BALANCE OF PAYMENTS:

MONETARY - OR MONETARIST - APPROACH

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Writing about the balance of payments in 1958, Harry Johnson referred to his analysis as a "payments approach". He emphasised the monetary nature of balance of payments disequilibrium to highlight that this is best treated as a problem of the overall operation of the economy, rather than of some "external sector". In later works, the name "monetary approach" was adopted.

Frenkel and Johnson (1976) specifically state that the approach is not monetarist although it does depend, like Friedman's restated quantity theory, on the existence of an aggregate money demand function as a stable function of a small group of aggregate economic variables.

If, to accept the monetary approach to the balance of payments, it is not necessary to be monetarist, in the minds of some writers it helps. Rhomberg and Heller point to the growing popularity of monetarism in general as one feature explaining the ascendancy of the monetary approach in balance of payments studies.

In a recent paper, Kuska purports to demonstrate that "almost all" of the models in the Keynesian balance of payments literature suffer from internal contradictions and deficiencies. On the other hand, he gives a clean bill of health to models "using the monetary approach" and lists a number of examples.
One model in that list is that presented in Kouri and Porter [1974]. Irrespective of the validity of Kuska's criticisms of Keynesian models, it is the aim of this paper to demonstrate that the Kouri-Porter model, on criteria similar to Kuska's, suffers from deficiencies, and that perhaps it should not even be considered as following the monetary approach to the balance of payments despite the claims of its authors.

1. The Monetary Approach to the Balance of Payments

Both Johnson and Mundell⁶ proposed taking the overall economy as the starting point of analysis. In its simplest form this may be seen as comprising three accounts: goods, capital assets, and money. Excess demand for each of these is met by an international flow, seen respectively as exports/imports of goods, purchase/sale of capital assets including bonds, and changes in international money reserves. A budget constraint requires that the sum of these excess demands for any country is zero irrespective of equilibrium considerations.

The balance of payments, or change in a country's international money reserves, involves the money account. Swoboda [1974] describes this in terms of the balance sheet identity:

\[ R = M - D, \]  

(1)

where \( M \) is the money stock, \( R \) is international reserves, and \( D \) is all other assets of the domestic banking system. Differentiating with respect to time gives the balance of payments (\( \dot{R} \)) identically equal to the change in the money stock (\( \dot{M} \)) less domestic credit creation (\( \dot{D} \)).

The balance of payments is thus seen as a monetary phenomenon which, according to the monetary approach, may best be analysed in such terms. Writing the domestic demand for money as \( L \), excess money demand is \( L - R - D \). If we then assume \( D \) largely controlled by the monetary
authorities and L a stable function of a few aggregate variables we have a simple model in which excess demand for money tends to be eliminated by increases in international reserves:

\[ \dot{M} = L - \dot{b}. \]  

(2)

Using the notation from Mundell [1968], excess demand for goods, which will tend to be met by an excess of imports over exports, is \( E - Y \) where \( E \) is gross expenditure and \( Y \) gross product; \( I - S \), where \( I \) is investment and \( S \) saving, will tend to be met by capital inflow. The balance of payments may be analysed by taking the sum of these two – i.e. the current account plus the capital account. In theory this must reach conclusions identical to those of the monetary approach, which merely suggests that it is more efficient to analyse the balance of payments in terms of the money account.

The basic assumption of the monetary approach, therefore, is that the individual determination of the current and capital account balances may be ignored in favour of the long run equilibrium equation (2) into which must be fed the determinants of the change in money demand and the determinants of the change in domestic credit. The monetary approach assumes these to be a small group of economic aggregates and rejects the view that such an equation can be efficiently analysed only in conjunction with the goods and capital assets markets.

2. From "Monetary" to "Monetarist"

It would be quite feasible to add to equation (2) a Keynesian aggregate money demand function, some assumption about the determination of domestic credit, and such other equations as are necessary to formulate a complete system. Whether such a system would in fact be complete without the inclusion of equations in which would be determined
the current and capital account balances goes beyond the scope of this paper - it is widely held that it would.\textsuperscript{7}

It is also possible, and perhaps more usual in the literature, to imbed equation (2) in a monetarist model in which monetary variables are seen as the dominant influences on the balance of payments. Kouri [1975] for instance describes a fixed exchange rate world in which the reserve currency country determines the world interest rate in the short run and world prices in the long run, while these in turn determine money demands in other countries. Any excess of these demands over domestic credit creation will be met by the balance of payments.

