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On the Effectiveness of Monetary Policy and Fiscal Policy

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1. INTRODUCTION

There has been a major shift within macroeconomic policy over the past two decades or so in terms of the relative importance given in both policy and theoretical terms to monetary policy and to fiscal policy with the former gaining considerably in importance, and the latter being rarely mentioned. Furthermore, the nature of monetary policy has shifted away from any attempt to control some monetary aggregate (which was prevalent in the first half of the 1980s), and instead monetary policy has focused on the setting of interest rates as the key policy instrument.[1] There has also been a general shift towards the adoption of inflation targets and the use of monetary policy to target inflation. In this paper we begin by considering the significance of this shift in the form of monetary policy. This consideration leads us to first question the effectiveness of monetary policy, and then to explore the role of fiscal policy.

The difficulties which Central Banks had in the control of monetary aggregates can be largely ascribed to the endogenous nature of money and to the unstable nature of the demand for money. The concept of endogenous (bank) money has become an important one for macroeconomic analysis, especially within Keynesian economics. Endogenous credit bank money provides a more realistic approach to money in comparison with the exogenous, controllable money approach (in the sense that we know that most money in an industrialized economy is bank money). Further, the concept of endogenous money fits well with the current approach to monetary policy based on the setting (or targeting) of a key interest rate by the Central Bank, with the stock of money becoming almost irrelevant.[2] In the case of endogenous money, the causal relationship between the stock of money and prices is reversed as compared with the exogenous money case. Endogenous money plays an important role in the causal relationships between investment and savings: simply the expansion of investment expenditure requires the availability of loans, which leads to a corresponding expansion of savings and to an (at least temporary) expansion of bank deposits.

A simple representation of the endogenous money approach treats the Central Bank rate of interest as given with the Central Bank providing bank reserves which are required (at a price which it sets). Loans are provided by banks at a rate of interest which is a mark-up over the Central Bank rate, and the banks meet all credit worthy demand for loans. The mark-up of the loan rate over the Central Bank rate may vary as banks' liquidity position, market power and attitude to risk vary. The loans are created in response to the demand for loans, and bank deposits are thereby created. The repayment of loans destroys money, and the amount of money that remains in existence depends on the demand to hold money. Money is generated in the inflationary process as rising costs and prices lead to requirements of loans to finance higher nominal production and expenditure. The rate of inflation then influences the rate of increase of the stock of money, but the growth in the stock of money does not in any sense *cause* inflation.

The Central Bank rate can be viewed as the key rate on which all other interest rates are based--often explicitly so as in the case of the interest rates charged by banks on loans and paid by banks on deposits. However, while that may be a useful way to proceed in the short run (which here would be that period over which the Central Bank holds its interest rate constant), it clearly

leaves open the question of the factors that influence or determine the Central Bank interest rate in the longer term. The discussion in the Keynesian literature has usually pointed to the discretion possessed by the Central Bank and exchange rate considerations.[3] But in this Keynesian endogenous money supply literature, there has been little discussion on the underlying determinants of the discount rate set by the Central Bank. In some contrast, the literature on monetary policy coming from the so-called "new consensus" on macroeconomics (as discussed in the next section) has given prominence to the question of the determination of the discount rate, and generally postulated that the discount rate is set in accordance with "Taylor's rule" whereby the real interest rate is set relative to some "equilibrium" rate influenced by deviations of inflation from target level and output from some trend or "natural" rate. However, if the Central Bank sets its discount rate at the "equilibrium rate" (where savings and investment are brought into equality at full employment or some other supply-side equilibrium level of employment or output), the problem of aggregate demand deficiency appears to be effectively dispensed with.[4] It would be more accurate to say that the Central Bank is perceived to be able to set a discount rate that generates a spectrum of interest rates (on bank deposits, loans, bonds etc.) that is compatible with a balance between savings and investment occurring at a level of employment corresponding to capacity output (at which it is assumed inflation would be constant).

The Keynesian endogenous money approach has tended to accompany a general view that monetary policy (in the form of interest rate changes) is relatively ineffectual and that fiscal policy is relatively effective (in the Keynesian tradition). However, the "new consensus" in macroeconomics which has emerged and which has been particularly applied in the discussion of monetary policy, treats money as endogenously created, though the terminology of endogeneity is not generally used. Money is treated as a "residual" in the sense that the stock of money has no causal significance within the approach (e.g. changes in stock of money do not cause inflation) and the rate of interest is treated as set by the Central Bank and is not market determined.[5] King (2002) has noted that "as price stability has become recognized as the central objective of central banks, the attention actually paid to money stock by central banks has declined." Surprisingly perhaps, "as central banks became more and more focused on achieving price stability, less and less attention was paid to movements in money. Indeed, the decline of interest in money appeared to go hand in hand with success in maintaining low and stable inflation" (p. 162). However, in this "new consensus" little attention is paid to the process by which loans and deposits are created and destroyed.[6] The causal links between investment expenditure and loan creation and between inflation and the creation of money, which feature strongly in the endogenous money literature, are rather overlooked in this "new consensus." Further, within the "new consensus" there is barely mention of fiscal policy--presumably with the implication that fiscal policy does not matter, whereas the focus is on monetary policy and the use of interest rate policy to target inflation.

In this paper, we begin by considering this "new consensus" and the limited nature of its analysis. It is further argued that broadening out the analysis and considering some empirical evidence points to the conclusion that monetary policy is relatively impotent. The role of fiscal policy is then considered where it is argued that fiscal policy (under specified conditions) is still a powerful tool for macroeconomic policy. A final section summarizes and concludes.

