Fiscal and Monetary Policy for Internal and External Stabilization Under Fixed and Floating Rates in the Presence of Capital Movements

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Introduction

The effect of fiscal and monetary stabilization policies has been extensively discussed, notably by Mundell [4,5] and Fleming [1]. Mundell discussed the problem under the special assumption of a perfect interest-elastic mobility of international capital flows, but Fleming assumed a less than perfect capital mobility. Mundell contends that "fiscal policy completely loses its force as a domestic stabilizer when the exchange rate is allowed to fluctuate," while monetary policy will have appreciable effects on employment and output. Under fixed exchange rates, on the other hand, monetary policy is shown by Mundell to be ineffective while any positive effects of fiscal policy would be conditional upon the country being able to sustain large trade deficits by either borrowing abroad or running down its accumulated international reserves. Fleming also demonstrates that the expansionary effects of monetary policy will be greater under floating exchange rates than under fixed rates and that it is uncertain whether the effects of fiscal policy will be less or more expansionary under floating rates than under fixed rates. In all but extreme cases, monetary policy is shown to exert a more expansionary influence under floating rates.

Separate effects of monetary policy and of fiscal policy have been analyzed by conceptually holding the other policy neutral. Neutral monetary policy has been defined in this context as either (i) leaving the interest rate unchanged,

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or (ii) leaving the stock of money unchanged. Since under the assumption of a perfect interest-elastic mobility of international capital flows the domestic level of interest rates is more likely to be outside the influence of national monetary authorities, the constancy of the stock of money may be a more relevant definition of a neutral monetary policy. However, as is shown below, the achievement of internal and external balance by fiscal policy may itself initiate and require a change in the stock of money. Accordingly, in this paper a neutral monetary policy is taken to mean a passive monetary policy under which the authorities allow the money stock and/or interest rate to vary as required by the functional relationships in the economy, following a discretionary change in fiscal policy. Only the expansionary policies will be considered here.

By an expansionary fiscal policy is meant an increase in government expenditures.[1] However, neither Fleming nor Mundell addresses himself to the question as to how the increased expenditures are financed within their model. There are broadly three ways in which the required finance may be procured: (i) by borrowing from the nonbank private sector, (ii) by borrowing from the central bank (it may be assumed that commercial banks are initially in equilibrium as far as their asset portfolio distribution is concerned), and (iii) by borrowing from abroad. The effects of these three different forms of financing will be different and need to be explicitly considered while examining the relative efficacy of monetary and fiscal policies. The present paper attempts to trace these effects.

The Model

The problem will be analyzed in terms of the familiar IS and LM curves and a balance of payments equilibrium curve (the T/K/curve). Internal equilibrium is depicted in Fig. 1 at the point P where the IS and LM curves intersect. The IS curve may be derived from the relationship between S (saving) and Y (income) and between I (investment) and i (interest rate). The LM curve may be derived from the relationship (usually proportional) between the transaction demand for money and income and from the relationship between the speculative demand for money and the rate of interest [2]. The T/K/curve in Fig. 2, which traces those combinations of income and interest rate at which the balance of payments is in equilibrium, is derived from trade balance (T) as an inverse function of Y and of net capital outflow (K) as a negative function of i.[2] As drawn in Fig. 2, the T/K/ curve is upward sloping. In a situation characterized by domestic and external equilibrium, the three curves, LM, IS and T/K/, will intersect at a common point, say P_o, in Fig. 4. However, it will be only fortuitous if P_o is also the position of full employment. If P_o were not the full employment point, then domestic monetary and fiscal policies would be required to move the economy to the full employment level. It is assumed

[1] It also includes a reduction in taxes. But in the text the argument is developed on the basis of an increase in expenditures.

[2] This may be shown by Fig. 3 adapted from Johnson [3]. The right-hand quadrant shows the trade balance as a decreasing function of Y. At successive levels of Y the resulting trade balance is transferred to the K-axis by drawing a 45° line from the corresponding points on the T-axis, thus establishing the points where the trade surplus is equalled by a capital outflow. These levels of capital outflow are related to the interest rate by the K(i) curve in the left-hand bottom quadrant. Then the balance of payments equilibrium curve (T/K/) is traced in the right-hand bottom quadrant by points of intersection of the lines perpendicular to the i-axis and the Y-axis from the K(i) curve and the T(Y) curve, respectively.

