Recent Applications of the Multiplier in Monetary Analysis

In this paper I propose to describe and comment on three recent
articles in which models of the multiplier type are used to analyse
specifically monetary processes. The articles are by Mrs Vera Lutz,[1]
J.J. Polak[2] and A.N. Macleod.[3] The most obvious common factor between
these three is that each uses process analysis and the convergent
geometric series to examine some aspects of the expansion of money
or credit. There are some other interesting cross-linkages between
them, both in methodology and results, but the interest of them goes
beyond that of pure theory. In his paper Polak is explicitly concerned
with the relationship between credit creation and the balance of payments
in developing countries. Macleod does not specifically apply his
analysis to this type of environment but I shall argue that, equally
with that of Polak, it is relevant to this situation. Mrs. Lutz's
contribution is the most purely theoretical of the three, but it is
a necessary complement to the other two, illuminating, by comparison,
the theoretical assumptions on which they are based.

Two of the models examined here - those of Lutz and Polak - are
represented as combining the multiplier analysis with the traditional
velocity of money approach. Macleod makes no claim of this kind. But
as I shall argue later some of his conclusions raise further questions
which can only be dealt with by an analysis related to the quantity
theory. The relationship between the velocity and multiplier theories
is a question which is involved in all these models and I shall begin
with a brief account of the past discussion of it.

Velocity of Money and the Multiplier

Velocity analysis in the truistic form of the Fisher equation,
$MV = PT$, may be used to describe almost any conceivable macro-economic
process. But neither the protagonists of the velocity approach nor
those who favour the consumption function have been interested in this
version of velocity.[4] Attempts to relate or reconcile the two analyses
have normally assumed a predictive version of the quantity theory, such
as that implied in the Cambridge version of the quantity equation, $M = KY$.
This regards velocity as the result of comparatively stable behaviour
on the part of the money holders. The conclusion which has emerged from
these attempts is that the velocity and multiplier theories are

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[1] "Multiplier and Velocity Analysis: A Marriage," Economica, February
1955, pp. 29-44.

[2] "Monetary Analysis of Income Formation and Payments Problems," I.M.F.
Staff Papers, vol. VI (1957-58) pp. 1-50.

[3] "Credit Expansion in an Open Economy," Economic Journal, September 1962,
pp. 611-40.

[4] See P.A. Samuelson, "Fiscal Policy and Income Determination", Quarterly
Journal of Economics, 1942., pp. 602-3; R.M. Goodwin,"The Multiplier,"
in The New Economics (ed. Seymour Harris) pp. 488-9.

inconsistent with one another.

The argument on which this conclusion is based runs in this way. Assume a _single_ increment of investment which is financed by newly created money. According to multiplier theory (dynamic version) this will produce a diminishing series of increments of expenditure and income which, in the limit, will add up to an amount equal to the initial increment of investment times the multiplier, the value of the multiplier being determined as $\frac{1}{1 - \text{m.p. to consume}}$. The analysis shows that during the process an amount of saving equal to the initial investment will be generated. In terms of this particular example the implication is that the new money created to finance the investment will all go to ground in hoards. Looking at this from the monetary circulation point of view, the velocity of money must fall during the process since by end of it the stock of money has risen but the level of sustainable income has fallen back to its previous figure. With continuous injections of new investment financed by continuous creation of money, a new higher level of income can be established. But again this implies a rising stock of money, a constant level of income and hence a continuously falling velocity of circulation. On these grounds writers like Samuelson and Goodwin - looking at the matter in the early days of multiplier theory - concluded that velocity analysis, and the Keynesian Multiplier were "contradictory". As Goodwin put it,[1] "One may describe the multiplier process in velocity terms, but it may, and ordinarily will require a variable velocity of all money. Consequently velocity has no explanatory value, since it is to multiplier, not velocity theory that one has to turn for the explanation of the variations."

Let us examine this problem further. Assume an economy in which income and expenditure are constant. Investment, ex ante, is equal to saving, and income is running steadily at a level determined as the quantity of investment times the multiplier. Now it has never been suggested that this model requires the continuous creation of money: it has never been suggested that it could not in fact function on a constant stock of money. This being so the implication is that the money which represents the unspent portion of income finds its way, via the capital market, into the hands of those who wish to invest and so becomes investment expenditure. This view of the matter would have been an anathema to Keynesians in the early days, but the reinvestment of savings has since appeared in the theories of no less a Keynesian than Kalecki.[2]

In the situation which we have just depicted there is clearly both multiplier equilibrium and constant velocity. But the Keynesian -

[1] Op.cit., p. 489.

