The Limited Role of Fiscal Policy in an Open Economy

Fiscal theory underlying macroeconomic policy has, in recent years, become mainly a question of manipulating the aggregate demand for goods and services. This is true whether one is concerned primarily with a closed economy (Blinder and Solow, 1973) or with the way in which government debt issue works itself out in an open economy (Mundell, 1963; McKinnon, 1969). Implicitly or explicitly commodity prices are assumed fixed and the firm's short-run production decision to produce more or less is made irrespective of the level of real wages. Similarly, fixed and working capital are seen to be freely available in the short-run relevant for the analysis.[1] The net result is that aggregate real output and employment respond perfectly elastically to any increase in aggregate money demand.

Superficially, at least, this modern truncated version of Keynesian macroeconomic theory is odd. Keynes himself was obsessed with the importance of the labor market and the relationship between the price of aggregate output and money wages. Indeed, throughout the *General Theory* he insisted on measuring aggregate output in terms of labor units on the presumption that commodity prices must rise if output and employment are to increase. On the other hand, he did take the money wage as simply exogenously imposed from the point of view of short-run macro policy[2] — an uncomfortable tradition that I shall follow here. Hence, for closed-economy macroeconomics, modern theorists have considered it but a trivial addition

---

1 In the *Treatise on Money* (1930), but not in the *General Theory* (1936), Keynes was very concerned with the availability of working capital — as embodied in inventories of finished and semi-finished goods — to support economic expansion.

2 "— it is hard to see that in his book he (Keynes) has *any* theory about the causation of money wages." J. R. Hicks (1974, p. 61).

to write real national income, $Y = Y(P)$, as a function of commodity prices, where $\frac{dY}{dP} > 0$; and so they usually omit this step altogether.

Whether trivial or not in the context of a closed economy, this omission has been carried over even to small open economies where P, "the" aggregate price level, and the level of interest rates are heavily influenced by the rest of the world. In the limit where all goods are perfectly tradable and the exchange rate is fixed, there is no scope at all for P to increase — for commodity prices to increase relative to money wages — in response to shifts in aggregate demand. Hence, models of open economies in which the supply capacity (demand for labor) of the economy responds elastically to increases in aggregate demand from domestic market sources are — from the labor market point of view — on far shakier ground than models of closed economies.

My intention is to impose the workings of the labor market on open-economy models of fiscal policy under fixed and under flexible exchange rates. One can then reexamine the conventional conclusion that fiscal policy is fully effective under fixed rates, but is fully offset under floating rates (Mundell, 1963). For this purpose, "fiscal policy" is an increase in government expenditures or a reduction in taxation covered by the issue of nonmonetary debt — treasury bills or government bonds — that either domestic nationals or foreigners are eligible to buy. (Discretionary monetary policy in the form of exogenous changes in the domestic money supply is being put temporarily to one side.)

Virtually, any convertible-currency country, other than the United States, presently falls within our analytical purview of being both "small" and "open." That is, conditions in the international capital market and the prices of tradable goods in foreign currencies are, in the first approximation, given independently of domestic policies.

A Pure Tradable Goods Model

How open to foreign trade and capital flows should our prototype economy be? If all domestically produced goods are "pure" tradables, instant commodity arbitrage through the foreign exchanges will establish domestic currency prices exactly at the level prevailing in the outside world. Hence, with the capital stock fixed in the short

run so that output from newly employed labor is subject to diminishing returns, output can only increase if fiscal policy succeeds in raising the domestic price level relative to money wages. To be effective when money wages are rigid, therefore, fiscal policy must somehow induce a devaluation.

Let T be the current production of tradable goods. Choose units for T so that its fixed foreign-currency price is unity. Then the domestic-currency price of T is simply e — the domestic-currency price of foreign exchange. Money national income in the domestic currency can then be defined as

$$[1] \qquad Y = eT$$

The aggregate production function for tradables is

$$T = F(L, \bar{K}) \text{ where } F_1 > 0 \text{ and } F_{11} < 0$$

The capital stock $\bar{K}$ is fixed independently of any new investment taking place within the short "Keynesian" time horizon under consideration. However, labor services L are variable in the short-run; and real wages $\frac{W}{e}$, where W is the given money wage, are above the marginal disutility of labor seeking employment. Firms are assumed to produce only to the point where profits are maximized — where the money wage equals the value of labor's marginal physical product, hence output (and implicitly the demand for labor) can be written as a function of the real wage

$$[2] \qquad T = T\left(\frac{W}{e}; \bar{K}\right) \text{ where } T_1 < 0,\ T_2 > 0$$

From [1] and [2], output T and money national income Y are simply functions of e — the price of foreign exchange. In this truncated and rigid pure tradables model, the only degree of freedom in the short run for increasing output is to pursue a fiscal (or monetary) policy that raises e. While simplistic and certainly inadequate as a description of any known open economy — however trade dependent it may be — this pure tradables approach to short-run macroeconomic policy has therapeutic value.

