The Public's Preference for Cash (*)

I. Some years ago Professor Gambino submitted in the *Quarterly Review* a theoretical case and some empirical evidence in support of his assertion that the supply of money in an economy with a commercial banking system is likely to vary owing to changes in the public's preference for cash (notes and coins); for, he argued, since in an economy with a commercial banking system the volume of deposits is some multiple of the banks' cash-holdings any fall (rise) in the public's demand for cash will tend to cause an expansion (contraction) of the money supply. Two eminent economists — Professors Schneider and Sayers — subsequently challenged Professor Gambino's thesis on two grounds (1). Professor Schneider maintained that the proportion of money which the public demand in the form of cash (*i.e.* the cash preference ratio) is determined predominantly by custom and institutional factors; in the short run it is thus virtually constant so that its influence upon the money supply can only be extremely small. Professor Sayers, on the other hand, does recognize the possibility that the public's cash preference ratio may vary with changes in the level of employment, the extent of black market activities, or bank charges. However, in his view, the present institutional framework in England does not permit such variations to have any noticeable effect upon the quantity of

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(*) Some of the points elaborated here were suggested in a previous article of mine (this *Review*, Dec. 1957). I have since had the benefit of a most stimulating correspondence with Professor GAMBINO which induced me to write the present paper; I am very much indebted to him for his help and suggestions although he is, of course, not responsible for any of the short-comings of this article.

(1) Almost every volume of this *Review* since 1951 contains a contribution to this controversy. Specific reference should be made to A. GAMBINO, "Money Supply and Interest Rate in Recent Macro-Economic Conceptions", this *Review*, 1954; ERICH SCHNEIDER, "The Determinants of the Commercial Banks' Credit Potential in a Mixed Money System", this *Review*, 1955 and R. S. SAYERS, "The Determination of the Volume of Bank Deposits: England 1955-56", this *Review*, 1955.

money. For the volume of bank deposits is no longer limited by the commercial banks' cash reserves but rather by their holdings of liquid assets (cash, money at call, and bills) through what is called their "liquidity ratio". This, however, does not mean that the commercial banks do not adhere to their "cash ratio": since they can readily convert a large proportion of their bills and money at call into cash (by letting Treasury Bills mature and/or by refusing loans to the discount houses who are thus forced to sell bills to the Bank of England) without changing the total amount of liquid assets their cash reserves tend to be adjusted almost automatically to the volume of deposits. Thus in present-day England variations in the size of the short-term Government debt, which accounts for a large proportion of liquid assets, appear to be the most effective means of controlling the supply of money although in recent years the Government has relied heavily on direct exhortations to the commercial banks.

It seems that if Professor Gambino's thesis is to be of general validity and importance we should be able to demonstrate (i) that the public's cash preference ratio does, in fact, vary noticeably and according to some pattern and (ii) that such variations are significant for the determination of the quantity of money or in some other respect. It is the purpose of this paper to examine Professor Gambino's thesis along these lines. First, we shall thus attempt to show that the public's cash preference ratio does not remain constant in the short run and to adduce reasons for its variability. Second, we shall discuss the effects of variations in the cash preference ratio upon the quantity of money assuming, in turn, that the commercial banks regard either their cash or their liquid assets as the main determinant of the level of deposits. Finally, we shall endeavour to present some plausible arguments in favour of a recognition of a variable cash preference for an effective monetary policy.

II. The Public's Demand for Cash – Empirical Evidence

The public's cash preference ratios — that is, the percentages of money held in the form of cash — for eight different countries since 1950 are plotted in Fig. 1. Two features of these time series

deserve special attention: First, the cash preference ratio varies considerably from country to country the highest and lowest values being approximately 55 and 20 per cent respectively (2). Second, neglecting the United States, the cash preference ratio fluctuated during the period under consideration by a minimum of 10 per cent (in France and the Netherlands) and by a maximum of over 25 per cent (in England). Further, the ratio displayed a continuous

