

11. Monetary Targets and Economic Policy

Control of Monetary Aggregates

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MR MIDDLETON

CONTROL OF THE MONETARY AGGREGATES

Mr Riley sent you a minute on the above topic on 7 November. I think what has happened is that Mr Riley has entered the debate half way through and has not fully understood the context of the minutes he criticizes. To a certain extent, therefore, I think he has built a set of straw men and then proceeded to knock them down. (Though one or two offered surprising resistance; Mr Riley certainly seemed somewhat apprehensive about knocking the stuffing out of them.)

2. This teasing apart, however, what I would like to do, to try to clarify the debate, is to set down two of the principal theoretical paradigms of the transmission mechanism. Then, Mr Riley's assertions can be considered in their light and, more generally, we can draw the implications for monetary targetry.

3. The first paradigm to be dealt with has been most fully formulated by Tobin and is usually described as the Keynesian view of the transmission mechanism. Keynes himself, however, held both forms at various stages in his development and so the term has to be used with caution. We assume, in the first instance,

- a. that the economy is closed,
- b. that all money held by the private sector is "outside" money, i.e. in this case, a liability of the Government.

4. It is very much in the essence of the Keynesian model that the greatest gap in the substitution spectrum of assets is between financial assets on the one hand and real assets on the other. Accordingly, the portfolio we consider consists only of two financial assets while real assets are considered separately. These financial assets are money and bonds. Dealing first with the demand for money, we can distinguish at least a transactions demand and a speculative demand. From the former,

we expect money demand to be positively related to income (proxying transactions) and negatively to the nominal rate of interest representing the opportunity cost of holding transactions balances. From the latter, we expect money demand to be negatively related to the rate of interest. Total money demand must be scaled by the size of the total financial portfolio. Thus, the money demand function is given by:

$$(Ai) \quad M^d = \underline{M^d(Y, \tilde{W}, i)} \quad M_{Y}^d > 0; \quad M_{\tilde{W}}^d > 0; \quad M_i^d < 0$$

where

- M^d = the demand for money
- Y = nominal income
- \tilde{W} = total financial wealth
- i = the nominal interest rate

In this simple two-asset system, the demand for bonds is given immediately as the portfolio residual:

$$(Aii) \quad B^d \equiv \tilde{W} - M^d$$

where

- B^d is the demand for bonds

Expenditure in the Keynesian system, which we define here as both current and capital purchases, depends positively on the level of income and negatively on the real rate of interest. Normally, the relationship is taken to be homogeneous in prices at least in the steady state:

$$(Aiii) \quad X/P = X(Y/P, r) \quad X_Y > 0; \quad X_r < 0$$

where

- X = current plus capital private sector expenditure
- r = the real rate of interest
- P = the price level

The Government is taken to have absolute control over its income and expenditure and finances any deficit by issuing either money or bonds to the private sector. Thus the financing identity is given by:

$$(Aiv) \quad \Delta M^S \equiv G - T - \Delta B^S$$

where

- M^S = the supply of money

- B^S = the supply of bonds
 G = Government expenditure
 T = Government income (principally from taxation)

For my present purposes, it is sufficient to make the model one of partial equilibrium and leave P, T, G and T all exogenous, though each of these can be made endogenous to the model, easily enough. Just two more relationships are added to complete the system: identities defining financial wealth creation and the real interest rate

$$\begin{aligned}
 \text{(Av)} \quad \tilde{W}_{t+1} &= W_t + Y - X \\
 \text{(Avi)} \quad r &= i - \dot{P}/P
 \end{aligned}$$

We take the system to be in equilibrium at the beginning of the period so that the money market clears

$$\text{(Avii)} \quad M_{-1}^S = M_{-1}^D$$

If we insist that the market clears at the end of the period then the new equilibrium condition is obviously

$$\text{(Aviii)} \quad \Delta M^S = \Delta M^D$$

Suppose instead, however, that the Government conducts its fiscal and financing policy so as not to create new outside money equal to the putative change in money demand but rather creates $\Delta M^D + k$ where k differs from zero.