2. THE "NEW CONSENSUS"

The "new consensus" has been summarized in terms of a simple model with the following three equations (drawn from Meyer 2001; but see, also, McCallum, 2001, and Clarida, Galí, and Gertler, 1999 and discussed in Arestis and Sawyer, 2002b and 2002c,):

$$(1) \quad Y^g_t = a_0 + a_1 Y^g_{t-1} + a_2 E_t (Y^g_{t+1}) - a_3 [R_t - E_t (p_{t+1})] + s_1$$

$$(2) \quad p_t = b_1 Y^g_t + b_2 p_{t-1} + b_3 E_t (p_{t+1}) + s_2 , (\text{with } b_2 + b_3 = 1)$$

$$(3) \quad R_t = RR^* + E_t (p_{t+1}) + c_1 Y^g_{t-1} + c_2 (p_{t-1} - p^T) + c_2 R_{t-1}$$

where Y^g is the output gap, R is nominal rate of interest, p is rate of inflation, p^T is inflation rate target, RR* is the "equilibrium" real rate of interest, that is the rate of interest consistent with zero output gap which implies from equation (2), a constant rate of inflation, s_i (with i = 1, 2) represents stochastic shocks, and E_t refers to expectations held at time t. Equation (1) is the aggregate demand equation with the current output gap determined by past and expected future output gap and the real rate of interest. Equation (2) is a Phillips curve with inflation based on current output gap and past and future inflation. Equation (3) is a monetary policy operating rule (of the Taylor's rule form) with the nominal interest rate based on expected inflation, output gap, deviation of inflation from target and the "equilibrium" real rate of interest. The lagged interest rate represents interest rate "smoothing" undertaken by the monetary authorities (see, for example, McCallum, 2001).[7]

A fourth equation can be added which relates the stock of money to "demand for money variables" such as income, prices and the rate of interest, which would reinforce the endogenous money nature of this approach with the stock of money being demand

determined. Clearly, though, such an equation would be superfluous in that the stock of money thereby determined is akin to a residual and does not feed back to affect other variables in the model! We have explored this issue and others related to whether the stock of money retains any causal significance at some length in Arestis and Sawyer (2002c).

From the perspective of this paper, equation (3) is of particular significance. It clearly endogenizes the setting of interest rate by the Central Bank and does so along the lines of "Taylor's rule." The significance of the use of "Taylor's rule" is twofold. First, it treats the setting of interest rates as a domestic matter without reference to international considerations such as the exchange rate and interest rates elsewhere in the world. This is not just an attribute of using Taylor's rule in the context of the closed economy model outline above, but is a more general feature of that rule. Second, the interest rate is adjusted in response to the output gap (and to the rate of inflation which in turn is modelled to depend on the output gap). A zero output gap is consistent with constant inflation, as can be seen from equation (2). Equation (3) then implies a nominal rate of interest which translates into a real rate equal to the "equilibrium" rate RR*, which is consistent with zero output gap and constant inflation. From equation (1), the value of RR* would need to be a_0/a_3. Provided that the Central Bank has an accurate estimate of RR* then it appears that the economy can be guided to an equilibrium of the form of a zero output gap and constant inflation (at an interest rate equal to the pre set target). In this case, equation (1) indicates that aggregate demand is at a level that is consistent with a zero output gap. In a private sector economy, this would imply that the real interest rate RR* brings equality between (*ex ante*) savings and investment. The equilibrium rate of interest corresponds to the Wicksellian "natural rate" of interest which equates savings and investment at a supply-side equilibrium level of income.

In effect, the model portrays an economy in which the interest rate can be adjusted to secure equilibrium in terms of a zero output gap and a balance between aggregate demand and aggregate supply (alternatively between planned savings and planned investment). There are (at least) three factors that may prevent this from coming about.[8] First, mistakes may occur in the setting of interest rates. The Central Bank has imperfect information on the equilibrium real rate of interest RR* (assuming that such a rate does actually exist), and may aim for a real rate of interest which is not equal to a_0/a_3. It could also be noted that it has been implicitly assumed in equation (3) that there are no stochastic errors in decision making with accurate knowledge on the lagged output gap and inflation rate. Any shift in fiscal policy, in investors' confidence or in world trade conditions would be reflected in a change in a_0, leading thereby to a change in the equilibrium real rate of interest. This would, of course, exacerbate the problems of securing information on the equilibrium rate and exacerbate the chances of policy mistakes.

Second, the domestic interest rate may be incompatible with those which are being set internationally or have severe implications for the capital account balance. Insofar as interest rate parity holds, then the difference between the domestic interest rate and the foreign interest rate will be equal to the (expected) rate of change of the exchange rate. The relevant domestic interest rate (for international capital movements) may be a rate such as that on bonds, but one assumed to be linked to the discount rate set by the Central Bank. The interest rate parity result appears not to hold empirically in the sense of the interest rate differential and exchange rate movements being closely linked.[9] This can provide the monetary authorities with some ability to vary the domestic interest rate without major effects on the exchange rate. The question then arises as to the extent to which monetary authorities have this ability and how far it is constrained by these exchange rate considerations. It was noted above that Taylor's rule neglects these exchange rate effects.

Third, the real rate of interest given by a_0/a_3 may be negative. This would be equivalent to saying that the savings and investment schedules do not intersect in the positive range of interest rates. The aggregate demand equation [equation (1)] above clearly assumes that aggregate demand, and presumably investment, is interest rate sensitive (such that a_3 is greater than zero) and that there is a substantial autonomous component of demand (otherwise a_0 would be non-positive).

This "new consensus" focuses on the role of monetary policy (in the form of interest rates) rather than on fiscal policy (though shifts in a_0 in equation 1 could be used to represent the fiscal stance). It also focuses on the control of demand inflation, and not on cost inflation, as is evident from equation (2). As Gordon (1997) remarked (though not in the context of this "new consensus"), "in the long run inflation is always and everywhere an excess nominal GDP phenomenon. Supply shocks will come and go. What remains to sustain long-run inflation is steady growth of nominal GDP in excess of the growth of natural or potential real output" (p. 17). The significance of the "new consensus" is that it strongly suggests that inflation can be tamed through interest rate policy (using demand deflation) and that there is an equilibrium rate (or "natural rate") of interest which can balance aggregate demand and aggregate supply and which is feasible, and lead to a zero gap between actual and capacity output.