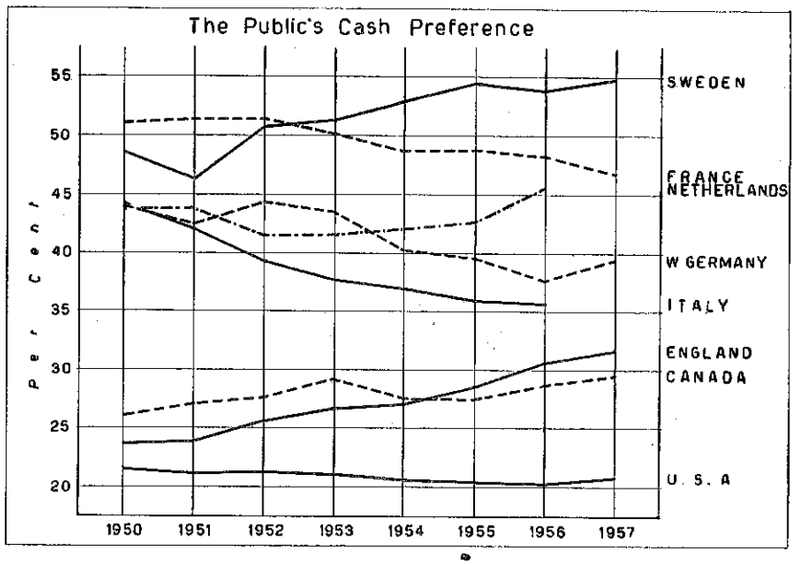

Fig. 1

upward trend in England and a continuous downward trend in Italy and, in other countries, its upward or downward movements are at times very pronounced. It would appear, therefore, that the assumption of a constant short-run cash preference ratio, which is determined predominantly by custom and institutional factors, is not vindicated by the available empirical evidence and should thus be abandoned as unsatisfactory.

(2) The discrepancies may be due, in part, to different definitions of "money". The cash preference ratios in Fig. 1 were calculated from information published in I.M.F.: *International Financial Statistics*; H.M.S.O.: *Monthly Digest of Statistics*, and Deutsche Bundesbank: *Monthly Reports*.

III. The Determinants of the Public's Demand for Cash

We may conveniently begin our analysis of the public's demand for cash by introducing the distinction between active and passive cash which is simply an extension of the Keynesian distinction between active and passive money. Further, we may assume as a first approximation that the demand for active and passive cash is proportionate to the balances of active and passive money, respectively; or, if C denotes the public's demand for cash, M their money balances and the subscripts 1 and 2 refer to active and passive money or cash, respectively we can write:

$$C = C_1 + C_2 = aM_1 + pM_2 \tag{1}$$

for the public's demand for cash, where a is the *active* cash preference ratio and p is the *passive* cash preference ratio. Hence, the *overall* cash preference ratio ($c = \frac{C}{M}$) depends on a, p and the distribution of M *between* M_1 and M_2. More precisely, c is the weighted average of a and p which becomes quite apparent after dividing equation (1) by M:

$$c = \frac{aM_1 + pM_2}{M_1 + M_2} \tag{2}$$

Having made the preliminary distinction between the active and passive cash preference ratios (a and p) let us now proceed to discuss their main determinants with a view to assessing the likelihood of their remaining constant in the short run.

In the first place, we must consider various non-economic factors: people's preferences and the institutional framework which are the most important determinants of a and p. Thus it would appear that the passive cash preference ratio (p) in most Western countries is nowadays virtually zero owing to custom, adequate banking facilities, and the risk of loss or theft of cash kept in the home. Non-economic factors may also account for changes in the active cash preference ratio (a) in a particular country as well as for differences in the ratios of different countries. It is, however, probably justifiable to maintain that in most countries customs and

institutions do not cause abrupt and substantial variations in a or p in the short run, that is, over a period of three to five years (3). Let us thus turn to other possible determinants of the two cash preference ratios.

In the second place, it seems that neither a nor p are likely to be independent of the stock of active or passive money; or, more specifically, the public's (active or passive) cash preference ratios will tend to decline with increasing (active or passive) money balances. This principle may be referred to as the "declining marginal propensity to hold cash".