This pattern is seen to vary where there are changes in exchange rates or imperfect substitutability between bonds of different countries but it is apparent that Kouri sees such variations as being relatively unimportant. Real variables, such as exports, imports, direct investment, play an insignificant role; they are assumed to have only liquidity effects which are offset by capital flows.

Strangely, Kouri ignores the wealth effect of current account balance and other real variables. Even in the most extreme form of his system - fixed exchange rates and perfect capital market integration - any variable contributing to domestic wealth has an impact on the money supply not totally offset by capital flows so that the extreme monetarist conclusions do not apply.

The remainder of this paper will consider an adapted version of the Kouri-Porter model aimed at demonstrating that these extreme monetarist conclusions from the model depend on features of the specification of the model which cannot be justified theoretically.
3. The Model

The Kouri-Porter model, first outlined in Kouri and Porter [1974], is based on the portfolio distribution application of Branson [1968]. Wealth is viewed as distributed between three financial assets: money, domestic government bonds, and overseas bonds.\(^8\)

Changes in the money stock \((M)\) come from the balance of payments or from domestic sources. The former comprises the current account balance \((CAB)\), net private capital inflow \((TC)\), and government overseas borrowing \((GOS)\). No attempt is made to model the balance of payments as an aggregate, as is required by the monetary approach as propounded by Johnson. \(CAB\) is assumed exogenous and only the capital account is modelled.

In the original paper, \(TC\) is defined to include both private flows and \(GOS\). There are two reasons for taking these separately here: it is consistent with the rest of the model to treat government borrowing from overseas as exogenous - government domestic borrowing is assumed exogenous; \(GOS\) used to fund the government's budget deficit adds to private financial wealth, while private capital inflow, as an exchange of money for bonds in this model, does not.

Domestic sources of money, abstracting from the private banking system, are government borrowing from the central bank \((GCB)\) and central bank releases of funds from the trading banks' reserve accounts \((-\Delta RA)^9\).

We therefore have:

\[
\Delta M = CAB + TC + GOS + GCB - \Delta RA.
\]

(3)

Where the government does not fund its budget deficit \((CD)\) from \(GOS + GCB\) it must do so by the sale of bonds to the private sector \((-\Delta D)\) so that \(CD = GOS + GCB - \Delta D\) and (3) may be rewritten:

\[
\Delta M = CAB + TC + CD + \Delta D - \Delta RA.
\]

(3a)
Financial wealth ($W$) is distributed between demands for money ($L$), domestic government bonds ($H$), and foreign bonds ($F$), with adjustments made by variations in the endogenous domestic interest rate ($r$). Wealth is an argument in the asset demand functions, together with other exogenous influences, including the overseas interest rate, all summed up here for simplicity in a single variable ($Z$).

Demand functions:

$$L = \ell_r r + \ell_w W + \ell_z Z,$$
$$H = h_r r + h_w W + h_z Z,$$
$$F = f_r r + f_w W + f_z Z,$$

$\ell_r < 0; \ell_w > 0;$ \hspace{1cm} (4)

$h_r, h_w > 0;$ \hspace{1cm} (5)

$f_r < 0; f_w > 0.$ \hspace{1cm} (6)

In flow equilibrium:

$$\Delta L = \Delta M,$$ \hspace{1cm} (7)

$$\Delta H = -\Delta D,$$ \hspace{1cm} (8)

$$\Delta F = -TC.$$ \hspace{1cm} (9)

Substituting (3a) into (7) and summing (7), (8), (9) we find:

$$\Delta W = \Delta L + \Delta H + \Delta F = CAB + CD - \Delta RA$$ \hspace{1cm} (10)

and the money supply equation may be rewritten:

$$\Delta M = TC + \Delta D + \Delta W.$$ \hspace{1cm} (3b)

The wealth constraint also implies:

$$\ell_r + h_r + f_r = 0,$$ \hspace{1cm} (9a)

$$\ell_w + h_w + f_w = 1.$$ \hspace{1cm} (9b)

The system of equations (3b), (4) to (9) comprises seven equations in the six endogenous variables $L, H, F, M, r, TC$. One of
the asset demand equations is superfluous because of the wealth constraint (10) and may be suppressed.