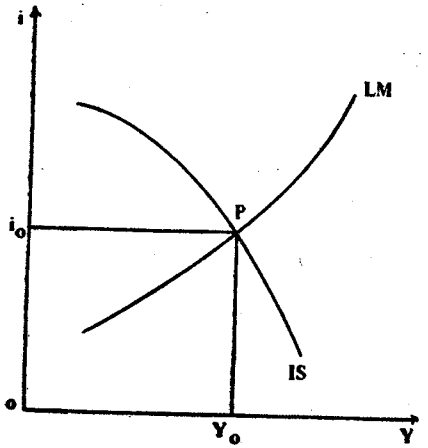

Fig1: Internal Equilibrium

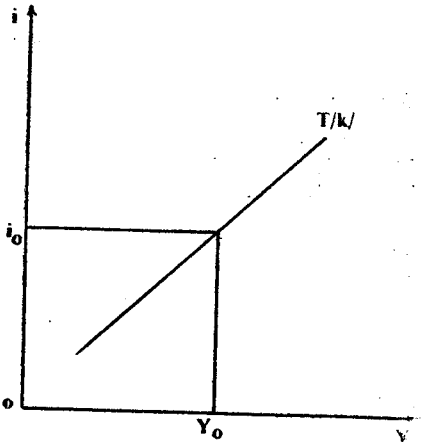

Fig2: External Equilibrium

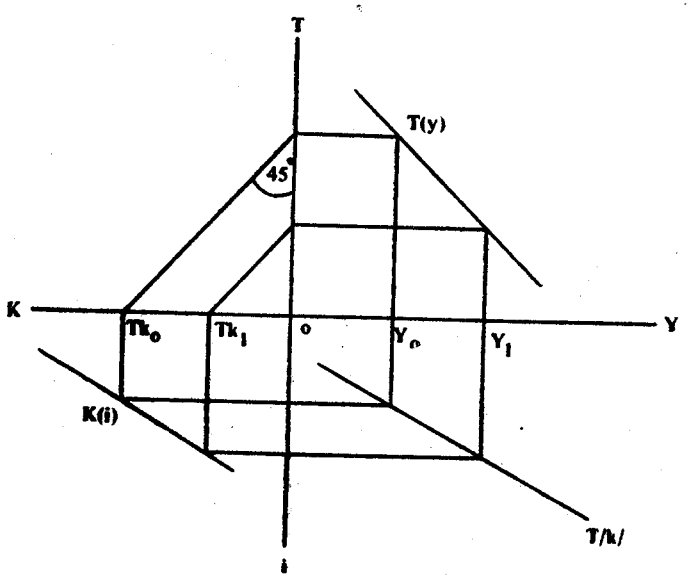

Fig3: Derivation of the Balance of Payments Equilibrium Curve

below that P_o is an under-employment equilibrium position and therefore only the expansionary policies are considered.

Fiscal Policy

Domestic Nonbank Borrowing

Assume first that the fiscal policy takes the form of increased government expenditures which are financed by sale to the public of new government securities. Under *fixed exchange rates*, interest rate will increase to induce the public to hold additional government indebtedness. New government expenditures will raise income and shift the IS curve to the right. At the same time the trade balance will deteriorate as income rises. The increase in the interest rate will attract capital inflow[3] and tend to offset the negative effects on the balance of payments of the worsened trade balance that is produced by the increase in income. Whether these two effects will be equal, i.e. whether the new IS curve will pass through the point of intersection of the original LM and T/K/ curves, will depend upon the interest-elasticity of capital flows and on the marginal propensity to import (net of exports). In general, the three curves are unlikely to meet at the same point, following a transition to a higher (full-employment) level of income. Thus the intersection of the IS and LM curves may be above or below the T/K/ curve and a balance-of-payments surplus or deficit may ensue. In that event, and since we have assumed that the monetary authorities do not neutralize the domestic monetary effects of the reserve changes, money stock with the public will either increase or decrease, and the LM curve will either shift to the right, in the case of a payments surplus, or to the left, in the case of a payments deficit. To preserve full employment, the fiscal authorities will need to make appropriate changes in government expenditures, thereby shifting the IS curve, until external equilibrium is also achieved.