Consider first the traditional demand-oriented approach to fiscal policy that ignores the relationship between prices and wages and

hence ignores the labor constraint on output and employment. Perfect capital mobility to the outside world fixes the domestic rate of interest, and the pegged exchange rate makes the money supply fully endogenous through the balance of payments. Government expenditures are seen, in the traditional view, to stimulate output and employment: On the one hand, government debt issue does not crowd out private investment expenditures because foreigners buy domestic bonds at an unchanging rate of interest. On the other hand, the resulting capital inflow will not reduce the price of foreign exchange so as to crowd out exports or the domestic production of import substitutes. True, a fixed marginal propensity to import (often equal to the average propensity) is usually posited in this demand-oriented approach, but this "leakage" from the spending stream is analytically equivalent to tax leakages as income rises. Hence, the traditional income multiplier from deficit-financed government expenditures in an open economy is simply[3]

$$[2] \qquad \Delta Y = \frac{1-m}{t+m-mt}\Delta G$$

Where: m is the marginal propensity to import $0<m<1$
t is the marginal propensity to tax, $0<t<1$
ΔG is the increase in government expenditures.

In such models, the marginal propensity to import is arbitrarily chosen — perhaps to reflect the average importance of imports in GNP. Supply conditions are not explicitly considered. Indeed, from Fritz Machlup (1943) and James Meade (1951), a whole generation of economists has played with multipliers similar to [2]. For example a fairly plausible value for m in a highly open economy may be .25, and for t say .4. The income multiplier of a one-dollar increase in government expenditure, which is deficit financed, would then be 1.36.

Yet, if we take our "pure" tradables model under fixed exchange rates with the labor constraint as defined by [2], *the correct income multiplier for government expenditure increases or tax reduction is*

3 McKinnon (1969, p. 229). The multiplier was derived by imposing the portfolio-balance condition that the government deficit be exactly offset by a deficit in the balance of trade so that the debt holdings of the private sector do not change in stationary equilibrium. That is, there is no private net saving once portfolio balance is achieved.

precisely zero. Since the exchange rate is fixed, domestic output cannot increase whatever demand and portfolio-balance equations are inserted into the model. In particular, if an increase in debt-financed government expenditures occurs, imports alone will rise to satisfy this official demand for goods and services. Capital flows inwards as foreigners purchase the flow of newly issued government debt so that the increase in imports is covered without loss of exchange reserves. Since domestic production does not increase, the effective marginal *propensity to import* out of government expenditures is *unity*. Contrary to the traditional view, fiscal policy is completely nullified under fixed rates.

What happens under floating exchange rates and perfect capital mobility? The now traditional answer given by Mundell back in 1963 was that, with a fixed money stock, an increase in debt-financed government expenditures would induce a capital inflow that appreciated the domestic currency in the foreign-exchange markets. The production of exports (and import substitutes) would fall until the trade balance deficit exactly offset the government budgetary deficit and again drained newly issued debt from the economy. Private portfolio equilibrium would be restored at the original level of national income because the money supply and its velocity were unchanging. Deficit-financed government expenditures simply crowded out exports through the exchange-rate effect.

In our "pure" tradables model, the same nullification of the income effect of deficit-financed government expenditures occurs, but the financial mechanism is now somewhat different. If the exchange rate appreciated as in the traditional demand-oriented approach, two incompatible effects would be induced:

(i) the fall in e would raise the real wage and hence, from [1], reduce output and employment.

(ii) However, if the nominal money stock is fixed, the real money stock $\frac{M}{e}$ will increase and thus raise the private demand for goods and services since velocity is unchanging.

Putting (i) and (ii) together and considering only the *private* domestic demand for and supply of goods and services, there would be a tendency for private aggregate demand to exceed private aggregate supply. In order to finance this "gap" at any given level of

income, the private sector would have to continuously issue debt to foreigners. But this would create portfolio imbalance as the private sector's bonded indebtedness increased to offset the wealth effects of the higher real cash balances. Private demand for goods and services must eventually fall to match the reduced level of private income derived from the production of tradable goods.

Although excess private demand for commodities (tradable) would thereby be eliminated, real cash balances would still appear too large to service that reduced level of private income if the exchange rate remained appreciated. There would be myopic attempts on the part of individual bond holders to sell cash balances to foreigners and buy bonds back. Collectively, however, they could only succeed in bidding up the price of foreign exchange and so reduce the size of $\frac{M}{e}$, the real money stock. This devaluation would continue until the exchange rate, the real money stock, and real national income were all restored to their original levels. Hence, the production of tradable goods would be restored after the initial depressive offset of our hypothetical exchange appreciation.

In order to see better how equilibrium income and employment are invariant to fiscal policy, two equations representing *stock* equilibrium in the money and bond markets are introduced:

$$[3] \qquad M = M(Y,r) \qquad \text{with } M_1 > 0 \text{ and } M_2 < 0$$

$$[4] \qquad B = B(Y,r) \qquad \text{with } B_1 \gtreqless 0 \text{ and } B_2 > 0$$

r is the single rate of interest on bonds that is fixed externally in the international capital market; domestic and foreign bonds are thus perfect substitutes.

B is the net (outside) stock of bonds held by the domestic private sector — hence B could be negative. For simplicity, take bonds to be very short term so that their capital value is not influenced by r.

M is the stock of money held by the private sector — claims on the integrated banking system. It is conceptually easiest (but not necessary) to assume that commercial banks hold reserves with the central bank that are 100% of their deposits.

Nominal liquid assets (wealth) in the economy are simply A where $A = B + M$. Why doesn't A appear as an argument in either the demand for money or the demand for bonds as represented in

equations [3] and [4]? The answer is that for a given Y and r, wealth holders have a certain preferred stock of money and bonds that is independent of their initial stocks of liquid assets. A can be freely adjusted upwards or downwards (unlike the stock of fixed capital, $\bar{K}$) within the "short" Keynesian time frame being considered.[4] Private net saving could be different from zero — positive or negative — as A moves up or down; but saving is zero in final equilibrium when the target stocks of money and bonds, represented by [3] and [4], are achieved. Hence, the model is one that only compares stationary asset equilibria.

