

## The Quantity Theory of Money: A Comment

In a recent article in this Review Mr. Kelly came out strongly against the Quantity Theory of Money.<sup>1</sup> It seems to me, unfortunately, that his knowledge and understanding of the theory and its implications are somewhat open to question and, in my opinion, his main criticism simply does not stand.

1. - Kelly starts by claiming that: "Quantity theorists assert that 'money matters' and mean by this that changes in the quantity of money have substantial and important effects on key economic variables like real income or the price level" (p. 436); and at the end of his paper he observes that: "Quantity theorists have a revealed preference for monetary control of economic instability..." (p. 442).

It is well known, however, that one of the basic tenets of the quantity or monetarist approach is that changes in the stock of money do not have significant effects on real variables. Such effects are taken to be of a temporary or short-run nature, and are often assumed to be unpredictable on the basis of present knowledge of the workings of any economy. All this follows in the main from the fact that the quantity theorists believe the private sector of the economy to be fundamentally stable and that there is only one general-equilibrium solution — although this last claim is very seldom explicitly made. To quote Friedman on the issue: "What I and those who share my views have emphasized is that the quantity of money is extremely important for nominal magnitudes, for nominal income, for the level of income in dollars — important for what happens to prices. It is not important at all, or, if that's perhaps an exaggeration, not very important, for what happens to real output over the long period".<sup>2</sup>

Coming now to Kelly's remark on the importance assigned to monetary policy for economic control, it must be observed that (1) followers of the Quantity approach do not believe in endogenous economic instability and (2) they are in general very guarded as to the rôle of monetary policy for economic control, although it is fair to admit that there is a growing and vociferous

<sup>1</sup> A. K. KELLY, "A Critical Note on the Quantity Theory of Money", this *Review*, December 1970.

<sup>2</sup> M. FRIEDMAN, *Monetary vs. Fiscal Policy*, Norton, New York, 1969, p. 46.

group of monetarists who are now ready to use monetary policy for short-run stabilisation purposes. To quote Friedman again: "The available evidence... casts grave doubts on the possibility of producing any fine adjustments in economic activity by fine adjustments in monetary policy... There are thus serious limitations to the possibility of a discretionary monetary policy and much danger that such a policy may make matters worse rather than better".<sup>3</sup>

2. - Without dwelling on these points any longer,<sup>4</sup> let us come to Kelly's criticisms of the Quantity approach. His contention is that the central feature of both classical and contemporary versions of the Quantity Theory is the so-called "hot potato" analogy. According to this view the nominal stock of money which is in the economy cannot be changed by the public but is under the control of the economic authorities. One man, so the argument runs, can add to his money balances only if another man reduces his. If everybody were to attempt at the same time to add to (to reduce) his cash balances, this would merely result in price and income reductions (increases) until such time as the real stock of money was brought into equilibrium.

While there is more to the Quantity approach than the "hot potato" story, let us accept Kelly's point and examine his objections.

The first one refers to the fact that, in a world where bank deposits are a major part of the money stock, the community can in fact alter the quantity of money in existence. Kelly explicitly takes into consideration the case when money balances are excessive and observes that "if individuals and firms find their money balances excessive, they can reduce them by the simple process of repaying bank loans" (p. 438). The argument, of course, is not new. It was advanced, for instance, by Gambino in the September 1970 issue of this *Review*,<sup>5</sup> and by Tobin in his well-known paper "Commercial Banks as Creators of Money".<sup>6</sup>

I am in fact prepared to agree that in the short run it is possible for the public to induce contractions in the stock of money. This will, however, lead to excess reserves in the banking system, so that offsetting reactions are likely to be set in motion.<sup>7</sup> It should also be observed that endogenous

<sup>3</sup> *Ibid.*, p. 48.

<sup>4</sup> For a general survey of the issue see, for instance, D. FAND, "Monetarism and Fiscalism", this *Review*, September 1970.

<sup>5</sup> A. GAMBINO, "On the Endogeneity of the Money Stock", this *Review*, September 1970.

<sup>6</sup> In D. CARSON (ed.), *Banking and Monetary Studies*, Irwin, Homewood, 1963, p. 415.

<sup>7</sup> Why these offsetting reactions are relevant to the question of long-term equilibria is largely explained by the institutional characteristics usually encountered in our present-day economic systems, in which both reserves and demand deposits are non-interest bearing. Under these conditions banks should always find it advantageous to be fully loaned up. Still the experience of the Great Depression is a constant reminder that it may in fact take a very long time for the banking system to react, especially when nominal interest rates are very low. I will return briefly to these points later.

short-term adjustments in the nominal money stock might take place with a certain asymmetry in the opposite case when money balances are considered by the public to be insufficient. The attempt to increase them by further drawings on bank loans would initially result in an expansion in the supply of nominal money only to the extent that the banking system allowed its reserve ratios to decline. This would put the burden of the initial adjustment mainly on interest rates.