The above argument is illustrated in Fig. 5a, where the initial full employment is accompanied by a payments surplus, and in Fig. 5b, where initially a payments deficit results. In the double equilibrium position (P_F), where domestic full employment is accompanied by a balance-of-payments equilibrium, money supply increases in the case of Fig. 5a and decreases in the case of Fig. 5b. Thus in the former case monetary authorities would accumulate some reserves during the transition from Y_o to Y_F while in the latter case some reserves are lost.[4] In the first case, the transition to full employment and its maintenance would have required a smaller injection of additional government expenditures, and the equilibrium level of interest rate would be lower than in the second case. In both cases capital inflow would have increased, and the trade balance correspondingly worsened, during the transition process in which the money supply was changing. Whether the cumulative capital inflow would have been smaller or larger in the first case than in the second case would depend upon the values of the interest elasticity of capital and the marginal propensity to import.

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[3]Apart from the effects of direct government borrowing in raising the interest rate, there will be two opposing indirect effects on the interest rate of the increased government spending. The resulting increase in incomes by increasing the transactions demand for money will raise the interest rate. However, the injection of money into the economy subsequent to the government expenditures will tend to reduce the interest rate. The net effect of these two may be regarded as insignificant.

[4]This occurs because the change in money stock due to a change in reserves is assumed not to be offset by domestic monetary policy.

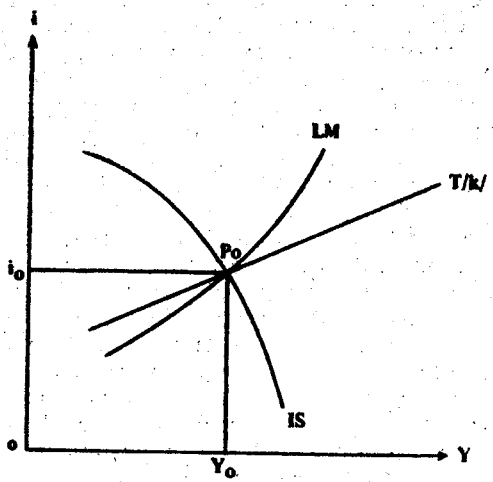

Fig4: Simultaneous Internal and External Equilibrium.

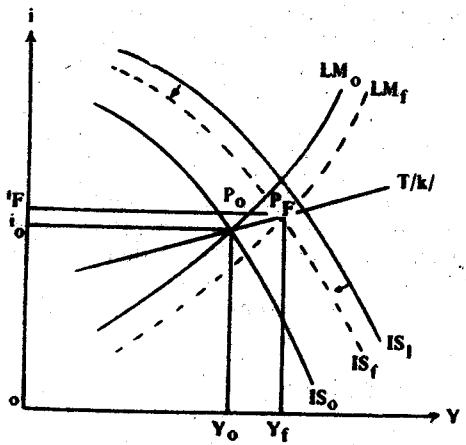

Fig5a: Case of reserve Accumulation.

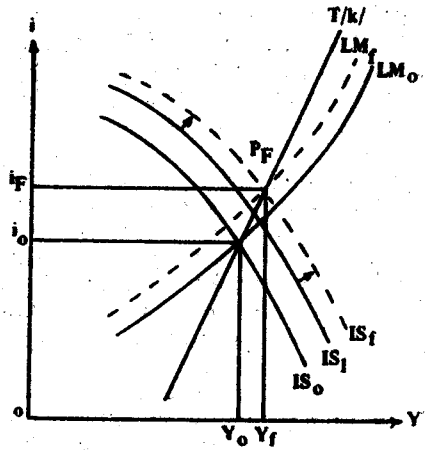

Fig5b: Case of Reserve Loss.