3. THE "NATURAL RATE" OF INTEREST

The *pre* -Keynesian view of the relationship between savings and investment could be summarized in terms of the variation of the

rate of interest to equate savings and investment. Indeed Keynes (1930) himself drew on this notion after his discussion of his "fundamental equations," the first of which was:

(1) $P = E/O + (I' - S)/R$

where P is price level of consumption goods, E is money income, O is total output of goods, I' is cost of production of investment, S is savings, and R is consumption goods purchased. The particular significance of his fundamental equations (of which we need to report only one here) for our current purpose concerns the link between the rate of interest and the price level. Keynes (1930) makes the point well when he argues that "Following Wicksell, it will be convenient to call the rate of interest which would cause the second term of our fundamental equation to be zero the *natural rate* of interest, and the rate which actually prevails the *market rate* of interest. Thus the natural rate of interest is the rate at which saving and the value of investment are exactly balanced, so that the price level of output as a whole, exactly corresponds to the money rate of the efficiency earnings of the factors of production. Every departure of the market rate from the natural rate tends, on the other hand, to set up a disturbance of the price level by causing the second term of the second fundamental equation to depart from zero. We have, therefore, something with which the ordinary quantity equation does not furnish us, namely, a simple and direct explanation why a rise in the bank rate tends, in so far as it modifies the effective rates of interest, to depress price levels" (p. 139).

The "new consensus" has not explicitly discussed the relationship between savings and investment nor the "natural rate" of interest. But it is immediately apparent from the three equations written above that there is discussion of the equivalent relationship between output and demand, and that an "equilibrium rate" similar in nature to the "natural rate" has been introduced. It should be noted, though, that Keynes (1936) explicitly rejects the idea of a unique "natural rate" of interest, and in effect argues that there is a "natural rate" of interest corresponding to each level of effective demand, which would bring savings and investment into balance. Keynes (1936) argues that in Keynes (1930) "I defined what purported to be a unique rate of interest, which I called the *natural rate* of interest--namely, the rate of interest which, in the terminology of my *Treatise* , preserved equality between the rate of saving (as there defined) and the rate of investment. I had, however, overlooked the fact that in any given society there is, on this definition, a *different* natural rate of interest for each hypothetical level of employment. And, similarly, for every rate of interest there is a level of employment for which the rate is the "natural" rate, in the sense that the system will be in equilibrium with that rate of interest and that level of employment. Thus it was a mistake to speak of *the* natural rate of interest or to suggest that the above definition would yield a unique value for the rate of interest irrespective of the level of employment. I had not then understood that, in certain conditions, the system could be in equilibrium with less than full employment" (pp. 242-243).

In the model outlined in section 2 above, the "equilibrium rate" of interest RR* was equal to a_0/a_3 where a_0 and a_3 are coefficients in equation (1) and represent the autonomous component of expenditure and the sensitivity of demand to the real rate of interest respectively. Hence, changes in either a_0 or a_3 would generate changes in the "equilibrium" rate of interest. The autonomous component of consumption, expectations and "animal spirits" governing investment, foreign demand as well as fiscal stance would all be captured by the a_0 coefficient. Shifts in any of those elements would be expected to change a_0 and thereby the "equilibrium rate" of interest. In particular, the "equilibrium rate" of interest can be seen to depend on the fiscal stance. It should be seen to leave open the issue as to whether fiscal policy or monetary policy is the more effective (however that is perceived). It could still be the case that the policy response to a downturn in "animal spirits" reducing the level of investment should be a fiscal stimulus than an interest rate cut. The "new consensus" says little on the strength of the impact of fiscal and monetary policy nor on the lags and uncertainties surrounding the effects of these policies. The "new consensus," however, takes the view that fiscal policy should not be used as a counter cyclical instrument of policy.[10]

The "equilibrium rate" of interest is deemed to be consistent with a zero output gap and constant inflation. The output gap clearly relates actual output to some notion of capacity output. This leaves unresolved the issue of the size of capacity output, and hence the relationship between employment of labor which would correspond to capacity output and full employment. There is no strong reason to think that a zero output gap would necessarily correspond to full employment.

4. LIMITS ON MONETARY POLICY

There are (at least) six ways which would upset the conclusion that interest rate policy can guide the economy to equilibrium with demand and supply in balance and inflation on target. The first is that the "equilibrium" rate of interest is either negative or positive but so low as to be unattainable.[11] In some respects this has overtones of the "liquidity trap," but the mechanisms are different. In the case of the "liquidity trap," it was presumed that the rate of interest on bonds was so low (and the price of bonds so high) that few would be willing be buy bonds in light of the likelihood of capital losses in doing so. In the present case, a negative interest rate is ruled out on the basis that a zero rate of interest can also be obtained by holding cash. The point here is that the equation

for the equality between savings and investment of the $I(r, Y_n) = S(r, Y_n)$ may not have an economically meaningful solution (in general that r is positive), where Y_n is income level for which output gap is zero.

Second, and not unrelated to the previous point, interest rates may have very little effect on the levels of investment and savings and hence variations in the rate of interest would be ineffectual in reconciling intended savings and investment.[12] The theoretical and empirical arguments on the ambiguity of the sign of the relationship between savings and the rate of interest are well known. The empirical literature on investment has often cast doubt on the impact of interest rates on investment and stressed the roles of profitability and capacity utilisation. "In the investment literature, despite some recent rehabilitation of a role for neoclassical cost-of-capital effects ... there remains considerable evidence for the view that cash flow, leverage, and other balance-sheet factors also have a major influence on spending [Fazzari, Hubbard, and Peterson (1988), Hoshi, Kashyap, and Scharfstein (1991), Whited (1992), Gross (1994), Gilchrist and Himmelberg (1995), Hubbard, Kashyap, and Whited (1995)]" (Bernanke, Gertler, and Gilchrist, 1999, p. 1344). These authors further note in a footnote that "contemporary macroeconometric forecasting models, such as the MPS model used by the Federal Reserve, typically do incorporate factors such as borrowing constraints and cash-flow effects" (fn. 2, p. 1344).