If the public hold any passive cash at all they do so either because they have no access to or are not willing to make use of banking facilities or because they like to keep some small proportion of their wealth in perfectly liquid form. In the first case, the passive cash preference ratio is equal to unity, but should people's passive cash holdings grow excessively large they will usually attempt to convert at least part of them into bank deposits thereby reducing the ratio. In the second case, p will tend to decline because after a point the advantages of holding highly liquid passive cash are outweighed by the inconvenience of protecting it against loss or theft. These arguments seem to warrant the conclusion that even if the passive cash preference ratio is initially significantly larger than zero it will tend to decline very markedly with increases in the supply of passive money.

It would appear that there are reasons for supposing that the principle of the declining marginal propensity to hold cash can also be applied to the demand for active cash. First, as incomes and, hence, active money balances rise the purchases of expensive products — such as consumer durables — will increase by proportionately more than those of cheap products and, since the former, in contrast to the latter, are predominantly paid for by cheque the active cash preference ratio will tend to decline. Second, people are inclined to fear the loss of large active cash balances more intensely than that of small ones and, therefore, will not permit them to grow beyond certain limits. Finally, rising incomes will tend to make payment of salaries and wages by means of cheques

(3) I think that there may be one important exception to this generalisation: It may become fashionable to have a bank account and, since fashions with snob appeal tend to spread very rapidly, a and/or p may change abruptly on this account.

more convenient and safer and, thereby reduce the average cash holdings in the economy (4).

Our discussion has thus led us to the conclusion that both a and p will tend to decline with increases in M_1 and M_2, respectively. However, it is probable that this process is not reversible in the sense that although a rise in M_1 (M_2) causes a reduction in a (p) a fall in M_1 (M_2) may not raise a (p) by the same amount since, once people have grown to appreciate the advantages of deposit money they are unlikely — in normal times at any rate — to revert entirely to their initial habits.

To sum up: In our attempt to explain the variations in the overall cash preference ratios which are observable in a number of countries we introduced the distinction between the public's preference for active cash and that for passive cash and proceeded to discuss their determinants. Habits, tastes, and institutional factors are obviously most important in this respect but we presented also some arguments in support of the principle of the declining marginal propensity to hold (active or passive) cash as the supply of (active or passive) money increases. However, since it is extremely difficult to assess the quantitative importance of this principle without very arbitrary assumptions we shall for the remainder of this paper assume that a and p are virtually constant (5). Keeping this simplification in mind let us now turn to an examination of the empirical evidence and see whether it lends some support to our distinction between a and p.

From our definition of the overall cash preference ratio (c) in equation (2) we can infer that if a differs significantly from p then c must vary with changes in the relative distribution of the supply of money between M_1 and M_2; or, more specifically: if $a > p$ a rise in M_1 relative to M_2 — that is, a rise in the overall velocity of circulation — should raise c, so that we would expect a positive

(4) Thus in the United Kingdom virtually all salaries are paid by means of cheques and only a legal anomaly is responsible for the fact that wages are still paid entirely in cash.

(5) If we are justified in assuming that $p=0$ and that the income velocity of circulation remains constant we can obtain an estimate for the fall in a in the following way. Since $C=aM_1$ and $Y=M_1V_1$ (where Y is national income and V_1 the income velocity of circulation) we have $\frac{C}{Y}=\frac{a}{V_1}$ so that with a constant V_1 any change in a would be indicated by a change in $\frac{C}{Y}$. Such a procedure is, however, full of pitfalls and only yields a value for the relative change in a because the value of V_1 is unknown.