We shall write down further specifications regarding the distribution of the economy's current flow of output — the level of exports, government expenditures, taxation, and so on — in due course. However, the three behavioral equations [1], [3] and [4] together with the identity [2] are themselves sufficient to determine the economy's equilibrium level of income and real output under fixed or floating exchange rates.

Consider *fixed exchange rates* first. The endogenous variables in our four equation systems are T, Y, B and M. Since e is fixed by assumption, the equilibrium value of T is determined directly from [2], Y is then determined from [1], B from [3], and M from [4]. The level of government taxation or expenditure does not affect this result.

Under *floating exchange rates* T, Y, B, and e are the endogenous variables, whereas M is predetermined. Again our four equations are themselves sufficient to determine the equilibrium values of our four endogenous variables although the solution can't be so simply decomposed. The joint determination of e and T now depends on the constancy of the asset demand function in [3] and [4]. However, as long as the private demands for money and bonds are stable functions of Y and r, the economy's real output and exchange rate are, in equilibrium, independent of the government's expenditure and tax policies.

What might we then conclude regarding our supply constrained "pure" tradable goods model in which money wages are exogenously fixed in the domestic currency?

(A) Contrary to the traditional model of the national income

4 The argument for omitting initial stocks of *liquid* assets from individual private demand functions for these assets is elaborated in McKinnon (1969).

multiplier, discretionary fiscal policy is completely nullified in a small open economy with perfect capital mobility and a fixed exchange rate.

(B) As with Mundell's (1963) model, such fiscal policy is also nullified under flexible exchange rates because the nominal stock of money and its velocity are fixed. Unlike Mundell's demand-oriented approach, however, no sustained appreciation of the domestic currency occurs in response to government spending financed by debt issue. In final equilibrium, imports simply increase *pari passu* with public expenditures and the initial exchange rate is unchanged.

Considering (A) and (B) together, the usual sharp distinction between fixed and floating exchange rates in determining the efficacy of fiscal policy has simply disappeared. In either case, fiscal policy washes out once real wage effects are taken into account. In a world with a melange of currency regimes with greater or lesser official intervention in the foreign exchanges, therefore, one need not actually observe an exchange appreciation in response to an "expansionary" fiscal policy to understand that such a policy was being frustrated for the country in question.

A Minimal Nontradables Sector: Fixed Investment and Government Expenditures

Does fiscal policy remain impotent if "nontradable" or "domestic" goods are introduced into our short-run Keynesian model? I shall show that the effectiveness of government expenditures is slightly enhanced if directed towards nontradable labor services, but variations in tax rates by themselves remain ineffective in controlling output and employment. Discretionary fiscal policy retains a certain residual influence, however, on the balance of international payments.

Following a tradition that goes back to Salter (1959), Dornbusch (1974) and Krueger (1974) have analyzed a two-sector economy including both tradable and nontradable goods, but they did not explicitly incorporate the level of government expenditures, taxation, or private fixed investment. Rather they were largely concerned with the manipulation of "aggregate demand" and the exchange rate within a flexible wage-price regime to secure both full employment and balance in international payments. In the last section of his paper, however, Dornbusch explicitly introduces underemployment equilibrium, with money wages that are exogeneously fixed in terms of the domestic currency. He then analyzes the impact of discrete or managed devaluations in stimulating employment and improving the trade balance.

While fully consistent with Dornbusch's analysis, I shall take the somewhat different tack of introducing fiscal policy explicitly by juxtaposing certain standard Keynesian concepts onto the tradable-nontradable goods framework. First, expenditures on nontradables are reinterpreted to be government expenditures and private fixed investment. Secondly, tax revenues less transfer payments are made dependent on the level of money income. Thirdly, a bond market is made explicit in which the government markets its nonmonetary debt to both foreign and domestic buyers.

Let us now extend our notation developed in the preceding section to portray this somewhat more elaborate economy. The private sector continues to consume only tradable goods, whose domestic price is e. The domestic production of tradables in the private sector remains dependent on the real wage, where money wages are exogenously given

$$[2.1] \qquad T = T\left(\frac{W}{e}; \overline{K}\right) \text{ with } T_1 < 0 \text{ and } T_2 > 0$$

However, the government is not constrained by profitability considerations in hiring bureaucrats directly; and its expenditures on national income and product account are treated as an exogenous policy variable. As long as civil servants are selected from among domestic nationals, these government expenditures (not including transfer payments) are naturally interpreted to be nontradable services.[5] Moreover, with fairly good conscience we can follow Keynes and simply measure such services in labor units. Hence, real government expenditures, G, are simply equal to L_g, which is the labor force in the public sector; whereas WG is the contribution of government to money national income. The government pays the same money wage as the private sector.