Third, the linkage from the key discount rate set by the Central Bank and the interest rates which influence economic decisions may be rather loose and uncertain. For example, the long-term rate of interest may be viewed as relevant for long-term investment decisions, and the response of the long-term rate of interest to changes in the key discount rate may be relatively slight and may vary over time. The banks could respond to a change in the discount rate by a combination of changes in the interest rate on loans and changes in the credit standards, which they set. Hence, the impact of a change in the discount rate on interest-sensitive spending decisions depends on the decisions of banks and other financial institutions.

Fourth, the "equilibrium" rate of interest has been determined in light of domestic considerations only, and may not be compatible with interest rates in the rest of the world.[13] The clearest case of this incompatibility would arise if the interest rate parity theory held such that the interest rate differential between currencies is equal to the expected rate of change of the exchange rate between the currencies.[14] A relatively high (low) real domestic interest rate would then be associated with a depreciating (appreciating) currency. But a relatively high (low) domestic interest rate is often associated with a high (low) value of the domestic currency. Those two propositions may be reconcilable if the initial imposition of a high (low) domestic interest rate is accompanied by a sharp rise (fall) in the exchange rate, followed by a steady decline (rise) in its value. However, a continuing high (low) domestic interest rate would be accompanied by (according to the interest rate parity theory) a continuing decline (rise) in the exchange rate. It is difficult to see that such a decline (rise) could continue for any substantial period of time, and hence that a relatively high (low) domestic interest rate be sustained for any substantial period of time.

Fifth, the Central Bank cannot calculate and attain the "equilibrium rate" of interest through reasons of lack of information, it being a moving target or incompetence.[15] It can be seen in the equations given above that the "equilibrium rate" depends on a_0/a_3 and these are parameters, which can and do vary over time. Shifts in the propensity to save, in the propensity to invest, in the demand for exports, and in the fiscal stance could all be expected to lead to a shift in the equivalent of a_0/a_3. Information on the "equilibrium rate" is not exactly readily available, and indeed at best can only be estimated with some lag and over a period when it can be reasonably assumed the underlying parameters are stable.

Sixth, the Central Bank (or the government) may not wish to attain the "equilibrium rate" of interest as defined above. In other words, the Central Bank does not pursue a policy rule akin to Taylor's rule. The Central Bank may use its interest rate for objectives other than a target rate of inflation and/or zero output gap: these objectives could include rate of growth of stock of money or a target level of the exchange rate. Weller (2002), for example, argues that for the Federal Reserve over the period 1980 to 2000, "the unemployment rate appears consistently to be a significant factor determining monetary policy. Moreover, the relative importance of the unemployment rate is greater than that of other determinants, suggesting that the Fed prioritizes stable unemployment over other goals. However, there is no indication that the Fed has a set target level of the unemployment rate. Also, real output and the real rate of return to the stock market appear to be significant factors during some periods between 1980 and 1990" (p. 413).

5. REINVENTING FISCAL POLICY

The effectiveness of monetary and fiscal policy can be approached along a number of routes, and we go down three here. The first can be discussed in terms of the model outlined above. There are shocks to the model (s_i, with i = 1, 2), and these lead to changes in output and inflation, and to which monetary policy in the form of interest rate changes is seen to respond. In those terms two questions are of interest. First, how effective is an interest rate change in offsetting the shocks? That is, in effect, what

are the sizes of the coefficients a_3 and b_1. These coefficients cannot be directly estimated, but we can draw on simulations of macroeconometric models to judge the effects of a change in the rate of interest on output and inflation. In another paper (Arestis and Sawyer, 2002b), we argue, in effect, that these coefficients are in some sense relatively small. We suggest there that "The conclusions we draw from this brief survey of some empirical evidence are along the following lines. First, (at least within the context of the macroeconometric models) there are constraints to a permanent change in the rate of interest. We would see the effect of interest rate on the exchange rate (when interest rate parity is assumed) as being a significant element in this (in that an interest differential between the domestic interest rate and foreign interest rate leads to a continual change in the exchange rate). However, we remain skeptical of the empirical validity of that link. Second, and this is clear in the case of the euro area models, when interest rates have an effect on aggregate demand this comes through from substantial changes in the rate of investment. This means that interest rate variations can have long lasting effects, in that the effects on investment will lead to changes in the size of the capital stock. Third, the effects of interest rate changes on the rate of inflation are rather modest. A 1 percentage point change in interest rates is predicted to lead to a cumulative fall in the price level of 0.41 percent in one case and 0.76 percent in the other, after five years. The rate of inflation declines by a maximum of 0.21 percentage points" (p. 15). The effects of interest rate changes on output were also found to be rather small.

This perspective on monetary policy is a rather narrow one in the sense that it starts from the viewpoint that the economy is essentially stable though subject to shocks. These shocks are presumably relatively small and are not serially correlated. In the event that shocks are relatively large and are highly serially correlated, it may be better to approach monetary and fiscal policy in terms of shifts in the parameters of the model. If, for example, there is a major shock which reduces demand and that reduction continues for a number of years, an analysis based on the downward shift of demand may be more insightful. This leads us to the second line of enquiry, namely how effective would monetary policy be in combating a fall in autonomous demand. In order to introduce explicitly fiscal policy into the discussion, the equations used above are expanded and particularly equation (1). The government sector is explicitly included though retaining the closed economy nature of the model, and the capacity level of output which is labelled Y*. With a simple consumption function of the form:

$$C_t = d_1 + d_2 (1 - t)Y_{t-1} - \alpha[R_t - E_t (p_{t+1})]$$

where C is consumer demand and t is the tax rate. The investment function is of the form:

$$I_t = d_3 + d_4 E_t (Y_{t+1}) - \beta[R_t - E_t (p_{t+1})]$$

Where I is investment demand and government expenditure is labelled G. This leads to:

$$Y_t = (d_1 + d_3) + G + d_2 (1 - t)Y_{t-1} - \alpha [R_t - E_t(p_{t+1})] + d_4 E_t(Y_{t+1}) - \beta[R_t - E_t(p_{t+1})]$$