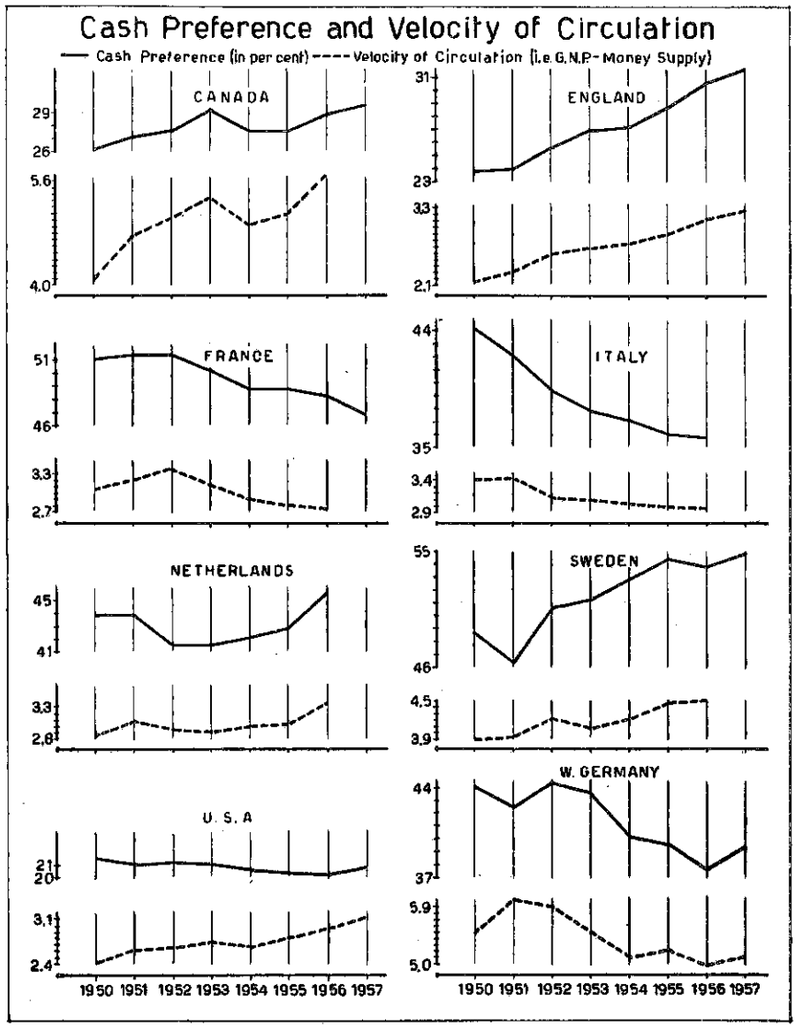

Fig. 2

correlation between the overall velocity of circulation (defined as the ratio of Gross National Product to the supply of money) and the overall cash preference ratio. In Fig. 2 the time series of these two ratios have been plotted against each other for the same eight countries considered in Fig. 1. The predominantly positive cor-

relation between the two series is apparent at first sight; only in a few instances did they move in opposite directions but, to be sure, only mildly. Making allowances for the various and here neglected determinants of a and p which were discussed in previous paragraphs and for the fact that the ratio of Gross National Product to the money supply is but an imperfect measure of the overall velocity of circulation we are justified, so it would appear to the present writer, to conclude that a is considerably larger than p and that the distinction between the two is useful for the purpose of explaining changes in the overall cash preference ratio (c).

IV. The Money-Creation Multiplier

In simplified models of the banking system the volume of deposits is usually assumed to be linked to the quantity of cash (notes, coins, and central bank deposits) by means of the so-called "Money-Creation Multiplier" (6). The assumptions underlying this multiplier are (i) a constant cash ratio (r) which the commercial banks maintain between their cash reserves (including central bank deposits) and their deposits and (ii) a constant cash preference ratio (c) which the public maintain between their cash holdings and their money balances. If the quantity of money is defined as the sum of the public's deposits and their cash-holding — that is, as excluding inter-bank deposits and the banks' cash reserve — such a multiplier can be derived in the following way: Money is defined as:

$$M = C_p + \frac{C_b}{r} \tag{3}$$

where C_p denotes the public's cash holdings and C_b the banks' cash reserves, so that if r is the cash-ratio $\frac{C_b}{r}$ is the volume of deposits. Now let C be the total supply of cash, namely:

$$C = C_p + C_b$$

(6) This discussion refers predominantly to Professor SCHNEIDER's "Money-Creation Multiplier", *op. cit.*, p. 124 and *Einführung in die Wirtschaftstheorie*, III. Teil, Tübingen, 1953, pp. 40-46.

and, furthermore, let C_p — in accordance with our assumptions — be proportionate to M, namely:

$$C_p = cM$$

After substitution and re-arrangement equation (3) can now be rewritten as:

$$M = C \frac{1}{r + c(1 - r)} \tag{3a}$$

where $\frac{1}{r + c(1 - r)}$ is the "Money-Creation Multiplier", for, since it is also valid for marginal changes, it measures the rise (fall) in the quantity of money which, with given c and r, is due to a unit rise (fall) in the supply of cash; or, alternatively, it gives us the value of $\frac{\Delta M}{\Delta C}$.