A parallel open-economy interpretation can be given to the Keynesian notion of private investment in fixed capital that does

[5] One could make the model more realistic by allowing one component of government expenditures for tradable goods, but this would yield no insight that was not captured in the preceding section.

not influence the supply capacity of the economy within the short time-horizon under consideration. The process of constructing plant and buildings and installing equipment requires on-site labor, and thus is also naturally a nontradable service[6] measurable in labor units. Investment $I = L_I$ — the labor force in construction activity. Unlike government expenditures, however, private investment depends on profitability as perceived by potential investors. Hence

$$[2.2] \qquad I = I\left(r, \frac{W}{e}\right) \qquad I_1 < 0 \text{ and } I_2 < 0$$

If our entrepreneurs have stationary expectations regarding the future, investment will fall if the rate of interest in the world capital market rises *or* if the real wage increases. Since an appreciation in the exchange rate is considered to raise real wages measured in terms of tradable goods, it will reduce the perceived future profitability of investing to produce tradables in the future. Hence a new element, the exchange rate, has been added to the standard Keynesian marginal efficiency of investment schedule normally applied to closed economies. The total production of nontradable goods N in labor units is continued to these two sectors, i.e.

$$N = G + I = L_g + L_I$$

Money national income generated from the production of both tradable and nontradable goods is then simply

$$[2.3] \qquad Y = eT + WG + WI$$

No unambiguous index of "real" national income exists because of the inclusion of both tradable and nontradable goods in the national product. Fortunately, such an index turns out to be unnecessary for our analysis of income and employment. Under the assumption of stationary expectations, the stock demands for money and bonds can be written simply as a function of money income and the rate of interest

$$[2.4] \qquad M = M(r,Y) \qquad M_1 < 0 \quad M_2 > 0$$

$$[2.5] \qquad B = B(r,Y) \qquad B_1 > 0 \quad B_g \gtreqless 0$$

6 Again, one could complicate the model by allowing a tradables component in such expenditures without altering the results in any essential way.

with the analytical justification for the functions M and B as described in the preceding section.

We have yet to specify certain flow equations that describe the state of the balance of payments, revenues versus expenditures in the government budget, the financing of private fixed investment, and private consumption demand for tradable goods. These are important in understanding the crowding-out effects of fiscal policy and how an engineered discrete devaluation might work itself out. Before doing so, however, one can first solve equations [2.1]-[2.5] for the five endogenous variables e *or* M, T, Y, I, and B, to see the impact changes in government expenditures have on income and employment.

Under *fixed exchange rates,* M is endogenous but e is not. An increase in G leaves the production of tradable goods unchanged (from [2.1]), but more bureaucrats are hired directly. Crowding out elsewhere is avoided because private investment is fixed by the given real wage and rate of interest (equation [2.2]). Money national income (in which government services are simply measured at factor cost) simply rises by WdG. The government-expenditure multiplier is limited to *one,* rather than completely washing out as in the pure tradables case. Nevertheless, the government is constrained to using bureaucratic expansion to stimulate "income". More importantly, perhaps, *tax reduction is still impotent* because any rebates would be used by the private sector to consume tradable goods. Such incremental private expenditures would simply absorb imports without stimulating domestic employment, which is still determined by the rigid real wage. This absence of a tax effect is reflected by the fact that income and employment are fully determined by equations [2.1] to [2.5] without a tax variable having been incorporated.

Under *floating exchange rates,* e is endogenous but M is fixed. What then would happen if G increases? The initial impact of an increase of one dollar of government expenditures is to raise income by one dollar. However, there is now a shortage of cash balances as the income velocity of money is fixed (equation [2.4]). Domestic nationals (as individuals) attempt to sell bonds or goods to foreigners, but collectively only succeed in appreciating the exchange rate — i.e., reducing e. This reduction in the prices of tradable goods itself reduces money income (equation [2.3]). But the appreciation of the exchange rate also lowers T and I until aggregate money income is further reduced until the demand for money is satisfied. It is interest-

ing to note in an open economy that private investment can be crowded out even though the interest rate is pegged on the international capital market.

In general, however, crowding out under floating exchange rates won't completely offset the increase in G. This fall in domestic prices reduces money income more than proportionately to the fall in employment associated with T and I. While incomplete, crowding out will be greater the higher the elasticity of [2.1] and [2.2] to changes in the real wage. Hence, the multiplier effect of a one-dollar increase in the government bureaucracy will be much less than unity — whether measured in terms of money income or in terms of employment.

Under floating rates, pure tax reduction again fails to stimulate income and employment. Incremental purchases of tradable goods by the private sector are offset in the balance of payments by sales of government debt to foreigners. Thus the exchange rate, level of output, and money income all remain unchanged.

In conclusion, under either fixed or floating rates discretionary fiscal policy gives some slight stimulus on the expenditure side, but none on the tax side.

Adjustment and Stability

Let us now develop the remaining flow equations describing the state of the balance of payments and the government finances in order to better understand the adjustment process in our mixed tradables-nontradables model.

Suppose that government expenditures are fixed at level G in labor units, should one write the revenue function for tax collection in real or in money terms? "Real" tax collections present an index-number problem. However, specifying tax revenue, R, to be a function of money national income is straightforward.

$$[2.6] \qquad R = R(Y) \text{ where } R'(Y) > 0$$

If based on sales or income levies, tax collections less transfers typically rise proportionately — or more than proportionately — to money income. The government budgetary surplus (flow per unit of time) covered by the issue of bonds then becomes

$$[2.7] \qquad R - WG = S^g \text{ Government Budget Surplus}$$

Given that the government appropriates only nontradable labor services, the state of the balance of payments essentially hinges on whether private absorption of tradables exceeds their production. The private absorption of tradables in turn depends on how domestic investment expenditures are financed, and are related to the private consumption function.

The financing of fixed-investment expenditures within a short-run Keynesian model is difficult to handle neatly without [1] having to specify the "long-run" portfolio-balance position for fixed capital itself, and [2] introducing a market for "equities" and looking at the optimum debt-equity mix. Incorporating [1] would greatly lengthen the analytical time horizon of the model in a way which is quite out of keeping with short-run assumptions of rigid money wages and a predetermined capital stock; whereas incorporating [2] requires the introduction of a whole new "illiquid" asset market, perhaps open to foreigners; yet I am primarily concerned with the short-run effects of changes in *liquid-asset* (government bonds and money) positions of the domestic private sector.