With the output gap incorporated, this can be written as:

$$(1') (Y_t - Y^*) = (d_1 + d_3) + G + [d_2 (1 - t) + (d_4 - 1)]Y^* + [d_2 (1 - t)](Y_{t-1} - Y^*)$$

$$+ d_4 [E_t (Y_{t+1}) - Y^*] - (\alpha + \beta)[R_t - E_t(p_{t+1})]$$

It is now evident that the "equilibrium" rate of interest (for a zero output gap) is given by

$$[R_t - E_t(p_{t+1})] = (d_1 + d_3)/ (\alpha + \beta) + G/(\alpha + \beta) + [d_2 (1 - t) + (d_4 - 1)]/[(\alpha + \beta)]Y^*.$$

It is then clear that the "equilibrium" rate of interest depends on government expenditure, and that there is not a unique "natural rate" of interest.[16] It is, of course, possible to take the balanced budget case, and then the "equilibrium rate" of interest would be given by

$$[R_t - E_t (p_{t+1})] = (d_1 + d_3)/(\alpha + \beta) + [(d_2 + d_4 - 1)/(\alpha + \beta)]Y^*$$

It is also evident that the "equilibrium rate" of interest depends on the parameters of the consumption and investment functions. The evidence from the USA and the UK (for example) during the 1990s suggests that those parameters can undergo substantial changes in the form of quoted rises in the propensity to consume (driving the household savings rate close to or below zero) and in the propensity to invest.

The empirical investigation of the effectiveness of fiscal policy is generally undertaken in the context of an econometric model that could be viewed as an elaboration of the "new consensus" model. The econometric model is, of course, much larger and involves many leads and lags which do not appear in the "new consensus" model, as presented above, but the econometric models generally impose the existence of a supply-side equilibrium (say the NAIRU) which is equivalent to the zero output gap for which inflation is constant.[17] With a policy regime that pushes the economy towards the supply-side equilibrium (reflected in Taylor's rule for the determination of the rate of interest) there is little room for output to substantially diverge from the supply-side equilibrium. Hence, any fiscal stimulus is soon dissipated in the context of the model, leading to the empirical conclusion that fiscal policy is ineffective. In view of the constraints imposed by the nature of macroeconometric models (e.g. the existence of a supply-side determined equilibrium in the form of the NAIRU), it may be surprising that any positive effects of fiscal policy are observed. The effects generally found for fiscal policy may be explicable in terms of the starting point for the simulations (say in terms of unemployment) relative to the supply-side equilibrium. Clearly if unemployment is initially higher than the NAIRU, there is scope for a fiscal stimulus, which would (in the context of the model) push unemployment down towards the NAIRU. But it could be expected that any conclusions drawn on the effects of fiscal policy would be sensitive to the starting point used. The "new consensus" model (or equivalent) provides little role for fiscal policy, and limited role for monetary policy. It is assumed that there is a feasible "equilibrium rate" of interest[18] which will secure a level of aggregate demand equal to the capacity level of output (which itself is compatible with constant inflation).

It is pertinent to think about the effectiveness of fiscal and monetary policy in the context of a major shift in the coefficients of the model formed by equations (1') and (2). Suppose, for example, there is a change in "animal spirits" or technological opportunities for investment which leads to a reduction in d_3 of Δd. For monetary policy alone to be able to offset that reduction (to maintain demand at Y*) would require a change in the real rate of interest of $-\Delta d/(\alpha + \beta)$. For fiscal policy alone to offset the reduction would require a change in Government expenditure of Δd. It should be noted that here there would be no "crowding out" due to a change in the rate of interest which is under the control of the Central Bank, nor due to output being constrained to be at the capacity level. This leads back to the question as to whether there can be a feasible interest rate change which is sufficient to do the job. We think the answer is likely to be no. Let us take some illustrative numbers. If the value of $\alpha + \beta$ were equivalent to a semi-elasticity (i.e. percentage change in demand divided by change in interest rate) of 0.33, then it would require a change of 3 percentage points in the real rate of interest. This can be compared with an historic average of the real rate of interest of the order of 3 percent. Note that a fall in investment would have multiplier effects on the level of output, and similarly a reduction in interest rates would have multiplier effects.

In the simulations surveyed in Arestis and Sawyer (2002b), the largest effect of interest rate on investment was that 1 percentage point change in the rate of interest generated a 3 percent change in investment (and generally the numbers were very much lower). Investment is 15 to 20 percent of GDP, and hence a 1 percentage point change in the rate of interest was associated with a 0.45 to 0.6 percent change in GDP (at the most). Given the bounds within which interest rates can be changed, falls in the autonomous components of aggregate demand equivalent to say 1 percent would require interest rate reductions of say 3 percentage points. It is of little surprise that when interest rate is held constant and output is well below any capacity output, then fiscal policy would stimulate economic activity. Yet in the context of endogenous money, a fall in autonomous demand would lead to precisely the position where fiscal policy would work.[19] On the other hand, interest rate changes would have little impact in offsetting the fall in autonomous demand.

In the context of equation (1'), a similar question can be asked with regard to a change in the capacity output Y*, and this is the third line of enquiry.[20] If there is a change in Y*, then fiscal and monetary policy would be required to change to ensure that output attains the new Y*. The estimates for the NAIRU showed major changes during the 1970s, 1980s and into the 1990s, particularly in Europe.[21] The NAIRU, of course, refers to a rate of unemployment, but it is likely that there would be a corresponding shift in capacity output (corresponding to constant inflation). A change in the capacity output could be managed by a change in government expenditure of $[(1 - d_2)(1 - t) + d_4]$ times the change in capacity output (and not surprisingly this would imply a simple multiplier relationship between change in government expenditure and change in output). A monetary policy response would require a change in real interest rates of $[d_2 (1 - t) + d_4 - 1)/(\alpha + \beta)]$ times the change in capacity output. A change for whatever reason in the level of capacity output, compatible with constant inflation, does not lead in any automatic way to a change in demand corresponding to the change in capacity output. It is rather that changes in fiscal and monetary policies would be required to move demand in the relevant direction. It is again argued here that monetary policy is not an effective mechanism for generating such changes in demand.