[2] See M. Kalecki, _Theory of Economic Dynamics_, pp. 91-108

meaning by this the anti-quantity theory man - would hold that the
constancy of the velocity of circulation in this case is simply the
end result of many processes which happen to produce an equilibrium
situation. These processes, while they will under certain assumptions
restore equilibrium following a change in the basic data, cannot be
relied upon to maintain a constant velocity of circulation of money.
An increase in the quantity of money, for example, would eventually
lead to a new equilibrium in which the velocity of circulation would
again be constant, but it would be a different velocity since basic
elements in the system, such as the rate of interest and the level
of investment would be different.

This example highlights the fact that in the context of this
discussion of the traditional and the Keynesian approaches the terms
'velocity of money' and 'multiplier' actually connote theories which
make wide-ranging assumptions about the behaviour of the monetary system.
We have seen already that the discussion has been concerned only with
predictive versions of the quantity approach. We should remark also
that the 'multiplier' in question is more than a mere mathematical
relation between injections of expenditure and the resulting level
of income. Like the quantity theory in its $M = KY$ form, the full
Keynesian theory of the multiplier involves a set of assumptions about
the operation of the capital market and the demand for financial assets.
The irreconcilability of the two theories is due to conflicting views
about the behaviour of asset holders: the theory of liquidity preference
which is part and parcel of the full multiplier theory is inconsistent
with an $M = KY$ view of things.[1]

After this preamble let us consider the models of Lutz, Polak
and Macleod.

Mrs. Lutz's Marriage

Mrs. Lutz calls her article "Multiplier and Velocity Analysis:
a Marriage". Her principal object is to show how, making quantity
theory assumptions, a model can be set up in which a change in the
quantity of money induces a series of events which can be represented
by a convergent series of the multiplier type.

She begins by making a telling point against the traditional
attitude of Keynesian economists towards the attempted reconciliation
of the velocity and multiplier approaches. She says: "it is in no
way necessary, so long as new investment is taking place (and this
is what the continual flow of investment commonly postulated in
multiplier analysis means) that the stability of the consumption func-
tion, and of its complement the saving function, should imply a hoarding

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[1] The inconsistency may rest in a difference of time period to which each
is applicable. It is a tenable position to maintain that the multiplier
analysis is applicable to the analysis of short-run changes, but that
in the long run a constant velocity reasserts itself. Even Goodwin
admits that the evidence for such constancy, in the U.S.A., is
considerable, though he immediately goes on to deny any "explanatory
value" to velocity analysis (loc.cit.).

function of the same form as the latter." It is worth quoting this
in full because it is a point to which we shall return in considering
Macleod's model. Lutz's own assumption about the hoarding function
is that it takes the form:- $\Delta M = h\Delta Y$ where ΔM & ΔY are increments
of money & income and h is the proportion of money income which the
community wishes its money balances to represent. This is of course
simply the Cambridge version of the velocity theory. Mrs Lutz adapts
it to period analysis making the assumption that there is a lag of one
period in the adjustment of money balances to changes in money incomes.
She then shows that a single increase in the quantity of money - resulting,
for example, from an expansion of bank credit - will cause income to
rise by converging oscillations to a new higher level, which is determined
as

$$\Delta M . \frac{1}{1 + h}$$

per period above the previous level. If marginal and average velocity
are the same the previous level of V will be restored. The model thus
demonstrates that a change from one level of income to another, under
velocity assumption, follows the path of a convergent series. In the limit, income settles
down at this level and the previous value of velocity $(= \frac{1}{h})$ is restored.
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Note the differences between this analysis and the Keynesian
multiplier. Here it is velocity which, having been disturbed by a
single injection of new money, eventually returns to a stable value.
As a result of this restoration of velocity, and of the injection of
new money, income per period is raised permanently to a new level.
The income created by this injection, summed to infinity, is infinite
and not, as in the Keynesian multiplier, a finite quantity. For all
the interest of Mrs Lutz's model we must agree with Mishan's[1] comment
that it does not bring velocity analysis any closer to the Keynesian
multiplier. It remains a classical model and, empirically, it stands
or falls by the validity of the classical assumptions. According to
Mishan the existence of a multiplier, dynamic or otherwise, is not an
issue in any choice between monetary theories. If we interpret
'multiplier' to mean a mechanical process, involving duration of time,
which can be represented by some kind of series, then no one would
disagree with this. But whether or not it was as clear as that before
Mrs Lutz produced her model, and forced her critics to decide what is
the essentially Keynesian content of any multiplier theory, is doubtful.