I do not want to enter here into a general discussion on the significance of the endogenous adjustments just referred to. Still, I should like to make the point that these adjustments seem to refer essentially to the case where monetary balances are insufficient or excessive from an *allocative* point of view. A shift in relative yields, or in subjective preferences for the services rendered by non-interest-bearing money, may well involve changes on the part of the public in the composition of the portfolios. The outcome of this readjustment may under certain assumptions be a different equilibrium level of the nominal stock of money balances.

However, the terms excessive or insufficient as applied to existing monetary balances may refer to the very different case where the existing *volume* of assets does not correspond to that desired. In this case the problem is essentially one of accumulation, although it will also entail reallocations; the initial adjustment directly results in expenditure flows and therefore has an impact on the economy over and above the secondary adjustments brought about by the shifts among different assets that arise out of any allocative reshuffle.<sup>8</sup>

Without pursuing these points any further just now, let us come to Kelly's "fundamental objection to the Quantity Theory". He claims that it is impossible for the quantity of money ever to be "excessive". And by this he refers also to the case when "excessive" is used in the volume sense outlined above. To justify his assertion he quotes first principles to price theory, according to which suppliers cannot increase unilaterally the quantity held by would-be-purchasers. In order to induce them to hold an excess supply, suppliers must first accept the change in one (or more) of the arguments of the demand schedule — in general a fall in the price of the commodity considered — at which point the quantity changing hands can no longer be excessive. Thus he concludes that: "The Quantity Theory proposition that the community may find its money balances excessive embodies a contradiction for it implies that the suppliers of money can unilaterally increase

<sup>8</sup> It should, however, be noted in this connection that the real stock of money differs from other financial assets in that it yields a flow of non-pecuniary output, such as durable consumer goods. Thus, also in the case where the disequilibrium in monetary holdings is of an allocative nature to start with, expenditure adjustments might result following the changes in relative yields on the various assets constituting total wealth.

the quantity of money in existence without reference to the demand for money" (p. 439)

It is a platitude that, as far as final equilibrium positions are concerned, there must be equality between the scheduled amounts that suppliers and would-be-purchasers wish to supply and demand respectively. The point at issue here, however, is a different one: whether or not the nominal stock of money can be changed by unilateral decisions of the suppliers of money balances, in particular the economic authorities. Kelly's answer is precisely that: "Any analysis of the impact of changes in the quantity of money, on income, prices, etc., predicated on the assumption that the monetary authority can arbitrarily create 'excessive' money balances is fundamentally in error"<sup>9</sup> (p. 442).

This conclusion, if correct, would certainly have far-reaching implications. Unfortunately, it is wrong. Let us start by considering with some care the very case taken by Kelly (on p. 441) of an increase in transfer payments by the government financed by the creation via the printing press of new monetary base, superimposed on an equilibrium position. The stock of money has gone up by an amount corresponding to the increase in the deficit. We should now decide whether or not the increase in the rate of government payments and its form of financing is anticipated to be permanent or of a once-for-all nature. If it is expected to be only a temporary change, the recipients of the new cash will treat this addition to their measured income as a transient component. Thus, if their consumption is related to wealth — or permanent income — their scheduled consumption expenditure will increase only to the extent of the product between their marginal propensity to consume and the capitalised value of the transient component. If, on the contrary, the increase in income is viewed as permanent, they will add to their current consumption expenditure applying directly their marginal propensity to consume to the extra income flow received in the current period.

The quantitative results will be different in the two cases, but from a qualitative point of view there is no conflict. In both cases an attempt will be made to increase real current expenditure, while the acquisition of financial assets — which is in general the counterpart of the attempt to add to income-yielding wealth<sup>10</sup> — will temporarily drive interest rates down. Still, the

<sup>9</sup> The reader can also consult on this issue the paper by L. GRAMLEY and S. CHASE, Jr., "Time Deposits in Monetary Analysis", *Federal Reserve Bulletin*, October 1965, pp. 1389-90.

<sup>10</sup> Part of the extra saving will, however, be scheduled to be retained in monetary form. It is only to this extent that the injection of new monetary base into the system under the circumstances outlined above influences directly the demand-for-money function. It should also be pointed out that the attempt of the public — and more particularly of the household sector — to add to income-yielding wealth may directly increase current expenditure if it takes immediately the form of — say — buying of new houses for renting.

proportions in which the new money is allocated between current expenditure and saving will be different in the two instances.