Fig5: Full Employment and External Equilibrium-Fixed Rates

Under *floating rates*, the resulting tendency toward a balance-of-payments surplus or deficit will lead to an appreciation or depreciation of the currency, respectively.[5] The appreciation (depreciation) will have depressing (expansionary) effects on Y but this will not fully offset the positive effect on Y of the original increase in government expenditures. Additional government expenditures raise the IS curve but leave the LM curve unchanged; the adverse effect on the trade balance of the rising income will be offset by a depreciation of the exchange rate, resulting in a right-hand shift in the T/K/curve. The new T/K/ curve will then meet the IS-LM curve at only a higher level of income than the initial level. However, under a system of floating rates, the IS curve cannot be defined in terms of Y and i only since the trade balance will be affected by the exchange rate also. Thus, the resulting change in the exchange rate could shift the IS curve to the right, in the case of a depreciation, or to the left, in the case of an appreciation. Accordingly, to maintain full employment government expenditures will have to be increased further in the case of an appreciation of the currency[6], and reduced in the case of a depreciation. Thus the overall budget deficit will tend to be higher under flexible rates than under fixed rates; in this sense, therefore, the fiscal policy is more potent, in the sense that a smaller budget deficit would be required to achieve full employment under fixed rates than under flexible rates. The two cases under floating rates are illustrated in Fig. 6.

Domestic Central Bank Borrowing

Consider now the case where the increased government expenditure is financed by borrowing directly from the central bank which, however, does not unload new government securities on the public via open market sales. Under *fixed rates*, money supply will increase and lead to a reduction in the interest rate and hence to a capital outflow. Increased government expenditure will raise income and hence imports. Thus both the current account and the capital account of the balance of payments will deteriorate. However, the overall payments deficit will be less than the government deficit since the increase in income *and* the decline in interest rate can only be feasible if the public held some additional money stock, i.e. the LM curve shifted to the right.[7] It is conceptually feasible that the type of fiscal policy under consideration could achieve a full employment level but it will be accompanied by a deficit in the balance of payments. With limited reserves at the disposal of any country, the scope for following such a policy under a system of fixed exchange rates will be narrowly circumscribed.

Under *floating rates*, central bank-financed expenditures will lead to a depreciation of the exchange rate to a level which will assure a balance of payments equilibrium. The depreciation of the currency should have a favourable effect on domestic incomes and thus reduce the extent of deficit financing required to achi ve full employment. In Fig. 7, the T/K/ curve is shown to shift to the right and to intersect the raised IS curve to the right of the original

[5]The actual surplus or deficit, in the sense of a gain or loss of reserves, will not occur since the exchange rate adjustments will take care of the emerging payments disequilibria.

[6]This is the opposite of what happens under fixed rates when the country achieves full employment with a surplus in the balance of payments.

[7]If in the equilibrium position the LM curve does not shift to the right, the raised IS curve will intersect the LM curve at a point yielding higher interest rate than in the initial position and resulting in a capital inflow rather than an outflow.

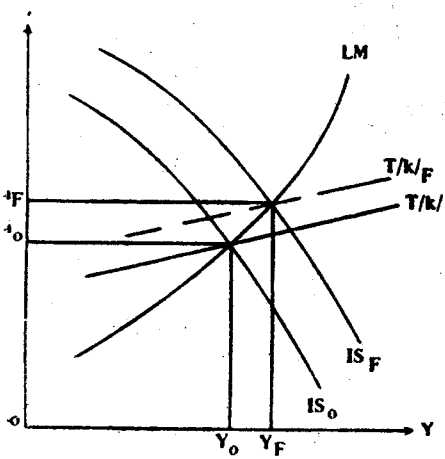

Fig6a: Case of Exchange Rate Appreciation.

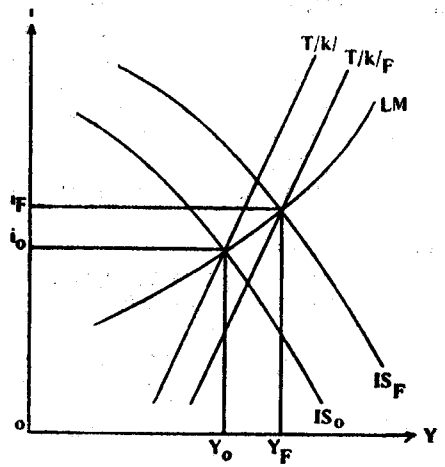

Fig6b: Case of Exchange Rate Depreciation.