Kouri and Porter derive a reduced form equation for TC in terms of the exogenous variables. This has the advantage of providing "offset coefficients" - i.e. coefficients giving the extent to which the authority's attempts to influence the money stock through \( \Delta D \) or through the monetary components (GOS, GCB) of \( \Delta W \) are offset by private capital flows.

It makes no difference which of the asset demands (2), (3), (4) is suppressed - the reduced form equation will not vary, given the constraints on the coefficients (9).

This should not be confused with the concentration on the money account by the monetary approach to the balance of payments. There the proposition is that the money account may be considered on its own without reference to the goods and capital accounts - the problem of simultaneous determination of variable circumvented by the assumption of a stable money demand function. The Kouri-Porter model assumes partial equilibrium in a sub-system comprising the money and bonds markets, assuming that the goods market may be ignored because of the rate of monetary adjustment to equilibrium. The suppression of an equation here is merely a technical device for purposes of estimation or derivation of a reduced form equation.

To illustrate clearly the operation of the model it is useful to suppress equation (6) so that:

- \( H \) is determined in (8) by the exogenous \( D \),
- \( r \) is then determined in (5) - the bond market,
- TC is then determined in the money demand equation (4),

and the semi-reduced form equations can be derived by substituting (8), (9) into (4), (5) giving:
which is a recursive system in which TC depends on but does not influence Δr.\textsuperscript{11}

The reduced form equation for TC is then:

\[ TC = \frac{f_r}{h_r} \Delta D + \frac{f_r h_w - h_r f_r}{h_r} \Delta W + \frac{f_r h_z - h_r f_z}{h_r} \Delta Z. \] (12)

By the assumptions on the coefficient signs in (4), (5), (6) the reduced form coefficients of ΔD and ΔW in (12) are negative. The extent of the offset of monetary policy through open market operations (ΔD) will differ from that through government borrowing which increases wealth (GOS + GCB), the former being greater if

\[ \frac{f_{rw}}{f_{w}} > \frac{f_{rw}}{f_{w}}. \]

4. Implications of the Model

The model concentrates entirely on the markets for money and bonds and from this derives its conclusions that capital inflow is determined by monetary rather than real variables. Kuska [1978], in condemning Keynesian balance of payments models, investigated the implications of such models for those suppressed markets whose demand functions are not specified. This example is followed here.

Equation (10) is a definitional identity between exogenous variables

\[ \Delta W = CAB + CD - \Delta RA \] (10)

and so must hold even where the system is not in equilibrium. Using
(3a), the right hand side of (10) is identically equal to \((\Delta M - TC - AD)\); by definition \(\Delta W = \Delta L + \Delta H + \Delta F\). We therefore have, irrespective of whether the system is in equilibrium:

\[
\Delta L + \Delta H + \Delta F = \Delta M - TC - AD.
\]

Because (3a) is a definitional identity the equality between the sum of supply and demand flow variables in (13) also holds for the stock variables:

\[
L + H + F = M - R - D \quad \text{(where } TC = \Delta R) \tag{14}
\]

or

\[
(L-M) + (H+D) + (F+R) = 0,
\]

implying that the sum of the excess demands in the domestic markets for money, domestic government bonds and overseas bonds is zero.

We consider that the remaining market in the economy is a market for goods. Given (14), the budget constraint would determine that excess demand for goods is zero – i.e. that the market for goods is always in equilibrium and cannot be influenced in any way by excess demands for money or bonds.

The fault lies in the restriction of wealth to financial wealth. In order to model capital inflow in terms essentially of monetary variables (open market operations, financial wealth, foreign interest rates) it was necessary to deny substitution between wealth in money and bonds and wealth in goods. The total separation of the financial and real sectors of the economy must be overcome by redefining the wealth variable.