The purpose of the subsequent argument in this section is to relax the assumption of a constant overall cash preference ratio (c) and to examine the effect which the introduction of the active (a) and the passive (p) cash preference ratios has upon the "Money-Creation Multiplier". In section III we concluded that c is likely to be a weighted average of a and p and this relationship was expressed by equation (2), namely:

$$c = \frac{aM_1 + pM_2}{M_1 + M_2}$$

or, since $M = M_1 + M_2$.

$$c = \frac{M_1(a - p) + pM}{M} \tag{2a}$$

All that remains to be done now is to substitute for c in equation (3a) in order to obtain the modified version of the "Money-Creation Multiplier":

$$M = C \frac{1}{r + p(1 - r)} - M_1 \frac{(a - p)(1 - r)}{r + p(1 - r)} \tag{4}$$

Equation (4) shows clearly that the quantity of money depends upon the three parameters a, p, and r, upon the supply of cash (C) and upon the quantity of active money (M_1). However, although

it is claimed that equation (4) contains more realistic assumptions than equation (3a) the former may suffer from being somewhat too complex for our purposes. Let us, therefore, make the fairly realistic assumption that the passive cash preference ratio is equal to nil (*i.e.* $p=0$), so that equation (4) becomes:

$$M = C\frac{1}{r} - M_1\frac{a(1-r)}{r} \tag{4a}$$

which illustrates essentially the same relationship as the former. Assuming constant values for a and r we shall now turn to an analysis of the way in which and the extent to which changes in the total money supply (M) can be effected by variations in the quantity of active money (M_1) and/or in the supply of cash (C).

First, let us suppose that the supply of cash in the economy remains unchanged (algebraically, that is, $\Delta C=0$) and examine the effects of changes in M_1 by adapting equation (4a) for our purposes:

$$\frac{\Delta M}{\Delta M_1} = -\frac{a(1-r)}{r} \tag{5}$$

Thus the multiplier of equation (5) which expresses the relationship between a unit change in the quantity of active money and the resultant change in the total supply of money will be larger the smaller r and the larger a. It would appear that in most Western countries the cash-ratio (r) lies within the range of 7.5 and 20 per cent and the active cash preference ratio (a) somewhere between 1/3 and 1 so that the multiplier of equation (5) should have a value between the limits of 1 1/3 and 12 1/3. On the assumptions postulated here, a decrease (increase) in the amount of active money of, say, £ 100 must, therefore, cause an increase (decrease) in the total quantity of money of, at least, £ 133 and, at most, £ 1,233 (7). However, in a more realistic analysis of the present

(7) In my previous article (*op. cit.*) I called this multiplier effect the "Gambino-Effect". Correspondence with Professor Gambino has convinced me, however, that he places great emphasis also upon induced or autonomous changes in a and p so that the term "Gambino-Effect" should be applied to any change in the overall cash preference ratio (c) which leads to a change in the supply of money.

problem our assumptions should be relaxed somewhat. For instance, C is unlikely to remain constant when M_1 rises because the public and/or the commercial banks will be induced to sell short-term securities to the central bank in return for cash; on the other hand, when M_1 is falling owing to slackening economic activity commercial banks may prefer to let their cash-ratio rise above the legal or customary minimum.

Second, let us suppose that the quantity of active money remains constant (that is, $\Delta M_1=0$) and assess the effect of a change in the supply of cash upon the stock of money. By adapting equation (4a) for this purpose we obtain:

$$\frac{\Delta M}{\Delta C} = \frac{1}{r} \tag{6}$$

which illustrates that the effect of a given change in C upon M will be larger the smaller r. Equation (6) is thus a very simple "Money-Creation Multiplier" because it does not allow for a rise in the public's cash-holdings; yet in spite of its simplicity it is appropriate if M_1 does not change and if the public do not demand any passive cash.