[1] E.J. Mishan, "Notes on the place and Significance of the Money Multiplier",
Economica, August 1957, p. 248. For other comments on Mrs. Lutz's
article see: G.C. Archibald, "Multiplier and Velocity Analysis: an
Annulment", Economica August 1956, pp. 265-9; R.F.G. Alford, A Taxonomic
Note on the Multiplier and Income Velocity", Economica, February 1960,
pp. 53-62.

Polak and the Foreign Trade Multiplier[1]

Polak's object in his article in IMF Staff Papers, 1957-58, is to examine the effects of credit creation on the foreign balance. The conclusion which he reaches is that an extension of credit in the monetary system of a country with an open economy will produce a series of balance of payments deficits which, in the limit, will be cumulatively equal to the amount of the original credit creation. Thus, an increase in credit produces a decline of equal amount in foreign exchange reserves.

The model which Polak uses to establish these conclusions is a combination of velocity analysis and one particular version of the multiplier. This version is what, in the early days of the application of Keynesian analysis to international trade, was called the 'Foreign trade multiplier'. To begin with he takes a straightforward quantity theory approach to the functioning of the domestic economy. "Our starting point," he says (p.3), "is that income equals the quantity of money times the income velocity of money;" and this means "eo ipso the discarding of the propensities to save, consume and invest." (p.8). This procedure is justified on the grounds that he is applying the analysis, in the first instance, to developing countries with relatively unsophisticated money and financial systems. In such systems, he argues, money is held almost exclusively for transaction purposes and hence demand for it is inelastic with respect to interest rates; and he adduces a large number of graphs showing money supply and income velocity, in various countries, to support this contention. Later in his paper he introduces the possibility of a variable velocity in more sophisticated monetary environments, but his treatment at this point is general rather than analytical.

In the Polak model it is assumed that all the income earned in one period is spent in the following period (i.e. there is no saving). However part of income is spent on imported goods, just as part of it is earned by the sale of exports. In any one period income may also be generated by the creation (and expenditure) of bank credit. As the length of the time period is made equal to the period of marginal income velocity of money, the amount of income so created is exactly equal to the increment of bank credit in that period. Apart from this inclusion of bank credit as a source of change, the Polak model is identical with that rudimentary example by which generations of economics students have been introduced to the income-expenditure aspects of international trade. (Indeed Polak's use of it shows that it is not so rudimentary as one had supposed).

[1] The Polak model examined here is that used by Dr. Clive Gray in his paper "Credit Creation for Nigeria's Economic Development, " Nigerian Journal of Economics and Social Studies, November, 1963, and also in the paper he presented to an earlier meeting of the Nairobi seminar.

The model is set out in the following equations:

$$Y_t = Y_{t-1} + \Delta D_t + X_t - M_t$$

$$M_t = m\, Y_{t-1}$$

where Y = national money income; ΔD = increase in bank credit;
X = exports; M = imports; m = marginal propensity to import; and
the subscripts t, $t-1$, denote the time period. In common with
most multiplier analysis it is assumed that there is unused capacity
in the economy.

Polak now introduces a single injection of new expenditure:
he postulates that this results from an expansion of credit by the banking
system, but one could equally well assume an increase in exports. This
new expenditure will create an increment of income which will lead to
further expenditure. It will in fact initiate a series of rounds of
expenditure, but it will be a diminishing series because at each round
part of the expenditure will leak away on imports and so create no
further income at home. The total expenditures (and incomes) resulting
from the initial injection will add up, in the limit, to an amount
equal to the injection times a multiplier which is itself determined as
the reciprocal of the propensity to import. Similarly the cumulative
total of the leakages at each round - i.e. total imports generated - will
in the end equal the original injection.

With this model Polak is concerned to demonstrate that, at least in
an underdeveloped environment, an expansion of credit causes a drain of
reserves, and that this follows regardless of the presence or otherwise
of elasticity of total supply. But he is also interested in examining
the time-scale of the process as it works itself out. For this purpose
he needs to establish the length of the income-expenditure period, but
this, of course, he has already done for the purpose of defining the
amount of income created by an extension of credit. His solution of this
problem - that the income-expenditure period is equal to the period of
marginal velocity of money - is, in my opinion, invalid,[1] but I shall not
pursue this point here. But the acceptability or otherwise of this
solution does affect one's view of the practical achievement of Polak's
model. In my opinion this lies primarily in a dramatisation of the
effect of internal credit expansion on the external balance - just as
the most useful practical function of the Keynesian multiplier was to
dramatise the beneficial effect of public expenditure in a depression.