Thus

$$\text{(Aix)} \quad \Delta M^S = \Delta M^D + k$$

Given \tilde{W} is predetermined the change in money demand must be minus the change in bonds demanded, from (Aii)

$$\therefore -\Delta B^S = -\Delta B^D + k$$

or

$$\text{(Ax)} \quad \Delta B^S = \Delta B^D - k$$

Hence, the first important implication of the Keynesian model is clearly seen from (Aix) and (Ax); any excess demand (or supply) in the money market is exactly matched by an excess supply (or demand) in the bond

market. But while this is an important feature of the model, the driving force comes from the assertion that the bond market is perfect, or at least a close approximation thereto, so that it clears instantaneously. Since there is therefore never disequilibrium in the bond market, there can never be disequilibrium in the money market either.

5. Suppose, however, that a putative excess demand in the money market did occur, matched by excess supply for bonds. How would it be resolved? As the model stands, Y is exogenous and \tilde{W} is predetermined so that the excess demand can only be eliminated by an upward movement in i . Given that P is unchanged, r moves upwards by an equal amount from (A_{vi}) . Consequently, real expenditure, X/P , falls according to equation (A_{iii}) . Mutatis mutandis, a putative excess supply in the money market would lead to an increase in real expenditure and it is precisely these movements which constitute the substance of the Keynesian transmission mechanism. Note that we could equally well have switched equations (A_i) and (A_{ii}) , defining $B^{\dot{}}$ in terms of Y , W and i by the law of portfolio aggregation and deriving $M^{\dot{}}$ by residual. In this case, model equilibrium is defined in terms of the bond market clearing and precisely the same results follow.

6. Having used this partial equilibrium model for purposes of exegesis, we can relax two of the most apparently restrictive assumptions and show that in fact they make very little difference. First, we can exogenise income Y merely by adding the national income accounting identity

$$(A_{xi}) \quad Y \equiv X + G - T$$

Two effects follow. First, we obtain the familiar multiplier as the initial change in X leads to an equal change in Y and hence further changes in X . Secondly, in the money market, money demand is now affected by the changed Y as well as i . Thus the movement in i required to clear the money (and bond) market will be different as compared with the case where Y is exogenous. Quantitatively, therefore, Y , X and i all have different equilibrium values. Qualitatively, however, the Keynesian result is unimpaired; the monetary transmission mechanism is still entirely through interest rates.

7. A second relaxation concerns prices. In the pure Keynesian model prices are constant at all times except in the special case of full employment. (See Keynes in the "General Theory" Chapters 19 to 21.) The Phillips curve may be regarded as a stochastic version of this proposition and indeed prices are determined by the Phillips curve in most Keynesian models. Essentially, if the real rate of interest falls when the economy is at less than full employment, then the increase in income engendered will be fully an increase in real income. If, however, the economy is at full employment then the reduced real interest rate will only induce a rise in nominal income fully matched by a rise in the price level, in turn created by the increased pressure of demand for real resources. Note that a transitory dynamic complication will result in this case since while \dot{P} is not zero, the real interest rate will not bear a constant relationship to the nominal rate. Overall, therefore, the effects of monetary policy in the Keynesian model depend upon the degree of unutilised resources in the economy. But in both the full employment and unemployment cases the channel for monetary policy to the real economy is entirely through interest rates.

8. To summarize the Keynesian model, therefore, it makes the following predictions:

- a. any disequilibrium in the money market will be fully offset by disequilibrium in the bond market;
- b. because the bond market is a close approximation to a perfect market, there can be no disequilibrium in it and hence none in the money market either;
- c. any such putative disequilibrium will be resolved in the first instance by interest rate changes in turn leading to changes in private sector income and expenditure;
- d. whether these effects are primarily on real or nominal magnitudes will depend on the initial degree of under-employment in the economy, affecting real magnitudes more as unemployment is greater.