Finally, let us turn to an examination of the effects upon M of simultaneous variations in both C and M_1. For this purpose, equation (4a) has to be re-written as:

$$\Delta M = \Delta C\frac{1}{r} - \Delta M_1\frac{a(1-r)}{r} \tag{7}$$

which illustrates that there may be a reduction in the total quantity of money in spite of a rise in the quantity of cash if the demand for active money — and, hence, the public's demand for cash — rises sufficiently, if, that is in terms of equation (7), $\Delta C < \Delta M_1\ a(1-r)$. Further, the total quantity of money will remain unchanged if $\Delta C=\Delta M_1\ a(1-r)$ and rise if $\Delta C > \Delta M_1\ a(1-r)$. It is thus not possible to say much about the effect of simultaneous changes in C and M_1 unless we have some information about the relative sizes of these changes. However, if we introduce the ratio of ΔM_1 to ΔC into our argument, denoting it by m, so that $\Delta M_1=m\Delta C$ we can derive from equation (7) two

multiplier formulae which are extended versions of those in equations (5) and (6):

$$\frac{\Delta M}{\Delta M_1} = \frac{1}{mr} - \frac{a(1-r)}{r} \tag{8}$$

$$\frac{\Delta M}{\Delta C} = \frac{1}{r} - \frac{ma(1-r)}{r} \tag{9}$$

Thus equations (5) and (8) are identical if $m=\infty$ (that is, if $\Delta C=0$) and equations (6) and (9) are identical if $m=0$ (that is, if $\Delta M_1=0$). However, our model is incapable of determining the value of m because there is no direct causal relationship between ΔM_1 and ΔC; m is thus an exogenous variable which may have any positive or negative value and, hence, equations (8) and (9) may have any positive or negative value between the limits set by equations (5) and (6), respectively, and positive or negative infinity.

To sum up: It has been the purpose of this section to modify the customary version of the "Money-Creation Multiplier" by means of substituting the active and passive cash preference ratios (a and p) for the overall cash preference ratio (c). In order to make our formulae somewhat more manageable we assumed that the public demand only active cash (*i.e.* $p=0$) and then we proceeded to develop two types of multipliers: The first (equations (5) and (8)) measures the effects of changes in the quantity of active money upon the total supply of money whilst the second (equations (6) and (9)) relates variations in the stock of cash to those in the supply of money. Equations (8) and (9) show that the two multipliers may have values within very wide ranges even if the commercial banks' cash-ratio (r) and the public's active cash preference ratio (a) remain constant. It is submitted here that the versions of the "Money-Creation Multiplier" presented in this paper are more appropriate than the customary ones because they are not based on the assumption of an autonomously determined and fairly constant overall cash preference ratio.

One implication of the analysis of this section perhaps deserves to be mentioned since it was extensively discussed in the controversy between Professors Gambino and Schneider. Our multiplier in equation (8) is in the nature of an automatic stabiliser because the quantity of active money tends to vary directly with the degree of

economic activity: For instance, as economic activity slackens the public will reduce its cash-holdings and, thereby, enable the commercial banks to expand the volume of money. There is thus, in Keynesian terms, not only a reduction in the demand for money but also an increase in its supply both of which will act as stabilisers.

V. The Liquid-Assets Ratio and Money Creation

In recent years the concept of the liquid-assets ratio has come to the forefront in British discussions of the determination of the quantity of money. It is argued that the cash ratio is nowadays inoperative because commercial banks can always overcome a shortage of cash by reducing their holdings of bills and/or call money. Hence, since the commercial banks in England maintain a liquidity ratio of somewhere between 30 and 40 per cent, the quantity of money can be controlled effectively only by concentrating attention upon the supply of liquid assets (bills, call money, and cash) rather than upon the supply of cash because the latter is infinitely elastic at a given rate of discount owing to the Bank of England's traditional function as "lender of last resort" (8).