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[1] Polak was not the first to identify the income-expenditure period with
the income velocity period. This identification has been criticised
implicitly by F. Machlup, "Period Analysis and Multiplier Theory,"
Readings in Business Cycle Theory, pp. 203-15; and explicitly by
R. Turvey, "The Multiplier," Economica, 1948, pp. 265-7. Gardner
Ackley has, in turn, criticised Machlup's analysis, though he still
rejects the identification: see "The Multiplier Time Period: Money
Inventories and Flexibility", American Economic Review, 1952, pp. 350-68.

Regarded as an exercise in the application of the multiplier Polak's
model has a clear affinity with that of Mrs Lutz. Like the Lutz model,
it demonstrates that the convergent series may be applied outside the
context of Keynesian assumptions. As in the Lutz case the multiplier
is used as a mechanistic relation and applied to those aspects of the
monetary or the income-expenditure process where no conflict with the
traditional assumption of the quantity theory is involved. To describe
either of these models as combining the multiplier and the velocity
approaches is acceptable only if we define the multiplier in the more
limited terms of the mathematical relation between injections of
expenditure and the resulting level of income. In fact, both the
Lutz and Polak models stand in a line of descent which goes back to
D.H. Robertson's period analysis, rather than to Keynes' 'General Theory'.

The Macleod Model

A.N. Macleod's contribution to recent applications of the
multiplier has been to combine the income multiplier and the bank credit
multiplier. He takes the traditional theory of credit creation in a
banking system which maintains a fractional cash reserve - the theory
developed originally in the 1920s by C.A. Phillips in the U.S.A. and
W.F. Crick in Britain - and grafts it onto the Keynesian income multiplier.
This provides him with his basic model. After examining how this works
under simple, closed-economy conditions, he successively introduces two
major modifications. First he brings in a non-bank financial inter-
mediary in the shape of a building society; and secondly he drops the
assumption of a closed economy and sets the model to work under 'open',
gold standard, conditions.

From this preliminary sketch it will be seen that Macleod's
paper bears on more than one aspect of monetary analysis. For example,
in his examination of the role of non-bank financial intermediaries in
the credit process is very relevant to the discussion, stemming from the
work of Gurley and Shaw in the U.S. and the Radcliffe Committee in
Britain, about the monetary significance of the non-bank institutions.
At the same time there are points of contact between Macleod's analysis
and the external payments problems investigated by Polak.

The multiplier with which Macleod works is not precisely the
Keynesian multiplier, but it is a very close relation. He calls it the
'spending multiplier' and it is derived from the 'propensity to spend'
out of income. This propensity is defined to include not only expenditure
on consumption but also induced investment expenditure. Income that is
not spent is said to be 'saved', but it is equally appropriate to describe
it as 'hoarded' since all the injections into the Macleod model consist
of newly created money.[1] The value of the multiplier is determined as

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[1] Cf. Lutz, op. cit., p. 42.

$$\frac{1}{1 - \text{m.p. to spend}} \quad \text{or} \quad \frac{1}{\text{m.p. to hoard}}$$

Macleod sets this multiplier working within a fractional cash reserve banking system. The banking system maintains a cash reserve ratio of 25%; the public has a marginal propensity to spend of 80% and retains no cash in circulation (i.e. there is no 'cash drain'), and, to begin with, the system is a closed economy. Macleod now supposes that someone discovers £1000 in gold, deposits it with the banking system and treats it as income. With the £1000 increase in its cash reserves the banking system is in a position to expand credit and it proceeds to do so. As there are no cash leakages, either abroad or into domestic circulation, the credit multiplier is 4. The banks therefore achieve an increase in lending of £3000 and, with the original deposit of cash, this produces a total expansion of bank deposit of £4000. This increment of credit (or deposits) is spent, as it is created, by the receipients, and forms the multiplicand of an income-multiplier process. As the value of the income multiplier is 5 (the reciproval of the propensity to hoard of $\frac{1}{5}$) the total income resulting from the original injection of £1000 of cash is £20,000 - i.e. £1000 x 4 (credit multiplier) x 5 (income multiplier). This gives what Macleod calls a 'total multiplier' of 20. The limiting factor in this multiplier process is the disappearance of part of income at each round into 'savings' or hoards. At the end of the process the £4000 of newly created bank deposits are all held in, say savings accounts, and form the financial result of the unspent portion of income at each round.