9. Turning to the second paradigm of monetary transmission, the monetarist theory, we need in fact to make only a few changes to the model already constructed. A crucial change, however, is in the

composition of the asset portfolio. Monetarists tend to emphasize that the gap between money and other financial assets in the spectrum of substitutability is at least as great as that between financial assets in general and real assets. They naturally, therefore, allow capital goods to enter the portfolio as assets in their own right. In addition, in the Friedmanian version of monetarism at least, current consumption is also related to wealth, contrasting with Keynesian models which emphasize income. The first three equations of the model are thus the three asset demand functions

$$(Bi) \quad M^D = (Y, W, i)$$

$$(Bii) \quad K^D = K^D(W, i)$$

$$(Biii) \quad B^D \equiv W - M^D - K^D$$

where

K^D = the demand for real assets

W = total real and financial wealth

As in the Keynesian two-asset case, it is a matter of indifference which of these three assets is regarded as the residual. We specify the expenditure function as depending on real wealth, the real interest rate and, most importantly, on asset disequilibrium in the portfolio:-

$$(Biv) \quad \frac{X}{P} = X \left(\frac{W}{P}, r, Y, \frac{(M^D - M^S)}{P}, \frac{(K^D - K^S)}{P}, \frac{(B^D - B^S)}{P} \right)$$

$$\text{with } X_1 > 0; \quad X_2 < 0; \quad X_3 > 0; \quad X_4 < 0; \\ X_5 = 0; \quad X_6 < 0$$

Now, the Government financing identity remains as in the Keynesian case

$$(Bv) \quad \Delta M^S \equiv G - T - \Delta B^S$$

But the wealth creation identity is now given by:-

$$(Bvi) \quad \Delta W = \Delta K^S + G - T$$

where the first term on the right hand side refers to physical wealth creation and the second two terms to financial wealth creation. Substituting from (Bv) into (Bvi)

$$(Bvii) \quad \Delta W = \Delta K^S + \Delta M^S + \Delta B^S$$

But first differencing (B iii)

$$(Bviii) \quad \Delta W = \Delta K^D + \Delta M^D + \Delta B^D$$

Hence from (Bvii) and (Bviii)

$$(Bix) \quad \Delta K^S + \Delta M^S + \Delta B^S = \Delta K^D + \Delta M^D + \Delta B^D$$

(Bix) is thus just the statement of Walras' Law for this model. In contrast to the case represented by (Aix) and (Ax), there is no exact correspondence between excess demand in any single market and excess supply in any other. The force of this point is easily seen if we embrace the Keynesian assertion that the bond market always clears. In that case, if we assume that there was initial general equilibrium then

$$\Delta B^S = \Delta B^D$$

Thus the disequilibrium condition, on rearranging, becomes:-

$$\Delta K^S - \Delta K^D = -(\Delta M^S - \Delta M^D)$$

Even with the bond market clearing, therefore, the possibility of disequilibrium in the money market still arises with any excess supply there being matched by excess demand for capital goods. We complete this model by adding the real interest rate definition and the national income accounting identity:-

$$(Bx) \quad r = i - P/P$$

$$(Bxi) \quad Y = X + G - T$$

10. From this model we can now trace out the transmission mechanism, assuming first that the price level is fixed. To illustrate suppose that the Government makes a pure act of monetary policy by making an allocationally and distributionally neutral increase in Government expenditure but fails to sell bonds to finance it. From (Bv) the increase in the money supply is exactly equal to the increase in expenditure. From (Bvi), we also see that, initially, private sector wealth is increased by the same amount. Unless Government bonds turn out to be an inferior good (which I rule out), the demand for bonds increases as well, as can be seen from equations (Bi), (Bii) and (Biii). Since the supply of bonds has not increased, and we take the bond market as an

approximately perfect market, the price of bonds must rise to clear the market so that the nominal interest rate falls. Since the price level is fixed, the real interest rate also falls. Hence, real expenditure rises, according to (Biv). To this extent, the transmission mechanism is exactly the same as in the two-asset Keynesian case.

11. But this is not the only branch of the monetarist transmission mechanism and, indeed, monetarists tend to argue, on empirical grounds, that it is not a very important one. More important, they argue, is the direct effect on expenditure from the augmented total wealth of the private sector. Except if there is perfect ultrarationality in the economy, the Government deficit increases private financial wealth via (Bvi) and hence real expenditure via (Biv). Yet, there is also a third strand, perhaps the most important of all. Even with the interest rate equilibrating the bond market there is no reason to suppose the demand for money will have risen sufficiently to absorb the increased money supply. In general there will be excess money balances matched by deficient real assets. Both of these factors will increase real expenditure via equation (Biv). As in the Keynesian case, all three of these branches may give rise to second round effects via the multiplier acting through (Bxi) on incomes and interest rates.