A "Money-Creation Multiplier" in which the supply of money is based on the banks' holdings of liquid assets can be derived in a fashion similar to that used in the previous section. Thus if the banks' liquid-asset holdings are denoted by L_b and their liquidity ratio by n the supply of money is defined as:

$$M = C_1 + \frac{L_b}{n} \tag{10}$$

where it is again assumed, for the sake of simplicity that the public do not demand any idle cash (*i.e.* $p=0$ and, hence, $C_2=0$). As before we shall assume that C_1 is proportionate to M_1 that is, $C_1=aM_1$ and since $L_b=L-L_i$ where L is the total supply of

(8) It is the purpose of this section to lend some theoretical support to Professor Gambino's hypothesis in conditions in which the liquidity ratio is more important than the cash ratio. However, the argument is on a higher level of abstraction than Professor Sayers's excellent description of the determination of the money supply in England (*op. cit.* and *Modern Banking*, 4th edition, 1958, Chap. 9) and is thus not directly comparable with the latter.

liquid assets and L_i the part that is held by the public we can re-write equation (10) as:

$$M = aM_1 + \frac{L - L_i}{n} \tag{10a}$$

Further, the public's holdings of liquid assets (L_i) consist of cash and other liquid assets which we shall call bills (B_i) so that: $L_i = aM_1 + B_i$. After introducing this identity into equation (10a) we obtain:

$$M = \frac{L - B_i}{n} - M_1 \frac{a(1-n)}{n} \tag{11}$$

so that the quantity of money depends upon the parameters a and n and upon the total supply of liquid assets (L), the bill-holdings of the public (B_i) and the demand for active money (M_1). The most direct and effective Government control of the quantity of money would thus be through a change in L and/or B_i (9). But this does not mean that changes in M_1 are unimportant although they may, of course, be offset by compensating changes in B_i and/or L.

Let us now assume that neither L nor B_i change and examine the effects of changes in the quantity of active money upon the total stock of money. Equation (11) then becomes:

$$\frac{\Delta M}{\Delta M_1} = -\frac{a(1-n)}{n} \tag{12}$$

which, since $a\Delta M_1 = \Delta C_1$, can be written as:

$$\frac{\Delta M}{\Delta C_1} = -\frac{1-n}{n}$$

If n lies within the range of 30 to 40 per cent this multiplier will thus have a value between 2.3 and 1.5. Between 1950 and 1957 the quantity of cash in circulation with the public in the United

(9) These two methods of control are described by Professor SAYERS in *Modern Banking*, p. 228. However, theoretically B_1 should be zero; for commercial banks should purchase all available liquid assets even if they yielded a small *negative* rate of interest (*i.e.* if banks had to pay for the privilege of holding bills) because on their basis they could purchase profitable long-terms assets by simply creating money. Although B_1 is by no means zero in England a Government-inspired attempt to raise it may meet with difficulties.

Kingdom rose by about £ 600 million; in accordance with our argument this means that *ceteris paribus* the supply of money should have been reduced by some amount within the range of £ 900 to £ 1,400 million. In fact, the supply of money rose during that period by about £ 600 million (or, approximately 10 per cent) owing to changes in L, B_i and n. Nevertheless it seems that the contractionary force of the cash withdrawals has contributed to keeping the volume of deposits fairly constant; for they constituted a continuous drain on the commercial banks' reserves of liquid assets. On the other hand, no precise estimate of their effect can be given here because our model does not take account of various other factors influencing the supply of money and because the liquid-asset ratio (n) tends to be fairly flexible (over the period considered its monthly average fluctuated between the limits of 39 per cent in 1950 and 33 per cent in 1955) (10).

The analysis presented in this section may require some qualifications if the public decide to hold less rather than more cash; for although the commercial banks can overcome a shortage of cash by selling bills to the central bank (directly or via the discount houses) they do not reduce excessive cash reserves by purchasing bills from the central bank but, instead, raise the level of deposits. Thus if the public reduce their demand for cash by ΔC_1 the rise in the quantity of money is not measured by equation (12a), namely: $\Delta M = \Delta C_1 \frac{1-n}{n}$ but rather by equation (5), namely: $\Delta M = \Delta C_1 \frac{1-r}{r}$ and, since the cash ratio (r) is smaller than the liquid-asset ratio (n) we may conclude that the expansionary effects of cash deposits are larger than the contractionary effects of cash withdrawals (11).