Fig6: Full Employment and External Equilibrium-Floating Rates.

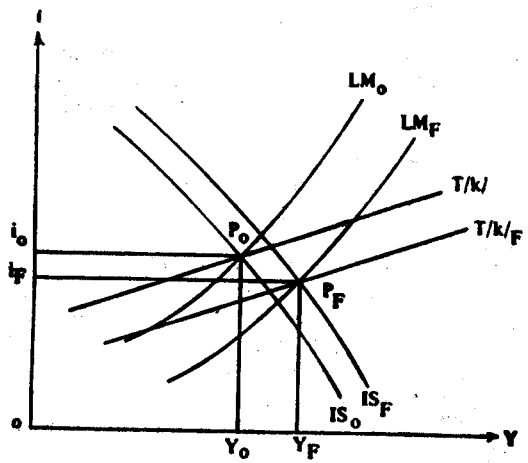

Fig7· Fiscal Policy (Central Bank Borrowing)-Floating Rates

LM curve. In a situation of both a payments equilibrium and domestic full employment, therefore, the LM curve would have shifted to the right. Since, by definition, under the system of floating rates the country does not experience an actual balance-of-payments deficit which could affect money supply, the LM curve would have shifted by the full amount of government borrowing from the central bank. Thus unlike under the system of fixed rates, the type of fiscal policy under consideration will be able to achieve full employment under a system of floating rates. However, it should be noted that the extent of required depreciation may become unacceptable on other grounds.

Foreign Borrowing

Assume now that the government borrows abroad. It hands over the foreign exchange proceeds from such borrowing to the central bank and uses the local currency counterpart for its increased domestic expenditure. In principle, the effects of such spending will be the same as those under case b above when the government borrows directly from the central bank. Under *fixed rates*, the balance-of-payments deficit, excluding the proceeds of foreign borrowing, will be lower than the amount borrowed abroad by the government and the central bank will accumulate some reserves which will generate the expansion in the money supply necessary to meet the increased demand for money following an increase in income. It should be noted that in the final situation of payments equilibrium as well as full employment, not the entire budget deficit will continue to be financed from abroad; rather a part will be financed by domestic central bank borrowing, since otherwise the country will continue to accumulate reserves.

Under *floating rates*, since reserves do not change, the increase in government expenditure financed from foreign borrowing will intersect the (unchanged) LM curve at a point of higher interest rate which in itself will attract further capital inflow. As under fixed rates, the proceeds of foreign borrowing will more than cover the adverse turn-around in the balance of trade arising from an increase in income. The interest-induced inflow of capital will further improve the balance of payments and accentuate the tendency for the currency to appreciate, thereby counteracting the expansionary effects of the increased government expenditures. The final equilibrium position will be characterized by a substantially worsened trade balance financed by an equally large improvement in the capital inflow. This outcome is probably less desirable than the one under fixed rates. It may be said, therefore, that it is feasible that a fiscal policy which relies on foreign borrowing to finance government expenditures will achieve full employment simultaneously maintaining a balance of payments equilibrium. However, it will probably be more acceptable under fixed rates than under floating rates.

Monetary Policy

Let us now turn to the monetary policy. In order to stimulate the economy, the central bank engages in open market purchases of securities. As a result, the money stock with the public will increase, i.e. LM curve will shift to the right and the interest rate will decline. The lower interest rate will result in an increase in investment and hence in income. Accordingly, the trade balance will deteriorate, there will be some capital outflow and the overall balance of payments will register a deficit.