12. Next, we can relax the assumption of price fixity. To do this we need to specify the aggregate supply function as well as aggregate demand. Provided we assume that money balances are not a factor of production*, then the production function can be taken to be homogeneous of degree zero in prices. Both output and the factor inputs into the system are then determined by physical considerations and by relative prices. General prices, however, are neutral. On these assumptions, which are more likely to be validated empirically in the long term than in the short run, a change in aggregate demand which is engineered to produce no effect on marginal factor products or on relative prices can have no effect on the volume of aggregate supply. If we assume further that divergences between nominal aggregate supply and demand are met by the output market clearing rather than by queues or stockbuilding, then it follows that any change in aggregate demand where there are no effects on the position of the aggregate supply schedule must be met entirely by changes in price with no change in the volume of expenditure.

* Monetarists are fond of asserting that they are, which often runs counter to their own prescriptions.

13. To summarize the monetarist paradigm, therefore, its predictions are as follows:-

- a. excess demands in the money, bonds and goods market taken together sum to zero;
- b. even if the bond market is in perfect equilibrium, the money market may still be in disequilibrium with excess demand (supply) matched by excess supply (demand) in the physical goods market;
- c. there are three channels of influence coming from a change in the money supply: (i) there will be a change in the interest rate as the bond market moves towards partial or complete equilibrium, affecting expenditure, (ii) the increase in wealth engendered by a monetary increase not offset by bond sales will increase expenditures; (iii) the asset disequilibrium effect will change expenditures in a direction depending upon which asset market is in disequilibrium; (iv) there may be any number of interactions between these three channels;
- d. there may be subsequent second round effects leading to further disequilibrium and expenditure movements;
- e. ultimately any change in aggregate demand not associated with a change in the position of the aggregate supply schedule will be fully reflected in price changes with no change in the volume of expenditure. This result may depend on the time period which is being considered.

14. In this minute, I do not propose to sketch the models for open economies at all closely since no further implications for monetary targets follow. Briefly, however, in the monetarist model, the capital account of the balance of payments is determined as the excess demand domestically for financial assets; or, if the bond market is in equilibrium, by the excess domestic demand for money balances. The current account is determined by the excess domestic demand for goods and services and the price level is determined by world prices - the law of one price. In the Keynesian system, the current account is determined by the foreign trade multiplier and the capital account by interest rates given the portfolio of the world as a whole.

15. The other heroic assumption made in paragraph 3 above was that all money was outside to the private sector. Clearly, in any modern economy, this is not so since a major part of the wider monetary aggregates are constituted by liabilities of the private sector itself. Strictly, to conduct a complete analysis we need to disaggregate the private sector into those whose liabilities constitute money, the "banks" and those who do not create money, the "non-banks". However, we can conduct a heuristic analysis by considering the definitional relationships which link the main monetary aggregates to the outside money in the above framework.

- a. Notes and Coin: assuming that short term public sector bill finance is included in bonds in the two paradigms then money as defined is exactly notes and coins;
- b. The Monetary Base: assuming that short term public sector bill finance is included in money in the paradigms, then money as defined is approximately the monetary base, depending on precisely how the latter is defined;
- c. M3: by accounting identity in the paradigms, ignoring non-deposit liabilities, outside money is defined as

$$\Delta M \equiv G - T - \Delta B$$

The accounting identity for M3 is then

$$\Delta M3 \equiv G - T - \Delta B + BL$$

where

B now represents bond sales to the non-banks only

BL is bank lending to non-bank private sector

- d. M1: by accounting identity

$$M1 \equiv G - T - \Delta B + BL - \Delta DA$$

where

DA represents bank deposits held as time deposits or CDs.

- e. M5: by accounting identity

$$\Delta M5 \equiv G - T - \Delta B + BL$$

Formally, the identity is the same as in the case of M3 but B now excludes sales of Government bill finance (and, strictly, National

Savings) and represents sales only to the non-bank, non-Building Society sector. Similarly BL now includes lending to the modified non-bank private sector as well as bank lending.