To sum up: In the present section we have attempted to extend the concept of the "Money-Creation Multiplier" to an economy in which the commercial banking system regards its liquid assets as the factor limiting the volume of its deposits. It was argued that

(10) However, our assumption that $p=0$ is not important in this context. The withdrawal of any cash (active or passive) deprives the commercial banks of liquidity.

(11) If the commercial banks adhere strictly to both r and n a reduction in the public's demand for cash will, of course, entail a rise in the banks' bill-holdings.

The implications of changes in L and/or B_i are not worked out here because they are very similar to those of changes in the supply of cash discussed in connection with equation (6).

even in such circumstances a change in the public's cash preference is likely to have some effect upon the supply of money which may or may not be counteracted by other factors. Further, it is likely that a reduction in the public's demand for cash is more effective in raising the supply of money than a rise is in reducing it; for, although the central bank is frequently used as the "lender of last resort" it is not the "borrower of last resort" in the sense that commercial banks purchase (directly or indirectly) bills from it in order to relieve themselves of excessive cash reserves.

The fundamental assertion made in the previous and the present sections is that variations in the public's preference for cash are likely to occur according to some pattern and that they do have an influence upon the quantity of money. Yet there can be no doubt that the authorities can, if they wish, counteract or offset this influence; but it is not, therefore, unimportant.

VI. Cash Preference and Monetary Policy

So far we have confined our attention to the effects of variations in the public's preference for cash upon the supply of money. But our distinction between the active and passive cash preference ratios leads to another and, in the present writer's view, very important corollary. In recent years disinflationary monetary policies have been limited in their effectiveness owing to the inability of authorities to prevent the activisation of passive money, to check, that is, the rise in the velocity of circulation (12). According to the analysis presented in this paper a rise in the velocity of circulation is accompanied — and, indeed, with given a and p is only possible owing to — a rise in the public's demand for cash so that the authorities should be able to prevent the velocity from rising by controlling the issue of cash to the public. It would appear that, coupled with other restrictive measures, such a policy is more likely to succeed in reducing inflationary pressures than exclusive reliance on the control over the supply of money. But it should be borne in mind that a and/or p may change considerably under

(12) The present discussion refers primarily to the experience in the United Kingdom. It is by no means asserted that monetary policy is inevitably the best disinflationary policy.

Dr. Thomas Wilson also recommended the restriction of the supply of cash in order to control the velocity of circulation. See his: "The Rate of Interest and Monetary Policy", *Oxford Economic Papers*, October 1957.

the pressure of the scarcity of cash and that this policy may involve far-reaching institutional changes. Moreover, an inflationary policy of this type to prevent the velocity of circulation from falling is not possible because the public cannot be forced to hold more cash than they desire.

VII. Conclusions

From the analysis presented in this paper it would appear that the public's cash preference is rather more important than its place in contemporary monetary theory would indicate. An attempt was made, therefore, to elaborate (i) the pattern according to which the public's cash preference ratio is likely to vary and (ii) the implications of changes in that ratio.

Whilst autonomous changes in the public's demand for cash cannot be ruled out we found that the distinction between the active and passive cash preference ratios (a and p) — both remaining fairly constant over time — yielded results which are similar to the experiences of several countries in recent years, namely a positive correlation between the public's (overall) cash preference ratio and the velocity of circulation.

Two implications of the distinction between a and p were discussed. From the first we concluded that, no matter whether the commercial banks regard the cash ratio or the liquid-asset ratio as more important, changes in the public's demand for cash are likely to have some influence on the supply of money; and this relationship acts as an automatic stabiliser: A rise in the velocity of circulation tends to cause a contraction of the money supply and vice versa. The second implication relates to the effectiveness of monetary policy: if a rise in the velocity of circulation is always accompanied by an increase in the supply of cash it may be possible to control the former by restricting the latter. Thus, since it tends to limit the rise in the velocity of circulation, a restriction on the cash supply may be necessary to support the more usual means of monetary policy.

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