The ultimate results of the increase in aggregate demand will depend on the exact form taken by the reaction functions of the macrosystem, and in particular on the assumptions made as regards supply elasticity. Still, from a general point of view the conclusion is that price and income rises will follow, and will continue until the community again finds an equilibrium relationship between the stock of nominal money and nominal income flows.<sup>11</sup>

All this shows that the economic authorities can in fact unilaterally increase the quantity of money, largely without reference to demand for it. Thus, by means of combined fiscal and monetary action they can induce a discrepancy between supply and demand for money balances, which sets in motion a complex adjustment process affecting prices, interest rates and presumably also real income. Broadly speaking, the new equilibrium is reached when the economy has done the adjusting to the excess monetary base introduced into the system, although the equilibrium level of nominal money balances may well depend also on endogenous adjustments. By definition, the new equilibrium is where the demand and supply schedules intersect. Throughout the "traverse", a discrepancy exists between the nominal stock of money in existence and that which would be willingly held by the public. In other words, in the case outlined above the economic authorities can in fact alter the money supply without any *prior* change in the determinants of demand having taken place, contrary to Kelly's assertion.

A less obvious case is encountered when the increase in the monetary base is engineered through open-market operations of the central bank: an instance of "pure" monetary policy. If in fact an open-market purchase of securities by the central bank has no direct effect on wealth, then, even if the sale of securities were to be only a temporary step in adjusting portfolios, there would be no repercussions on prices and income, unless demand for non-financial assets were to be sensitive to changes in interest rates.<sup>12</sup> In other words, to revert to the terminology used before, we should have the case where the imbalance is essentially of an allocative nature.

Two objections may, however, be raised to such a conclusion. First, the general idea of the monetarist school is that wealth — and hence expenditure — effects are to be expected in this case too, because the community discounts tax liabilities concerned with the servicing of government securities. Thus "excessive" — in the wealth sense — monetary balances would result from the central bank's open-market purchase, which would therefore entail an immediate expansion of current expenditure and, hence, price and income

<sup>11</sup> The final equilibrium stock of nominal money balances will be a multiple of the cumulated injections of monetary base. But, of course, the multiplier need not be constant.

<sup>12</sup> On this issue, see however footnotes 8 and 10.

adjustments. Again — but now only through monetary policy operations<sup>13</sup> — the economic authorities would be able to create excessive money balances.

The second, and to my mind no less important, objection to the purely allocative impacts of open-market operations can be put in somewhat more general terms.<sup>14</sup> When the extra monetary base is introduced into the system following the open-market purchase, a certain proportion of it will be immediately swapped for demand deposits. The banking system will therefore tend to react to its excess reserves by expanding its assets and hence further lowering interest rates. Thus, if interest rates are quicker to adjust than prices, the public may be induced to hold temporarily a multiple of the initial increase in monetary base in the form of non-interest-bearing demand deposits.<sup>15</sup> But in these circumstances wealth will appear to have gone up, both because of the intrinsic properties of money balances,<sup>16</sup> and because the fall in interest rates increases the nominal value of securities. The consequent attempt to re-establish an equilibrium both from an allocative and an accumulation point of view will result in income adjustments and price and interest rate rises until a new equilibrium position is attained, when in particular the discrepancy between the demand for and the supply of money balances will have disappeared.<sup>17</sup>

<sup>13</sup> Nevertheless, one may expect that open-market operations have in practice a dampened wealth effect with respect to the "fiscal and monetary" policies described above because (a) it seems reasonable to assume that there is in reality only a partial discounting of future tax liabilities, mainly because of uncertainty and information costs, and (b) even if we were to assume that the same capitalisation rates are used on an income flow and on the taxes on that income we should allow for the fact that the capitalisation rate on the flow of human income should be higher than the rate by which non-human income is capitalised into wealth (this point has been forcefully made by B. PESK and T. SAVING in their *Money, Wealth and Economic Theory*, New York, Macmillan, 1967, Chapter 10). Thus, taking into account the fact that government bonds represent for owners a flow of non-human income, the difference between the two capitalisation rates guarantees that government debt is a positive component of wealth if the taxes necessary to pay interest on the debt are at least in part levied on human income flows. For a general analysis of these problems see PESK and SAVING's *Money, Wealth, op. cit.*, pp. 275 ff.

<sup>14</sup> In the sense that the considerations that follow would also refer to the case of "fiscal and monetary" policy operations, as regards their second-round effects.

