policy. Cross-country studies of central bank behavior are more limited in number, but examples are Gordon (1977), Laney (1985) and Sheehey and Kreinin (1985).
2. An exception is Ahking and Miller (1985), who model the time-series relationship between government deficits, monetary base growth and inflation for the United States as a trivariate autoregressive process. Ahking and Miller find some evidence of two-way causality between deficits and monetary base growth for the 1950s and 1970s, while for the 1960s there is only one-way causality running from deficits to monetary policy. Elsewhere, further U.S. time series analysis by Bradley and Potter (1986) and by Turnovsky and Wohar (1985) suggest only a one-way direction of causality. However, in the former case the causality is from fiscal policy to monetary policy, while in the latter study causality from monetary to fiscal policy is the only linkage found to be empirically important. At the same time, each of these two studies discerns a common assignment of instruments to targets -- with fiscal policy found to be responsive to the unemployment rate and monetary policy responsive to the inflation rate.
3. The discipline imposed by the monetary authority may, however, by its very nature tend to be a factor pertinent more to the long run than to the short run. Blinder (1982, 1983) depicts the policy process as the outcome of a game in which the monetary policymaker is taken to have a

preference for contractionary policy, and the fiscal authority a preference for expansionary policy. Here, Blinder shows that, in a short run sense, the Nash equilibrium ensues in the position where the monetary policymaker plays contraction and the fiscal policymaker expansion -- and he suggests that this is a 'natural candidate' for the outcome of the game even should both players prefer an easy money/tight budget scenario.

4. The Swiss case is examined by Burdekin (1986b), where a strongly negative effect of inflation on monetary base growth was found. In conjunction with a tendency to offset rather than accommodate federal budget deficits, the results appeared to firmly support the independence of the Swiss National Bank.
5. International moves toward monetary tightness in the post-1979 period are documented by Laney (1985). Laney finds evidence of a significant policy shift over the 1979:4-1982:2 period for each of Canada, Japan and the United States. Although the presently employed 1980-1983 period extends slightly beyond the period of monetary tightness identified by Laney, it nevertheless appears preferable to treating the 1974-1983 period as a single unit.
6. In the inflation equation, one might expect DI to operate only through DMB. It is important to recall here, however, that central bank independence might be reflected in some measure by other tools of monetary policy in addition to operations on the monetary base -- changes in reserve requirements, for example -- so that DI might play an independent role in this equation also. To specify a more broadly

defined monetary aggregate in the equation itself presents a rather intractable problem in international cross-sectional work, because the appropriate definition of money is likely to vary both across countries and over time.

7. Multicollinearity between UN and DY could easily contribute to lower significance for the DY variable. Also, in unreported regressions, allowance was made in the fiscal equation for an effect of changes in government spending levels. However, when the rate of growth of real government purchases (corresponding to certain theoretical considerations raised by Barro, 1979) was tested as an explanatory variable in the regression, it was found to be insignificant and of the incorrect sign. Government employment as a percentage of total employment was likewise found to be insignificant.
8. In a further re-definition of the independence dummy, the 1980-1983 period for the United States (corresponding to the tenure of Chairman Paul Volcker) was included alongside Switzerland and West Germany. The independence dummy was significant in this case, but while interesting, because there was no constitutional change in central bank independence separating the 1980-1983 period from the rest of the U.S. experience, this re-definition has somewhat less theoretical justification than those discussed in the text. Moreover, Volcker's tenure as Federal Reserve Chairman corresponded to an explosion of fiscal deficits in the United States, which does little to reinforce the hypothesis that fiscal policy was much influenced by any increased monetary discipline.

9. For one survey of the extent of sterilization over portions of the interval examined here, see Laney and Willett (1982).
10. Miller (1983) also argues in favor of a direct link between deficits and inflation in the United States. Miller stresses that, even in the absence of monetary accommodation, private monetization of deficits and/or crowding out can still lead to inflation. In particular, nonmonetized deficits are seen as leading to higher interest rates, and in turn to crowding out of private investment and a reduced rate of growth of real output which, with a given money supply, leads to higher prices. Here, Ahking and Miller (1985) do in fact provide some supportive evidence that government deficits were inflationary in the 1950s and 1970s. A problem with this approach may lie in the integral proposition that higher deficits lead to higher interest rates -- a proposition frequently questioned. See, for example, Evans (1985).

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