Under *fixed rates*, the country's external reserves will fall and the maintenance of full employment will need a continuous draw-down of reserves. This case is similar to the case of fiscal policy when increased government expenditures were financed by borrowing from the central bank. However, in that case, the IS curve shifts to the right, whereas in the present monetary policy case it is the LM curve which shifts to the right (Fig. 8). As a result the full employment level of interest rate will be higher when the expansionary policy takes the form of central bank-financed fiscal expenditures than when expansion is engineered through monetary policy. Higher interest rates will attract larger capital inflow which will cover at least a part of the increased trade deficit, following an increase in incomes, and make the fiscal policy a more sustainable instrument of expansion than the monetary policy.

Under *floating rates*, the resulting payments deficit will result in a depreciation of the exchange rate, i.e. the T/K/ curve will shift downward (Fig. 9). Since there is no reason to expect a shift in the IS curve, internal and external equilibrium will imply that the LM curve shift to the right. Since under floating rates the country does not experience any loss in reserves the shift in the LM curve will reflect the full increase in the money stock resulting from the open market operations.

With a given amount of open market sales, interest rate will be lower under floating rates than under fixed rates, and hence the capital outflow will also be larger under floating rates than under fixed rates. Accordingly, the country will have to earn a larger trade surplus under floating rates which implies a further exchange depreciation. The large depreciation in turn will provide a stimulating effect on the economy and will, therefore, require a smaller volume of open market purchases. Monetary policy will also be able to attain domestic full employment and maintain the payments equilibrium under flexible rates, which it cannot do under fixed rates. The analogous fiscal policy (Fig. 6b above) will also achieve internal and external equilibrium. However, since in the fiscal policy case the IS curve will also shift to the right, the full employment interest rate will be higher, and therefore capital outflow lower and trade balance deterioration less, under the fiscal policy assumption than under mone-

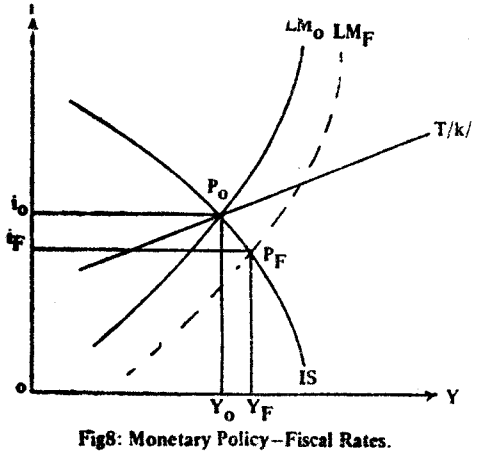

Fig8: Monetary Policy–Fiscal Rates.

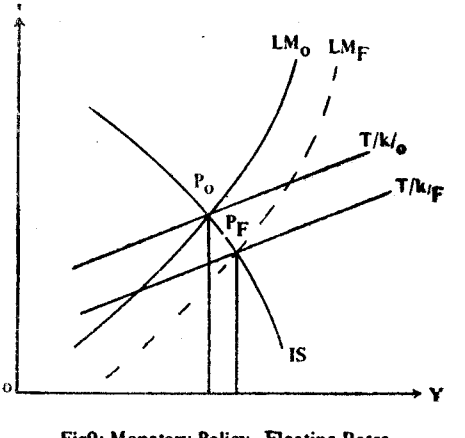

Fig9: Monetary Policy–Floating Rates.

tary policy. Correspondingly, the exchange rate depreciation will be greater and expansionary stimulus larger with monetary policy than with fiscal policy. However, since the deterioration in the trade balance will be less under fiscal policy than under monetary policy, the former policy may be more acceptable.

Conclusions

This paper considered the relative effects on income and on the balance of payments of fiscal and monetary policies under fixed and floating exchange rates after explicitly distinguishing the methods of financing the increased government expenditures. It was shown that the fiscal policy is more likely to achieve sustainable results under fixed rates than under floating rates when increased expenditures are financed by nonbank domestic borrowing or by external borrowing by the government. It is, however, a less effective instrument under fixed rates than under floating rates when increased expenditures are financed by borrowing from the central bank. Monetary policy is also likely to provide a more expansionary impact under floating rates than under fixed rates. Finally, an expansionary fiscal policy is more sustainable than an expansionary monetary policy under fixed rates, while contrary is the case under floating rates.

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