16. But now, having set up the two paradigms, what are the implications for monetary targetry? Suppose, first, that one has reason to believe that the Keynesian framework is the one which best fits our economy. In that case, the crucial target variable is the interest rate since that constitutes the pathway between the monetary and real sectors of the economy. If this is the paradigm we believe in, then it is difficult to see why we need a monetary target at all. Suppose we believe that at a particular point a nominal interest rate of 10% is appropriate. Suppose we also believe from our model of the monetary and real economy that such an interest rate would lead to growth in M1 of 8% and growth in M5 of 15%. It is then a matter of indifference whether we express the target as 8% growth in M1 of 15% growth in M5 or indeed a % growth in any of the other aggregates. Since, however, all of the relationships between interest rates and the monetary aggregates are subject to error, it would be plainly preferable to express the target in terms of the interest rate simpliciter.

17. There are two arguments often advanced against this position:-

- i. that monetary aggregates data is available before national incomes data and act as leading indicators. Thus special attention should be paid to the monetary aggregates even if we do accept the Keynesian analysis;
- ii. that while the relationships between monetary aggregates and interest rates, on the one hand, and between interest rates and the real economy, on the other, are not well understood, the direct link between the monetary aggregates and national income is stable and well determined.

18. In fact, we pay little attention to the first of these arguments precisely because we do not believe that the monetary aggregates provide any useful leading information about the future behaviour of the economy. We have several times specifically rejected this argument. The second position outlined above is a statement of "reduced-form" monetarism of the kind, for example, proponents of the St Louis school hold. We have no theoretical or empirical grounds for holding that it is true. To

reiterate, therefore, if we believe in the Keynesian view of the transmission mechanism, there is no reason to have a monetary target at all. Policy should rather concentrate on attaining an interest rate target, changing as necessary.

19. If, however, we believe that the monetarist transmission mechanism is the correct representation of the economy, then a role for monetary targets emerges. A primary determinant of expenditure is now the excess demand (supply) for money which may exist even if the portfolio of the private sector as a whole is at the desired size. In the paradigm expenditure function (Biv) outlined above, there is only one excess money demand term but in fact there exists a possibility of several portfolio disequilibria occurring. The private sector may, for example, have a demand function for total bank deposits and another for Building Society deposits. Either or both assets may be in disequilibrium and hence there is a prima facie case for having several monetary targets. Since any asset disequilibrium may affect expenditure, a target for each asset constitutes a potential policy instrument for affecting the real economy.

20. Supposing, though, that we were restricted to one monetary target, we can ask which aggregate we should choose. It is excess demand which is the important variable in this case and by definition this is the difference between a quantity supplied and a quantity demanded. The first property the monetary aggregate chosen as target must have, therefore, is to have a stable demand function, otherwise policy cannot have an accurate or predictable effect on the economy. Other things being equal, the more stable the demand function, the better suited the aggregate to be a target variable.

21. But we also have to consider the supply side of excess demand. Now, referring to the identities in para 15, it is clear that provided the authorities are prepared: (i) to control the PSBR; (ii) to sell a specific amount of Government bonds to the (non-bank) private sector at whatever price is necessary; (iii) to control the level of lending between banks and non-banks in the private sector; then they can, if they wish, control the supply of notes and coins, of the monetary base, of M3 or of M5. It cannot, however, control the supply of M1, since its supply identity contains a term in ΔDA , the increase in time deposits and CDs. Effectively, while the authorities behaving under conditions (i) to (iii) above, can control the total nominal increase in bank

deposits, they cannot control their allocation between sight and other deposits. This latter decision is entirely a matter between the non-banks and the banks. The authorities can only affect the decision if they take direct (and unusual) powers to do so. Exactly the same problems would apply if one were to choose as target an aggregate which included Building Society deposits, properly defined, but excluded shares. Now, it would be possible to think of policy measures which would enable the authorities to control the supply of M1. For example, a strict cash reserve system in the manner of Duck and Shepphard, applied only to current accounts, should be sufficient. I have never myself considered this option very seriously because I have never been able to think we would ever operate such a scheme any more than we would seriously contemplate controlling the supply of notes and coin. What is clear, however, is that unless some new scheme is adopted to control the supply of M1, it cannot be a proper variable to take as a monetary target.