<sup>15</sup> In conditions of strong disequilibrium, where in particular nominal interest rates are already very low, prices may, however, be adjusted more quickly than interest rates, and the above analysis would no longer apply. The analysis is in fact concerned with local stability around full-employment equilibrium, and not with global stability.

<sup>16</sup> Non-interest-bearing money yields a stream of services to holders without yielding a corresponding negative income to producers, as shown by PESK and SAVING, in *Money, Wealth, op. cit.*

<sup>17</sup> The interactions of differing wealth and allocative effects of changes in the monetary base seems to raise a question as regards the stability, from a theoretical point of view, of the money multiplier (of course defined here in the Friedman-Meiselman sense). In fact, if no wealth effects are present a sufficient condition for the money multiplier to

To conclude, there are certainly sound arguments supporting the view that the nominal stock of money is partly dependent on the endogenous behaviour of the economic system. This fact, however, does not preclude the existence of two separate supply and demand functions, although it does raise the question of whether the single-equation approach to the estimation of the demand-for-money function is in fact warranted. But the extreme position held by Kelly that it is impossible for the suppliers of money to create "excess" monetary balances, and that the public can never find itself in a position of holding more money than it would wish to hold, does not withstand scrutiny. The Quantity Theory may well be unsatisfactory, or even wrong, but not because of the "basic objection" raised by Kelly.

Basel

RAINER S. MASERA

#### REPLY TO DR. R. S. MASERA

I thank Dr. Masera for his comments. Because space is limited, I shall respond only to his main criticisms of my article!

Masera's main objection, not surprisingly, is to my contention that the monetary authorities cannot arbitrarily create excessive money balances in the hands of the public. He first takes the case of government transfer payments financed by printing currency, the same case I examined, and while his analysis of the resulting adjustments is more detailed than mine, we apparently agree on the final outcome, namely, that prices and incomes will rise until the nominal money stock and income are in equilibrium. Masera then concluded that "... this shows that the economic authorities can in fact unilaterally increase the quantity of money, *largely* without reference to demand for it" (*italics added*). It shows nothing of the sort. Masera, like others before him, fails to distinguish between money and income. The rise in government transfers, in this example, takes the form of money but analytically it must be treated as a rise in the income of transfer recipients. If it is not so treated, no variable in the money demand function ( $M^d = kyP$ ) will have changed and the quantity of money held by the public cannot, therefore, have changed. Incidentally, Masera's use of the word "largely" would indicate that he himself is uncertain of his conclusion.

Dr. Masera's next objection is "... that wealth — and hence expenditure — effects are to be expected... because the community discounts tax

be stable is that there exist both: (a) a stable demand-for-money function and (b) a stable relationship between interest rates and global expenditure. If, however, wealth effects are present, and they have differing impacts on aggregate behaviour, the simultaneous satisfaction of the above two conditions no longer produces a stable money multiplier.

<sup>1</sup> "A Critical Note on the Quantity Theory of Money", this *Review*, December 1970.

liabilities concerned with the servicing of government securities", referring to an open-market operation when the demand for money is interest-elastic. His objection overlooks the fact that government securities must be serviced whether they are held by chartered banks, the general public, or the central bank. Shifting securities from one portfolio to another therefore should have no effect on expected tax liabilities.

As to Masera's contention that Quantity Theorists do not advocate monetary cures for economic fluctuations, two comments are in order. First, this is simply not true of the older Quantity Theorists like R. G. Hawtrey.<sup>2</sup> Second, Milton Friedman's suggestion that discretionary monetary policy be replaced by some rule for increasing the money stock is really the monetary policy to end all monetary policy. And as Masera notes, some neo-Quantity Theorists now believe that short-run monetary policy is possible.<sup>3</sup>

I agree with Masera that my conclusion that the monetary authorities cannot arbitrarily create excessive money balances in the hands of the public has far-reaching implications. Specifically, it means that monetary policy is likely to be ineffective and possibly even disruptive. Unfortunately, so long as economists embrace the Quantity Theory, be it an old or a modernized version, they will continue to see in monetary manipulations a means to deal with the basic instability of the modern economy.

Regina.

A. KELLY

<sup>2</sup> In 1925, Hawtrey wrote: "... the true remedy for unemployment is to be found in a direct regulation of credit on sound lines", *Economica*, March 1925, p. 48.

<sup>3</sup> Don Patinkin's recent article, "The Chicago Tradition, The Quantity Theory, and Friedman", *Journal of Money, Credit and Banking*, February 1969, pp. 46-70, raises doubts as to whether Friedman and his followers are even properly described as Quantity Theorists.