6. CROWDING OUT AND ALL THAT

There have been three distinct sets of arguments to the effect that fiscal policy will be ineffective, under the general heading of "crowding out." The first, in the context of t IS-LM analysis, was a "crowding-out" due to a rise in interest rates following a fiscal

expansion. This was based on an exogenous money supply and the interest rate equating the demand for and supply of money. In that context, though, it was recognized that a sufficient increase in the supply of money alongside an increase in government expenditure could prevent the rise in the interest rate. In the context of endogenous money with the interest rate set by the Central Bank, this form of "crowding out" would arise from the deliberate actions of the Central Bank. That is to say, that if the Central Bank (presumably operating on an "independent" basis) responds to a fiscal expansion by raising interest rates, then there would be some form of crowding out. Its extent would depend on the size of the interest rate rise, its feed through to other interest rates, the interest rate responsiveness of expenditure, and the phase of the business cycle. The effect on expenditure may be relatively small (as indicated above). But the key point here is that any "crowding out" depends on the responses of the monetary authorities: it does not occur through the response of the markets.

The second form of "crowding out" arose from a combination of the notion of a supply-side equilibrium (such as the "natural rate of unemployment" or the non-accelerating inflation rate of unemployment, the NAIRU), and that the level of aggregate demand would adjust to be consistent with that supply-side equilibrium. In the context of an exogenous money supply, this came through the assertion of a "real balance" effect, with changes in the price level generating changes in the real value of the stock of money, thereby generating changes in the level of aggregate demand.[22] In the context of endogenous money, it would come through the adjustment of interest rate by the Central Bank. This would occur, as indicated above, if the Central Bank adopts some form of "Taylor's rule" (provided, of course, that interest rates are effective in that regard). As has been argued above, fiscal policy has an effect on the level of aggregate demand, and "crowding out" only occurs if it assumed that the supply-side equilibrium must be attained (in order to ensure a constant rate of inflation) *and* that the level of aggregate demand would anyway be equivalent to the supply-side equilibrium. In the absence of some powerful automatic market forces or a potent monetary policy which can ensure that the level of aggregate demand moves quickly to be consistent with the supply-side equilibrium, then fiscal policy has a clear role to play.

The supply-side equilibrium can itself be influenced by the path of aggregate demand. The size and distribution of the capital stock is a determinant of the productive capacity of the economy, and a larger capital stock would be associated with the supply-side equilibrium involving a higher level of output and employment. The level of aggregate demand (including the change in economic activity and profitability) has an impact on investment expenditure, and thereby on the size of the capital stock. The supply-side equilibrium may form an inflation barrier at any point in time, but it is not to be seen as something immutable and unaffected by the level of aggregate demand.

The third route of "crowding out" comes from the "Ricardian equivalence" proposition. An expansion of government expenditure, however funded, is postulated to lead to an equivalent reduction in private expenditure, leaving the overall level of demand unchanged. A reduction in taxation in the present is viewed as the prospect of future taxation (which is equivalent in present value terms) leaving the public no better off in wealth terms. The reduction in present taxation may stimulate consumer expenditure but the prospect of future taxation reduces consumer expenditure to an equivalent amount.

A range of objections have been raised against the Ricardian equivalence. The major proponent of the relevance of Ricardian equivalence, Robert Barro, lists five "major theoretical objections that have been raised against the Ricardian conclusions. The first is that people do not live forever, and hence do not care about taxes that are levied after their death. The second is that private capital markets are 'imperfect' with the typical person's real discount rate exceeding that of the government. The third is that future taxes and incomes are uncertain. The fourth is that taxes are not lump sum, since they depend typically on income, spending, wealth and so on. The fifth is that the Ricardian result hinges on full employment" (Barro, 1989, p. 40). While the first four listed are, in our view, significant and valid objections to "Ricardian equivalence," it is the fifth which is particularly relevant here.

Barro's discussion of the fifth objection is rather brief (two paragraphs). He states that "in standard Keynesian analysis, if everyone thinks that a budget deficit makes them wealthier, the resulting expansion of aggregate demand raises output and employment, and thereby actually makes people wealthier. This result does not mean that budget deficits increase aggregate demand and wealth in Keynesian models. If we had conjectured that budget deficits make people feel poorer, the resulting contractions would have made them poorer. Similarly, if we had started with the Ricardian notion that budget deficits did not affect wealth, the Keynesian results would have verified that conjecture. The odd feature of the standard Keynesian model is that *anything* that makes people feel wealthier actually makes them wealthier (although the perception and actuality need not correspond quantitatively). This observation raises doubts about the formulation of Keynesian models, but says little about the effect of budget deficits. Moreover, in equilibrium models that include unemployment (such as models with incomplete information and search), there is no clear interplay between the presence of unemployment and the validity of the Ricardian approach" (pp. 47-48).

In the simplest Keynesian model:

$Y = C + I = a + cY + I$

hence

$Y = (a + I)/(1 - c)$

If "feeling wealthier" means that a or c rise, then income (Y) rises, and people are indeed "wealthier." Clearly if an action by government (increasing expenditure, lowering taxes) generate adverse expectational responses (e.g. leading to falls in consumer expenditure or in investment) then the government action has less effect, and the overall impact may be zero or negative. When taxation is reduced, people do have more money to spend, and so it is not unreasonable to believe that they will feel wealthier, will spend more and income will rise. Thus it can be postulated that lower taxation will (in general) make people fell wealthier and spending will rise.

If the "Ricardian equivalence" proposition held, then the size of the budget deficit is irrelevant for the level of aggregate demand. In particular, a balanced budget would be compatible with full employment (or more generally with the supply-side determined equilibrium), and hence (for a closed economy) savings and investment would be equal at full employment. In those circumstances, there would be no reason for fiscal policy: the problem of any deficient aggregate demand would have been solved. But it could also be noted that if there is a discrepancy between intended savings and investment, then that discrepancy can never by overcome through the use of fiscal policy. If, for example, savings would exceed investment at a level of income corresponding to the supply-side equilibrium, that difference could never be dealt with if the Ricardian equivalence hypothesis held.