22. The general conclusions of this note are thus as follows:-

- a. taking a Keynesian view of the economy, the target should be in terms of interest rates. In this framework, it is indeed difficult to see any role for monetary targets at all;
- b. in a monetarist framework, there is a role for one or more monetary targets;
- c. in this case, an aggregate is a candidate for a target if:
(i) its supply can be controlled by the authorities; (ii) its demand function is stable and well-determined;
- d. in either paradigm, M1 is not a suitable aggregate as a target in monetary policy.

As you will recognise, these conclusions are very close to those in your paper of 26 September and identical to those in my minute of 13 October. I hope, however, that I have now sketched out in more detail the analysis which underlies them.

23. Let me now turn to Mr Riley's note. I have two basic quarrels with it:

- a. Mr Riley criticizes propositions in my note using Keynesian analysis even though I made it perfectly clear that these

propositions followed from accepting the monetarist view of the transmission mechanism. To this extent, Mr Riley has only succeeded in showing that monetarist analysis yields different prescriptions to Keynesian analysis, which is not desperately surprising;

- b. there is a more basic confusion as to the roles of theory and data in economic analysis. Mr Riley asserts that there is no clear theoretical reason why excess money balances should affect the goods market direct. Now the role of a theory in economic analysis is to generate testable propositions about the real world. In Marshall's terms, it acts as an "engine of analysis". Of itself, theory tells us nothing about how the world behaves but merely gives a set of consistent predictions. The role of empirical evidence is to test the theory by rejecting or conforming with these predictions. The power of the theory in question lies in the volume of empirical evidence which its predictions do explain, the greater this volume being, the better the theory. Of course, there is therefore no clear theoretical reason for expecting excess money balances to affect the goods market direct. There is, however, a perfectly well generated theoretical prediction that they will act in this way, derived as in the second paradigm above. It is for the data ✓ to tell us whether this prediction is well founded or not.

24. More specific points I would wish to take issue with in Mr Riley's note are as follows:-

- a. in para 2 of page 1, Mr Riley asserts that the authorities do not in fact act to control the supply of M3 because of the system they use to sell gilt-edged securities. My first point is to question the status of this observation. My analysis was to suggest under what circumstances a monetary target would be appropriate and, if the authorities have decided to adopt one, what that target should be expressed as. It is largely beside the point for Mr Riley to observe that the authorities never in fact pursue monetary targets because of their behaviour in the gilts market. Secondly, I question the factual accuracy of this observation. Certainly I accept that up to 1973 the authorities were not able to control the

supply of money because of fixed exchange rates. Indeed, it is precisely this which may make it difficult to identify the influence of excess money balances since we have very little data when they may have existed. But, more recently, the authorities have adopted monetary targets and, moreover, taken the steps in both the foreign exchange and gilts markets necessary to achieve these targets. Interest rates have been pushed up sufficiently high to enable the required gilts to be sold;

- b. on page 2, Mr Riley asserts that it is total financial wealth and not monetary disequilibrium which affects expenditure. He also asserts that there is no clear theoretical reason for supposing disequilibrium in M3 money balances to affect the real economy directly; and, then, "the existence of liquidity effects on expenditure suggests that M5 is the relevant variable and definitely not M3." I have already indicated why in general this kind of a priori argument is inappropriate. One cannot derive from theoretical preconceptions how the world actually behaves and, indeed, most of the very worst economics derives from attempts to do so. All of these assertions can only be based on empirical evidence and I see no discussion of this in Mr Riley's note at all. My own view of the state of the empirical debate on wealth is briefly* that wealth is the primary determinant of expenditure and that the evidence as to whether it is total or only financial wealth which is relevant is less clearcut. Note, however, that the wealth effect implicit in the Treasury consumption function is one of total wealth, not financial wealth alone as Mr Riley seems to believe. Liquidity effects may and indeed probably are important but only in those periods when liquidity is not a choice variable of the private sector. In the UK, because of fixed exchange rates, this situation cannot have arisen until 1973 and because of the relatively short period since then such effects may be difficult to capture econometrically. This position, incidentally is fully consistent with the Treasury consumption function and I

*For a fuller account, I would refer to my IFS survey paper on wealth effects and expenditure.

would refer Mr Riley to para 26 of Mr Bean's working paper for a discussion of the same points. Now, whether any such liquidity effects are best expressed in terms of M3 and M5 or both depends on the relative and absolute stability of the demands for these assets. Since there is no empirical work available on the demand for M5, I do not see how Mr Riley can assert that either aggregate is "definitely" to be preferred to the other.