Into this basic model Macleod now introduces a 'building society'. He assumes that out of every £5 saved by the public £1 is placed in a building society which then proceeds to lend it to, say, house buyers. For simplicity it is assumed that the building society holds no cash reserve against marginal increments in its liabilities. The cash ratio of the banks and the public's propensity to spend are the same as before (25% and 80%), and as before a change is introduced in the shape of £1000 injection of cash.

In this model, out of every £5 of immediately unspent income £1 is channelled into the building society and returns to the income expenditure circuit. The consequence of this is that the total income eventually resulting from the single £1000 injection is £25,000, compared with £20,000 in the basic model. The eventual increment in savings is £5000 of which £4000 is held in bank deposits and £1000 in building society deposits.

Macleod's next step is to remove the assumption of a closed economy. He does this first with his original straight banking model, and secondly with his bank-plus-building society model. The 'opening up'

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[1]Cf. Lutz, op. cit., p. 42.

of the model is achieved by assuming a marginal propensity to import of 20%; the other assumptions are the same as before. The insertion of a propensity to import alters the value of the income multiplier. This is now determined as

$$\frac{1}{\text{m.p. to save + m.p. to import}} \quad \text{or} \quad \frac{1}{\frac{1}{5} + \frac{1}{5}} = 2\frac{1}{2}$$

Assuming a £1000 increase in cash (in gold) in the system, the end result in the straight banking model is as follows:

	£
Total new income generated	3478
Total new imports generated	826
Bank deposits created (= new savings)	696
Gold (=cash) retained in system	174

In the 'open' version of the building society model Macleod again assumes that out of every £5 of unspent income £1 is channelled through the building society to re-enter the expenditure stream. The 'opening up' is again effected by inserting a marginal propensity to import of 20% and all the other assumptions are the same as before. The results of this open model are particularly interesting. Following an injection of £1000 of gold into the system a credit-and-income expansion process is set off. The presence of the building society, as before, provides an extra feed-in of expenditure and, as in the corresponding closed economy model, the tendency is for a higher level of income to be generated than in the straight banking model. But the increased flow of expenditure also stimulates higher imports and this has two distinct restrictive effects: first it reduces income expansion by lowering the value of the multiplier; secondly it limits credit creation by causing a loss of gold, and this amounts to a reduction in the size of the total multiplicand. The outcome of this model is given here, with the results of the corresponding straight banking model in brackets:-

		£	
Total new income generated		3571	(3478)
Total new imports generated		857	(826)
New savings		714	(696)
of which	(bank deposits	471	(696)
	(building society deposits	143	(nil)
Gold retained in system		143	(174)

This result has an important bearing on a controversy which has recently been simmering in money and banking circles, in Britain and the U.S., about whether or not the activities of the non-bank intermediaries in attracting deposits can positively reduce the level of deposits in the commercial banks. The generally accepted view in the past has been that, while they may increase the velocity of circulation of bank deposits, the competition of the non-bank institutions does not affect their quantity (as shown, for example, by Macleod's two closed economy models). But Macleod's analysis of the credit process under

open economy assumptions, with a building society present, clearly
throws a different complexion on the matter, since in this case the
banks finish up with fewer deposits than in the straight banking model.

Macleod's results may be transposed, roughly, into quantity
theory terms. If we define M as the quantity of bank deposits then the
activities of the building society may be regarded as increasing V.
If we place this in the context of an open economy where monetary
expansion is limited by loss of foreign exchange reserves we can
readily see that, given that an increment of monetary demand equal to
$M^1 V^1$ is permitted by the state of the reserves, the greater the value
of V^1 the smaller can M^1 (the actual increase in credit) be. But this
is no more than a rough translation: Macleod's model, as it stands, is
actually inconsistent with quantity theory assumptions - a point to
which we return later.

In the balance of payments sphere Macleod's findings may be
regarded as complementing, and to some extent qualifying, those of Polak.
Monetary expansion is still shown as impinging heavily on external
reserves, but the presence of 'saving' in the Keynesian sense also leads to
the retention of some part of the original increment of gold. Polak
actually notices this possibility without explaining it; but I would
suggest that it is relevant to the situation of a developing country.
The extension of the money economy involves the accumulation of cash
balances in the hands of the public: this is an example of the kind
of pure hoarding that features in Macleod's model.