To finesse these potentially unmanageable complications, I shall assume that fixed investment is completely self-financed by domestic residents without any direct open-market transaction. Once a decision is made to invest according to r and $\frac{W}{e}$ as described by [2.2], domestic income is preempted for this purpose much like tax revenues are appropriated by the government. Private disposable money income available for consumption, therefore, is

$$[2.8] \qquad D = Y - R - WI$$

This simplification eliminates the need to introduce an equity market on the one hand, and having to specify the long-run target stock of fixed capital and its wealth effects on current spending on the other. The simplification has the disadvantage of not allowing direct investment finance from abroad to enter the balance of payments. Hence, private international capital flows are always zero in equilibrium once domestic nationals achieve portfolio balance in their liquid asset positions (equations [2.4] and [2.5]). However, fiscal and monetary policies that operate to substantially change the liquid asset position of the private sector in the short-run are effectively incorporated. Not too much seems to be lost by sweeping

the wealth effects of slowly changing illiquid-asset positions under the rug.

A more subtle disadvantage of considering private disposable income to be a residual after the investment decision is made, is that the Keynesian *ex ante* investment-saving dichotomy is obliterated. Except for the hoarding or dishoarding of *liquid* assets, the *ex ante* private absorption demand for goods on both investment and consumption account equals private income — an approach quite close to the "new" Cambridge view (Spraos, 1974) as we shall discuss later. However, the qualitative conclusions of the model regarding the efficacy of monetary or fiscal policy over a "short" time horizon do not seem to hinge on this assumption.

Using [2.8] the private consumption expenditure, C, can then be written

$$[2.9] \qquad C = C\left(\frac{D}{e}, r, \frac{A}{e}\right) \quad C_1 > 0 \; C_2 < 0 \; C_3 > 0$$

Again $A = M + B$ is the stock of liquid financial assets held by the private sector. Note that we deflate disposable income and the domestic money value of liquid assets by the price of tradable goods e, since tradables are the only consumption goods available to the private sector. Hence the relative price of nontradables only enters indirectly through the investment function.

The foreign trade surplus, S^f, can be written (in domestic currency) as the difference between the value of domestic production and consumption of tradable goods

$$[2.10] \qquad S^f = eT - eC = eX - eI_m \quad \text{where } X = \text{exports and } I_m = \text{imports}$$

For convenience, our identity describing national *money* income from the expenditures side can be written

$$[2.11] \qquad Y = eC + WG + WI + eX - eI_m$$

Consider now the crucial equation in the asset adjustment process. Whatever the exchange-rate mechanism might be, the flow rate at which the private sector is accumulating liquid assets is the sum of the government budgetary deficit and trade surplus, both of which pump financial assets into the economy

$$[2.12] \qquad (WG - R) + (eT - eC) = \dot{A}$$

In comparing stationary equilibria, individuals attain their desired liquid asset positions and then cease further accumulation of these assets. Hence asset equilibrium, as defined by equations [2.4] and [2.5] above, requires that $\dot{A} = 0$. When the system is finally at rest, the trade-balance surplus exactly equals the government budgetary deficit.

$$[2.13] \qquad S^g = S^f \quad \text{Asset-Equilibrium Condition}$$

The government's budgetary deficit pumps liquid assets into the economy that are drained out by the trade deficit. If the trade deficit was smaller than the budgetary deficit, the private sector would be accumulating liquid assets. From [2.9] private expenditures for tradables would then rise until the trade deficit widened sufficiently to siphon off the excess. Our portfolio balance conditions [2.4] and [2.5] will then hold.

Is there any aspect of the above flow conditions that might make the economy dynamically unstable so that the equilibria defined by equations [2.1] to [2.5] may never be achieved? When newly issued government debt *must* be acquired by domestic residents, Blinder and Solow (1973) have identified just such a possibility. Government bond issue could increase r, if the economy were closed to foreign sources of finance. Private expenditures for goods and services would then be reduced. If this effect was strong enough to overwhelm any increase in G, Y would fall and further reduce revenue through a tax function similar to [2.6]. More debt issue would ensue with private expenditures and tax revenues falling further; the economy would then spiral downward indefinitely as private holdings of government debt kept increasing.

Blinder and Solow did not mention the full economic implications of their unstable constellation of parameters: Fiscal policy cannot be used as an automatic stabilizer. If some shock temporarily reduces income, the induced deficit in the government budget leads to debt issue that pushes the closed economy down further. Hence, to avoid such an "automatic" destabilizing effect, government authorities would be well advised to raise taxes promptly in response to unforeseen deficits arising from, say, a fall in national income. This result is contrary to most people's intuition on the automatic

stabilizing qualities of passive fiscal policy in financially mature economies.[7]

Fortunately, these potentially perverse wealth effects of debt issue do not hold in our model of an open economy. The interest rate on bonds is pegged on the international capital market so that the private sector can quickly sell excess bonds for money. With a fixed relative price, bonds and money can be aggregated into "liquid assets", A, in our expenditure function. From the point of view of *individual* private residents, the issue of bonds has the same effect as the issue of money in stimulating expenditures. Thus, when $\dot{A}>0$ as in equation [2.12], private expenditures for goods and services will expand until $\dot{A}$ is driven to zero by a widening of the trade deficit or a reduction in the government budgetary deficit. Thus, the interesting problem of dynamic instability identified by Blinder and Solow does not exist here, although the same issue would arise if we assumed *no* capital mobility to the outside world so that government debt issue drove up the domestic rate of interest.[8]

Because of this underlying stability, fiscal policy works quite well as an *automatic stabilizer* in our open economy with unlimited access to external credits, as far as domestic fluctuations in aggregate demand are concerned. If the private investment function [2.2] is unstable in the Keynesian mode, the multiplier impact on national income will be limited to unity (as with fluctuations in G) under fixed exchange rates. Under floating exchange rates, a reduction in I (and incipient decrease in Y) will induce a devaluation as individuals attempt to dishoard cash balances. Devaluation will stimulate the production of tradable goods and induce more investment so as to keep the multiplier impact of the initial shock below unity.