However, when fiscal policy is approached in "functional finance" terms, that is a budget deficit is run by the government because there is a difference between savings and investment at the desired income level, then the Ricardian equivalence approach is scarcely relevant. In the absence of a budget deficit, the excess of savings over investment cannot occur (and the discrepancy is dealt with through a fall in income reducing savings until brought into line with income). In this regard it can also be noted that much of the variation in the budget position of government occurs as a result of fluctuations in private demand, with the operation of the "automatic stabilizers" of fiscal policy. Barro (1989) also argues that "abstracting from chain-letter cases where the public debt can grow forever at the rate of interest or higher, the present value of taxes (and other revenues) cannot change unless the government changes the present value of its expenditures. This point amounts to economists' standard notion of the absence of a free lunch--government spending must be paid for now or later, with the total present value of receipts fixed by the total present value of spending. Hence, holding fixed the path of government expenditure and non-tax revenues, a cut in today's taxes must be matched by a corresponding increase in the present value of future taxes" (pp. 38-9)

The "chain-letter case" can be viewed in the following way. Take a budget deficit (primary, that is excluding interest payments on debt) to GDP ratio of d, then it can be readily shown that the government debt to GDP ratio would converge on $b = d/(g - r)$ where g is the rate of growth of GDP and r is the (post-tax) real rate of interest on government debt. If $g > r$, then the debt to GDP will stabilize though the amount of outstanding debt will continue to rise (in line with GDP). But, if $g < r$, then the debt to GDP ratio would not stabilize and attempts to run a continuous budget deficit would lead to escalating government debt. It should, though, be noted that if $g < r$, then any size of deficit will lead to escalating debt to GDP ratio, though obviously the build-up will be slower the smaller the budget deficit. On the other hand, if $g > r$, then any size of budget deficit can be sustained. The limits on the budget deficit could then arise if the rate of interest on government borrowing rose with the size of the budget deficit. The impact of a budget deficit on the rate of interest may well depend on the purpose of the budget deficit. When the budget deficit is viewed in terms of "functional finance," that is the deficit is run for the purpose of securing a high level of economic activity and does so by absorbing the excess of private savings over investment, then the budget deficit need not put upward pressure on the rate of interest.

It can be agreed that the response to an increase in government expenditure (not matched by a change in taxation) would include a commensurate increase in savings. However, that increase in savings can come from a change in the level of income (the Keynesian view) or a change in savings behavior (the "Ricardian equivalence" view). For a closed economy, G - T = S - I, and hence S = G - T + I. For simplicity assume that T and I are constant, then $s\Delta Y + \Delta s\, Y = \Delta G$. The Keynesian emphasis is on ΔY, whereas the "Ricardian equivalence" is on Δs (savings propensity rises as consumption propensity falls in the face of government expenditure and the prospect of future interest payments and taxation).

7. SUMMARY AND CONCLUSIONS

When the level of aggregate demand is stable and only effected by random shocks and the rate of interest, then monetary policy (in the form of varying the rate of interest) may be an effective way of offsetting those shocks. This, however, is predicated on the rate of interest that would equate aggregate demand with supply-side equilibrium, being achievable (that is positive and consistent

with exchange rate requirements). But the power of monetary policy needs to be compared with the power of fiscal policy. In this paper, it is argued that shifts in the level of aggregate demand (arising from shifts in confidence and world demand) cannot be readily offset by monetary policy. Further, fiscal policy remains a potent tool for offsetting major changes in the level of aggregate demand.

NOTES

1. There has also been a shift away from any use by the Central Bank or other arms of government of credit controls.
2. There is, however, an important difference between the current approach to monetary policy and the more Keynesian notion of endogenous money. The current approach sees money as a residual with no further role for it. The Keynesian notion of endogenous money entails a fully articulated theory with clear policy implications where money and credit have important roles to play in their interaction with real variables (see, for example, Fontana and Palacio-Vera, 2002, especially p. 559).
3. "A central bank's key decision variable throughout the business cycle, and its central control instrument of monetary policy, is the nominal supply price at which it provides additional reserves. Over a wide range the central bank can determine exogenously the supply price at which it provides liquidity to the financial system. The upper and lower limits of this range are set by the size and openness of the economy and by the exchange rate regime in force" (Moore, 1989, p. 27)
4. The generic term Central Bank discount rate is used to denote the rate of interest at which the Central Bank is willing to supply funds. It covers rates such as the ECB 'repo' rate , the Federal Funds rate (USA) etc.
5. For further discussion in the specific context of the approach of the Bank of England, see Arestis and Sawyer (2002a); for a more general discussion, see Arestis and Sawyer (2002b).
6. There is considerable discussion of the various channels through which monetary policy operates, e.g. a variety of credit channels, for example, Kuttner and Mosser (2002).
7. Variations on this theme could be used; for example, interest rate 'smoothing' in equation (3) is often ignored, as is the lagged output gap variable in equation (1) so that the focus is on the influence of expected future output gap in this equation.
8. It could be noted that Keynes (1930) discussed these points at some length.
9. "Despite dozens of studies showing that uncovered interest parity is without empirical support, neoclassical authors still rely on it, because, they would say, a more attractive relationship has yet to be found" (Lavoie, 2000, p. 175).
10. The arguments utilized to support the ineffectiveness of fiscal policy range from the old idea of 'crowding-out' and the alleged inflationary bias of the policy, to more recently developed arguments of protracted parliamentary discussions which may delay action fatally, and the idea that increases in government expenditures are desirable but decreases are politically difficult, the so-called "ratchet" effect. Needless to say that monetary policy is not completely immune to these problems.
11. This discussion is in terms of the Central Bank rate. It is assumed that the rate of interest on loans is above that Central Bank rate, and that it is the rate of interest on loans, which is relevant for investment decisions. Given the risks for banks involved in extending loans, it can be assumed that there is a minimum level below which banks would not go in terms of the loan rate.
12. It is notable in this respect that Kalecki's approach made just this assumption--interest rates are not mentioned in respect of savings, and investment did not depend on the rate of interest as the long-term rate of interest (deemed relevant for the level of investment) varied little and the differential between the rate of profit and the rate of interest (also seen as relevant) also varied little. See Sawyer (1985).
13. As Keynes argued, "the dilemma of modern banking is satisfactorily to combine the two functions. As a purveyor of representative money, it is the duty of the banking system to preserve the prescribed objective standard of money. As a purveyor of loans on terms and conditions of a particular type, it is the duty of the system to adjust, to the best of its ability, its supply of this type of lending to the demand for it at the equilibrium rate of interest, i.e. at the natural rate" (Keynes, 1930, p.192).
14. The Central Bank sets the key discount rate. Other interest rates may be more relevant for foreign exchange transactions, and indeed returns such as expected change in stock market prices may also be seen as relevant. The implicit assumption here is that the interest rates of relevance to movements across the foreign exchanges are linked to the key discount rate.
15. "Policy mistakes in the estimation of the long-run equilibrium real interest rate or potential real GDP may prevent the Central Bank from achieving its inflation target" (Alonso González and Palacio-Vera, 2002).
16. The "natural rate" of interest could be said to be unique if there was no effect of government expenditure on demand, which would be the equivalent of invoking Ricardian equivalence, and this is further discussed below.
17. See Arestis and Sawyer (2002a) for our summary of the Bank of England model and its similarities with the "new" consensus model.
18. The word "feasible" is used in the sense of involving a positive nominal rate of interest and compatible with exchange rate targets.
19. This is the form of fiscal policy which we had in mind when we argued for the use of fiscal policy for "coarse tuning" but not for "fine tuning" (Arestis and Sawyer, 1998).