In terms of the Polak model, Macleod's introduction of a non-
bank intermediary, by increasing the velocity of circulation, is equivalent
to reducing the time period required to effect a given loss of external
reserves. But again the difference of velocity assumptions between the
two models make this only a rough equivalence.

It is time now to look more closely at the Macleod model and
especially at its velocity assumptions. One result of this model, under
all the varying conditions in which Macleod makes it perform, is that
there is an accumulation of 'saved' deposits in the hands of income
receivers. In other words the model is a 'true' Keynesian model with
a variable velocity of money. But the explicit financial elements in
this model - the specifying of bank deposits as the form in which
savings end up - demand further analysis of the position. Macleod side-
steps this issue by, first, restricting his analysis to the effects of
a single, once-for-all injection of credit and, secondly, by postulating
that the increment of bank deposits is 'saved', with the implication, on
a strict Keynesian view, that their further consequences for the system
may be ignored. If however we postulate a continuing, or at least a
protracted, phase of credit expansion, and if we take account of the
fact that while some bank deposits end up in savings accounts others may

remain within the transactions circuit as current account deposits,
then Macleod's model appears incomplete. In fact it is arguable that, ·
like the Keynesian multiplier itself, it can only be regarded as a
very short-run account of the matter. In the longer run something
more like the Lutz model may be called for to take account of money-
balance effect. Such a model would tend to be more expansive of income
than the Macleod model, since the increase in money balances would
cause some upward adjustment of expenditures. But of course, this extra
expansiveness would produce a bigger drain of external reserves. The
effect of modifying the Macleod model to account for increased money
balances would in fact be to bring it nearer to the Polak model: velocity
would be maintained at something nearer its original figure and this would
produce the greater loss of gold compared with the outcome under Macleod's
own assumptions.

It is increasingly pertinent to ask just how short we have to
make the time period in order to retain the usefulness of the Keynesian
multiplier as an analytical tool. The Macleod model adds to one's
doubts on this score. It is arguable that once we start talking in
terms of a 'spending multiplier', which admits some investment expenditure
into the propensity to spend, we take still further the process of
dissolving the clear and simple outlines of the original Keynesian con-
ception. But an even bigger step in this direction is taken when we
begin to break down the barriers between 'saving' and spending. It is
only a short step from Macleod to a monetary, as distinct from a savings-
investment, approach to macro-economic problems, and it may be a step
that we shall yet take. Polak based his choice of quantity theory rather
than multiplier assumption on the unsophisticated nature of the monetary
system of developing countries. But in the advanced countries the
increasing efficiency, diversity and ubiquity of financial institutions
is also posing questions for the multiplier analysis. Practically,
this financial development has given rise to flow-of-funds accounting.
Theoretically it may lead us to return to a demand-for-money approach
to macro-economic problems. A rather more complex function than the
old $M = KY$ will be required: perhaps something forged in the Chicago
workshop will fit the bill. When this day arrives Mrs. Lutz's equation
may point the way to its marriage with income-expenditure analysis.

Meanwhile, I would suggest that for the analysis of the
relationship between internal monetary changes and the external balance
of payments, in developing countries, both the Polak and the Macleod
models should be kept in view. With a rising per capita income and an
expanding area of monetary transactions the appropriate assumptions in
regard to monetary developments will lie somewhere between the extreme
hoarding function of Macleod and the absence of hoarding (other than
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It is increasingly pertinent to ask just how short we have to make the time period in order to retain the usefulness of the Keynesian multiplier as an analytical tool. The Macleod model adds to one's doubts on this score. It is arguable that once we start talking in terms of a 'spending multiplier', which admits some investment expenditure into the propensity to spend, we take still further the process of dissolving the clear and simple outlines of the original Keynesian conception. But an even bigger step in this direction is taken when we begin to break down the barriers between 'saving' and spending. It is only a short step from Macleod to a monetary, as distinct from a savings-investment, approach to macro-economic problems, and it may be a step that we shall yet take. Polak based his choice of quantity theory rather than multiplier assumption on the unsophisticated nature of the monetary system of developing countries. But in the advanced countries the increasing efficiency, diversity and ubiquity of financial institutions is also posing questions for the multiplier analysis. Practically, this financial development has given rise to flow-of-funds accounting. Theoretically it may lead us to return to a demand-for-money approach to macro-economic problems. A rather more complex function than the old $M = KY$ will be required: perhaps something forged in the Chicago workshop will fit the bill. When this day arrives Mrs. Lutz's equation may point the way to its marriage with income-expenditure analysis.

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