- c. on page 3, Mr Riley attacks Mr Goodhart's and your view that M3 is a better indicator of fiscal stance than M1. As I understand it the Goodhart/Middleton position reflects the fact that the supply of nominal M3 balances is linked to the PSBR by a series of items all in principle under Government control while M1 is not. For Mr Riley to observe, therefore, that fiscal policy affects the demand for M1 as well as M3 is not to the point. Clearly, if post tax incomes or, for that matter, net private worth affects the demand for M1, fiscal policy may affect the demand for M1. But that simply is not the point at issue.
- d. on page 5, Mr Riley asserts that there is a strong a priori assumption that the demand for M1 is more stable than that for M3. Once again, this is an empirical, not a theoretical question. Mr Riley provides good reasons why the demand for M3 may not be (but not why is necessarily not) stable. Equally one can think of good reasons why the demand for M1 may not be stable. First, M1 is not itself a very homogenous asset consisting of both notes and coin and current account bank deposits. There are actually very few transactions for which these two forms of settlement are equally acceptable. Further evidence of non-homogeneity comes from the apparent effects of interest rates. While the empirical evidence suggests notes and coin are not interest sensitive, the demand for M1 apparently is to a marked degree. Unless the ratio of notes and coin to M1 is always constant, this of itself may cause instability. Secondly, people may operate their transactions accounts on the assumption that they can always call on their time deposits for settling immediate transactions, if necessary. In other

words, time deposits may (or may not) be a close substitute for current account deposits. There again, Building Society deposits may (or may not) be a close substitute for bank transactions deposits. Thirdly, people may feel it is simply not worth the time and effort of exercising tight control over their levels of transactions balances so that any M1 equation will have a very high variance. All of these issues are empirical questions and the fact of the matter is that a lot of effort aimed at discovering a stable demand for M1 has failed to produce one. I am therefore inclined to reject Mr Riley's a priori presumptions as being inconsistent with the evidence;

- e. finally on page 5 et seq. Mr Riley asserts the superiority of an M1 target to an M3 target in that it is likely to lead to the greater fluctuations in interest rates. I cannot help feeling from this that M1 is onto a good line: Mr Goodhart tells us we should prefer M1 as the target because it will lead to smaller fluctuations in rates than would M3; Mr Riley tells us that M1 should be preferred because it will cause greater fluctuations. It really is very difficult to dispute both of these arguments at the same time. What seems to have happened in Mr Riley's paper is that he has become entrapped by his own theoretical preconceptions. Because he asserts that the main impact of monetary targets must occur through interest rates, he is faced with the problem of finding specifically where they might affect the real economy. The bulk of the empirical evidence is that interest rates do not have a very strong effect on real expenditures. Indeed, Keynesians quite consistently tend to hold monetary policy as not very important for just this reason. Consequently, Mr Riley is correct to argue that if the Keynesian paradigm is appropriate and monetary policy is to have any significant impact then there must be large movements in interest rates. But it does not follow that these interest rate targets should be expressed as an M1 target or indeed any other monetary aggregate target. Equally, it does not follow that setting an M1 target or any other monetary target will generate "appropriate" interest rates. Alternatively, if the monetarist analysis is the

correct one, Mr Riley's train of thought does not get off the ground at all.

25. For all of these reasons, therefore, I am not inclined to change my analysis in face of Mr Riley's note and the original conclusions stand.

26. Let me add a final coda to the note. Thinking about the way the monetary model operates at present, I am not sure that it will react properly with the unified model. Mr Spencer, correctly in my view, has interest rates clearing the bond market which is fine under either paradigm. On the other hand, in the process, the money market also clears. In our search for the transmission mechanism, we have thus effectively confined ourselves to a Keynesian view of the world ab initio. Since Keynesians themselves regard this mechanism as a weak one, we are perhaps not yet on the best course for a successful integration of real and financial sectors.

J. W. Grice

J W GRICE
2 January 1979