20. This should not be taken as suggesting that there is a well-defined and easily measured NAIRU (or capacity output) nor that any inflationary barrier cannot be moved over time.
21. This should not be taken to mean that we believe that there is a well-defined and/or unchanging NAIRU determined by conditions in the labor market.
22. This could be a long adjustment process, but it is the "automatic" one invoked in the context of the NAIRU.

REFERENCES

Alonso González, L. A. and A. Palacio-Vera. 2002. "Monetary Policy: Taylor's Rule and Instability." *Metroeconomica* 53(1): 1-24.

Arestis, P. and M. Sawyer. 1998. "Keynesian Policies for the New Millennium." *Economic Journal* 108: 181-195.

------. 2002a. "The Bank of England Macroeconomic Model: Its Nature and Implications." *Journal of Post Keynesian Economics* 24(4): 529-545.

------. 2002b. "Can Monetary Policy Affect the Real Economy?" *The Levy Economics Institute of Bard College, Working Paper* 355.

------. 2002c. "Does The Stock of Money Have Any Causal Significance?" *The Levy Economics Institute of Bard College, Working Paper* 363.

Bernanke, B. S., M. Gertler, and S. Gilchrist. 1999. "The Financial Accelerator in a Quantitative Business Cycle Framework." In J. Taylor and M. Woodford, eds. *The Handbook of Macroeconomics* Volume 1. Amsterdam: North Holland.

Barro, R. J. 1989. "The Ricardian Approach to Budget Deficits." *Journal of Economic Perspectives* 3(2): 37-54.

Clarida, R., J. Gali, and M. Gertler. 1999. "The Science of Monetary Policy: A New Keynesian Perspective." *Journal of Economic Literature* 37(4): 1661-1707.

Fazzari, S., R. G. Hubbard, and B. C. Peterson. 1988. "Financing Constraints and Corporate Investment." *Brookings Papers on Economic Activity* 1: 141-95.

Fontana, G. and A. Palacio-Vera. 2002. "Monetary Policy Rules: What are We Learning?" *Journal of Post Keynesian Economics* 24(4): 547-568.

Gilchrist, S. and C. P. Himmelberg. 1995. "Evidence on the Role of Cash Flow for Investment." *Journal of Monetary Economics* 36: 541-572.

Gordon, R. J. 1997. "The Time-Varying NAIRU and its Implications for Economic Policy." *Journal of Economic Perspectives* 11(1): 11-32.

Gross, D. 1994. "The Investment and Financing Decisions of Liquidity-Constrained Firms." Unpublished paper (MIT).

Hoshi, T., A. K. Kashyap, and D. Scharfstein. 1991. "Corporate Structure, Liquidity and Investment: Evidence from Japanese Industrial Groups." *Quarterly Journal of Economics* 106: 33-60.

Hubbard, R. G., A. K. Kashyap, and T. Whited. 1995. "Internal Finance and Firm Investment." *Journal of Money, Credit and Banking* , 27: 683-701.

Keynes, J. M. 1930. *Treatise on Money.* London: Macmillan (page references refer to *The Collected Writings of John Maynard Keynes* V. London: Macmillan).

------. 1936. *The General Theory of Employment, Interest and Money.* London: Macmillan.

King, M. 2002. "No Money, No Inflation--The Role of Money in the Economy." *Bank of England Quarterly Bulletin* (Summer): 162-177

Kuttner, K. N. and P. C. Mosser. 2002. "The Monetary Transmission Mechanism: Some Answers and Further Questions."

Federal Reserve Bank of New York Economic Review 8(1): 15-24.

Lavoie, M. 2000. "A Post Keynesian View of Interest Rate Parity Theorems." *Journal of Post Keynesian Economics* 23(1): 163-179.

McCallum, B. T. 2001. "Monetary Policy Analysis in Models without Money." *Federal Reserve Bank of St. Louis Review* 83(4): 145-160.

Meyer, L. H. 2001. "Does Money Matter?" *Federal Reserve Bank of St. Louis Review* 83(5): 1-15.

Moore, B. J. 1989. "A Model of Bank Intermediation." *Journal of Post Keynesian Economics* 12(1): 10-28.

Sawyer, M. 1985. *The Economics of Michal Kalecki.* Basingstoke: Macmillan.

Weller, C. E. 2002. "What Drives the Fed to Act?" *Journal of Post Keynesian Economics* 24(3): 391-417.

Whited, T. 1992. "Debt, Liquidity Constraints, and Corporate Investment: Evidence from Panel Data." *Journal of Finance* 47: 1425-1460.