I conclude that while discretionary fiscal policy is likely to be frustrated in an open economy, the system does operate as an automatic stabilizer to exogenous disturbances in the private propensity to invest or consume and in the government's propensity to

7 This seemingly anomalous situation may have some substantial empirical content in less developed countries. The financial system is often quite primitive so that government deficits preempt the productive sector's access to working capital. This reduces output and tax revenue so as to further widen the deficit in the government's budget. See R. McKinnon (1973), Ch. 7.

8 No capital mobility to the outside world may be the result of excessive debt issue in the past that makes foreign creditors unwilling to purchase any new issues of domestic bonds — whatever their currency of denomination. Such an unfortunately situation is not out of the question for countries like Britain and Italy at the present time.

spend.[9] They are two sides to the same coin. In addition, one would not expect dynamic instability of the kind found by Blinder and Solow in their closed economy model.

However, fluctuations in *supply* conditions, in the level of money wages or in the foreign-currency price of tradable goods, are not automatically stabilized to the same extent. One can immediately see, from [2.1] and [2.2], that a rise in money wages tends to depress the output of tradable goods and private investment. If e is fixed, there is nothing to prevent a rise in the real wage and a reduction in real output. If e is flexible but M is fixed, I leave it to the reader to demonstrate the counterintuitive proposition that circumstances exist where the real wage may rise even more than the initial percentage increase in money wages. Hence, a flexible exchange rate need be no better than a fixed rate as an automatic stabilizer of output fluctuations due to changes in money wages.

Internal-External Balance, Devaluation, and the New Cambridge View

Because of the limited influence of fiscal policy on macroeconomic activity in an open economy, a given (or increased) level of money wages that substantially depresses output and employment can only be offset by discretionary monetary policy: either by increasing the money supply directly in a floating exchange-rate regime or indirectly by engineering a discrete devaluation through a change in the official parity. But such monetary expansion influences the government budgetary surplus or deficit (when fiscal policy remains passive) and so *pari passu* (equation [2.13]) determines the foreign trade surplus or deficit. Discretionary fiscal policy can then be used risidually to offset any "deficits" or "surpluses" that remain in international payments. These policy implications of our mixed tradables-non-tradables model are similar to the "new Cambridge view" (Spraos, 1974): Discretionary monetary (exchange-rate) policy should be

9 Following William Poole's (1970) work on closed economies, John Scadding (1974) has analyzed fiscal and monetary policies as automatic stabilizers (in the sense of minimizing the variance of income around some mean) for open economies. However, his interesting model does not include labor-market and price-level effects. He was primarily concerned with instability in the goods and money markets within the classic Hicksian IS-LM model of aggregate demand.

assigned to domestic output and employment in the short run, whereas discretionary fiscal policy has a comparative advantage in maintaining external balance.

It makes no difference whether we begin with pegged or floating exchange rates. If the government devalues by raising the pegged price of foreign currency in terms of the domestic, the higher e will raise money income, output, and employment — equations [2.1], [2.2], and [2.3]. Because of the fixed velocity of money [2.4], the money supply rises with money income because the monetary authority is induced to sell domestic money in order to maintain the higher price of foreign exchange. Starting from the same initial position under a floating-rate regime, therefore, one can always find a $dM>0$ — an increase in the money stock through domestic open-market operations — that leads to the same devaluation, $de>0$; and hence it has the same expansionary impact on equilibrium income and employment.

Let the analysis begin from a position of employment adjudged to be "full" by the authorities, and where there is no deficit in the balance of trade or in the government budget. Consider only a discrete devaluation *cum* monetary expansion in response to an arbitrary increase in money wages. What are the consequences for internal and external balance of, say, a 10% increase in money wages compensated by a 10% devaluation? That is, impose the condition

$$[2.14] \qquad \frac{de}{e} = \frac{dW}{W} > 0$$

One can see immediately that in final equilibrium there will be no net change in real output or employment. Because de just offsets dW to leave real wages unchanged, the production of tradable consumer goods and nontradable labor services in fixed investment remain as before. As long as G is exogenously given, employment in the public sector will then stay the same even though WG rises. Hence, the exchange-rate *cum* monetary policy is fully effective in maintaining *internal* balance (price-level effects aside) as money wages fluctuate.

However, a devaluation tailored correctly to maintain internal balance does not offer assurance that "balance" in international payments will be reestablished as well. Indeed, exports could increase or decrease relative to imports even if [2.14] is satisfied. To see this,

let dY_e represent the change in equilibrium money income from the devaluation; and let dY_w be the change from the increase in money wages. The total increment in money income is then

$$dY = dY_e + dY_w$$

From [2.3], we have that

$$dY_e = edT + Tde + WdI > 0$$

and

$$dY_w = -edT - WdI + IdW + GdW \gtreqless 0$$

Because the price level rises, the net impact on money income of *both* the devaluation and the wage change is

$$[2.15] \qquad dY = Tde + IdW + GdW > 0$$

In order to calculate the impact of this change in money income on the trade balance, look again at the government budget where:

$$[2.16] \qquad dS^g = dR - GdW = R'dY - GdW$$

R′ is the marginal propensity to tax out of money income. Clearly if R′ is sufficiently high (towards unity), the trade balance must improve because the increased government wage bill is itself an important component of the increase in money income. Even if R′ is much lower than unity, the other contributors to the rise in money income — tradables production and investment — may still generate enough tax revenue to put the government budget and, hence, trade balance into surplus.[10] Only if government expenditures were the *dominant* element in national income, would the government budget and trade balance deteriorate as a result of raising e and W by the same percentage amounts.

Supposing, therefore, that the trade balance actually improves through the passive fiscal mechanism. The government may now wish to eliminate the flow accumulation of official financial claims

10 By itself, a devaluation (with no change in money wages) *always* improves the trade balance. The increase in exports relative to imports, however, arises from the increased revenues generated through the government budget with G and W fixed: $dY>0$, $dR>0$, $dS^g>0$, and $dS^f>0$. Improvement in the trade balance requires that the government passively allow its budgetary position to improve, rather than being directly derivable from elasticity conditions in the goods market.

FIGURE 1

FISCAL AND MONETARY POLICY: TRADITIONAL ASSIGNMENT.

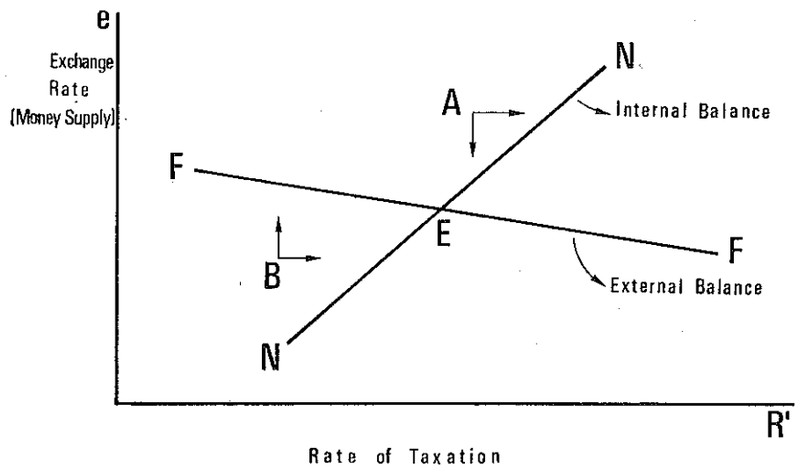
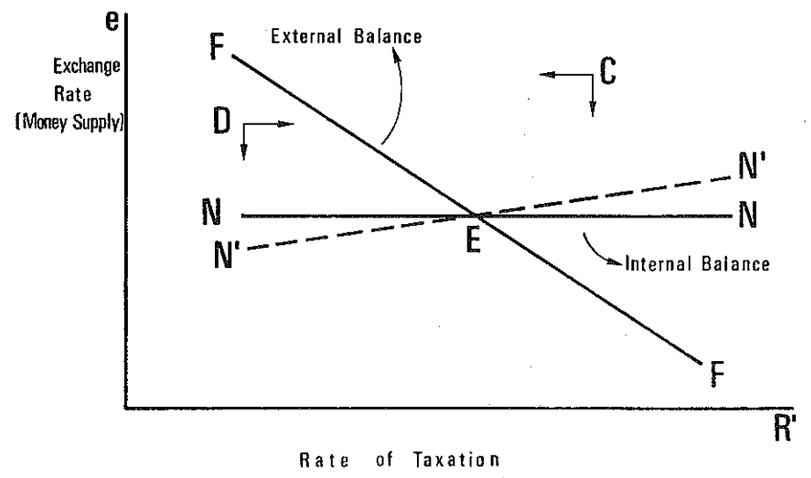


FIGURE 2

ASSIGNMENT: IN A PORTFOLIO-BALANCE MODEL: NEW CAMBRIDGE.



on foreigners. If R′ is reduced through a cut in tax rates, the trade surplus will fall correspondingly with *no* change in the level of real output and employment. In this residual sense, discretionary fiscal policy should be assigned to maintaining the balance of international payments. Changes in tax rates would seem more efficient than changes in government expenditures in meeting this external objective because the latter has small side effects on employment and output of a very specialized kind.

In contrast, the "normal" assignment — fiscal policy to internal balance and exchange-rate policy to external balance — is sketched in Figure 1. The direction of adjustment is by the arrows at points A and B. The system is stable because the FF (external balance) line is drawn to be flatter than the NN line associated with full employment. That is, the exchange rate has a comparative advantage over the tax rate in achieving external balance in the traditional income-expenditure approach to modelling macroeconomic processes.

Our reversal of this orthodox assignment is sketched in Figure 2. The internal balance (NN curve) and external balance (FF curve) now reflect full portfolio adjustment in private liquid asset positions in an economy with a minimal nontradables sector and rigid money wages. Notice that the NN curve is now completely flat since the rate of taxation plotted on the horizontal axis has no influence on output and employment. (If — dG was plotted instead of R′, the NN curve would have a slight positive slope as shown by N′N′.) On the other hand, the FF curve is negatively sloped but not vertical: A depreciation (rise in e) will not only stimulate output and employment, but also improve the trade surplus through the automatic increase in government revenue. The new assignment of exchange-rate *cum* monetary policy to internal balance, and fiscal policy to external balance, is given by the direction of the arrows at points C and D. With this new assignment, the system should converge to a position of both internal and external balance by the ordinary criteria described by Mundell (1962) and Cooper (1969).

The analysis in Figure 2 differs a little from Spraos' (1974) portrayal of the new Cambridge view. He has the FF curve vertical by not allowing for passive fiscal effects — he kept government revenue constant. Nor would the NN curve be perfectly horizontal in his model because tax cuts are allowed to have some impact on domestic output; he did not specify the labor market (real wage) constraint on the domestic production of tradable goods or fixed

investment. Instead or relying on liquid asset effects to drive private net saving (above fixed investment) to zero in equilibrium as done here, Spraos simply posited that private absorption always equals private expenditure.[11] Nevertheless, the spirit of the two approaches is the same in assigning fiscal policy to external balance and monetary *cum* exchange-rate policy [12] to internal balance.

In conclusion, engaging in heavy fiscal deficits as the principal response to unemployment could be a perilous policy for the stability of an open economy. Unemployment would not be significantly alleviated, and the resulting foreign deficits could cumulate so as to threaten the economy's international credit worthines. Nevertheless, such a policy response is often considered respectable by civil servants and economists steeped in old " closed-economy " Keynesian economics. The heavy budgetary and trade deficits in many " small " countries — such as Britain and Italy — suggest how deeply ingrained these old habits of mind might be at the present time.

On the other hand, while monetary *cum* exchange-rate policy can give a sharp short-run stimulus to an open economy with rigid money wages, it lacks viability if used repeatedly. As this official policy response becomes anticipated, money wages lose their rigid character. Indeed, labor unions may come to overestimate future exchange depreciations in current bargaining sessions — an important long-run effect that requires a more elaborate model than the short-run analysis contained in this paper.

Stanford

RONALD I. MCKINNON

11 By some mechanism that is not entirely clear in his analysis. Moreover, his specification is entirely too strong if applied outside of equilibrium because it leaves the private sector self-sufficient in liquid assets. Hence, " there is no way whereby the private sector's stock of central bank money can change " (SPRAOS, 1974, page 9). However, as long as the private sector is free to accumulate liquid assets when moving from one equilibrium to another (equation [2.12]), and then stops once a desired portfolio is achieved (equations [2.4] and [2.5]), there is no paradox. Money holdings can expand with money income, but the difference between private absorption and expenditure is always zero in equilibrium. Needless to say, my earlier assumption of completely self-financed fixed investment is a big simplification in this regard.

12 While the new Cambridge approach does not concede that exchange-rate policy is simply one facet of monetary policy, it could be described as " disguised monetarism."

BIBLIOGRAPHY

BLINDER, A. S. and SOLOW, R. M., " Does Fiscal Policy Matter?," *Journal of Public Economics* (2), 1973, pp. 319-337.

COOPER, *R. N.*, " The Assignment Problem: Comment," in *Monetary Problems of the International Economy*, Ed. by R. A. Mundell and A. K. Swoboda, 1969, pp. 235-241.

DORNBUSCH, R., " Real and Monetary Aspects of the Effects of Exchange Rate Changes," in *National Monetary Policies and the International Financial System*, Ed. by R. Z. Aliber, 1974, pp. 64-81.

HICKS, J. R., *The Crisis in Keynesian Economics*, Basic Books, 1974.

KEYNES, J. M., *A Treatise on Money*, 1930, reprinted by The Macmillan Press, for the Royal Economic Society, 1971.

KEYNES, J. M., *The General Theory of Employment, Interest, and Money*, reprinted by the Macmillan Press, for the Royal Economic Society, 1973.

KRUEGER, A., " The Role of Home Goods and Money in Exchange-Rate Adjustments," in *International Trade and Finance: Essays in Honour of Jan Tinbergen*, ed. by W. Sellekaerts, 1974, pp. 141-162.

MACHLUP, FRITZ, *International Trade and the National Income Multiplier*, Blakiston, 1943.

MCKINNON, R. I., " Portfolio Balance and International Payments Adjustment," in *Monetary Problems of the International Economy*, Ed. by R. A. Mundell and A. K. Swoboda, 1969, pp. 199-234.

MCKINNON, R. I., *Money and Capital in Economic Development*, Brookings Institution, 1973.

MEADE, JAMES E., *The Balance of Payments*, Oxford University Press, 1951.

MUNDELL, R.A., " Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates," *Canadian Journal of Economics and Political Science*, Vol. 29, November 1963.

MUNDELL, R.A., " The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability," International Monetary Fund *Staff Papers*, 9, No. 1, March 1962.

POOLE, W., " Optimal Choice of Monetary and Fiscal Instruments in a Simple Stochastic Macro Model," *Quarterly Journal of Economics*, 85, May 1970, pp. 197-216.

SALTER, W. S., " Internal and External Balance: The Role of Price and Expenditure Effects," *The Economic Record*, August 1959, pp. 226-238.

SCADDING, J., " Stabilization Policies in an Open Economy," Memorandum No. 169, *Center for Research in Economic Growth*, Stanford University, April 1974.

SPRAOS, J., " New Cambridge Macroeconomics, Assignment Rules, and Interdependence," paper presented to the conference on *The Political Economy of Monetary Reform*, Wingspread, Wisconsin, July 1974.