5. Extension of the Model

Private wealth in the form of goods is assumed to comprise capital goods, unsold inventories, and durable goods owned by consumers. Demand for such goods \((K)\) is defined in real terms and net of
depreciation; the price of such goods (P) appears in all the asset
demand equations and is endogenous; supply of such goods (K_s) is
exogenous, decisions leading to changes in K_s being made in past time
periods.

The asset demands are:

\[ L = \lambda_r r + \lambda_p P + \lambda_w W + \lambda_z Z, \quad \lambda_r < 0; \lambda_p, \lambda_w > 0; \]  
\[ (15) \]

\[ H = h_r r + h_p P + h_w W + h_z Z, \quad h_r, h_p, h_w > 0; \]  
\[ (16) \]

\[ F = f_r r + f_p P + f_w W + f_z Z, \quad f_r < 0; f_p, f_w > 0; \]  
\[ (17) \]

\[ K = k_r r + k_p P + k_w W + k_z Z, \quad k_r, k_p, k_w > 0. \]  
\[ (18) \]

Equations (3a), (7), (8), (9) still hold. Equilibrium in the
goods market requires:

\[ K = K_s. \]  
\[ (19) \]

Change in nominal wealth is now:

\[ \Delta W = \Delta L + \Delta H + \Delta F + \Delta (PK) \]
\[ = CAB + CD - \Delta RA + \Delta (PK_s) \]  
\[ (20) \]

from which the money supply equation becomes:

\[ \Delta M = TC + \Delta D + \Delta W - \Delta (PK_s). \]  
\[ (21) \]

Writing the exogenous component of nominal wealth as \( W_x \)
such that:

\[ \Delta W_x = \Delta W - \Delta (PK_s) = CAB + CD - \Delta RA, \]  
\[ (22) \]

we have:

\[ \Delta M = TC + \Delta D + \Delta W_x. \]  
\[ (21a) \]
The system comprises the ten equations (7), (8), (9), (15) to (19), (21a), (22) in the endogenous variables $L$, $H$, $F$, $K$, $M$, $TC$, $r$, $P$, $W$. Again one of the demand equations is superfluous because of the wealth constraint.

Solving out the identities we have the following three equation system with $TC$ determined by excess money demand given $r$ and $P$, while $r$ and $P$ are determined simultaneously in the bonds and goods markets uninfluenced by $TC$:

\[ TC - r \Delta r - (p + w K_s) \Delta P = -\Delta D - (1 - w) \Delta W_x + w \Delta K_s + z \Delta Z, \]  
\[ -h \Delta r - (p + h K_s) \Delta P = \Delta D + h \Delta W_x + h \Delta K_s + z \Delta Z, \]  
\[ -k \Delta r - (p + k K_s) \Delta P = k \Delta W_x + k \Delta K_s + k \Delta Z, \]  

($P_{-1}$ denotes $P$ lagged one time period).

Because of the inclusion of both real and monetary variables with an endogenous price variable non-linearities have now arisen making estimation more difficult.

We now have a system in which capital flows are induced by changes in the stock and price level of goods as well as by monetary influences.

The wealth constraint now implies that the sum of excess demands for money, bonds, and unconsumed goods is zero, and thus that the excess demand for consumed goods is zero which follows also from the definition of $K$ to include unsold inventories.

The reduced form equation for $TC$ will have as right hand variables $\Delta D$, $\Delta K_s$, $\Delta W$ and $\Delta Z$. The coefficient of $\Delta K_s$, given the assumptions of coefficient signs in (15) to (18), will be positive implying an induced money capital inflow as $K_s$ rises. Murray [1978], using Australian data and real new capital expenditure as the variable (in a model derived differently from the above) shows this to
be the most important determinant of capital flows except for a period of speculation on revaluation.

6. Conclusions

To the advocates of the monetary approach, the Balance of Payments is a monetary phenomenon best studied through the money account rather than as the sum of the goods and capital accounts.

To Kouri and Porter, the capital account is a monetary phenomenon to be studied as a component of a financial wealth distribution mechanism. This, unlike the monetary approach to the Balance of Payments, divorces the money and bonds markets from the goods market and leads to irrational conclusions.

Extension of the model to include nominal wealth in goods corrects this irrationality at the expense of some of the simplicity of the model.

None of the above, of course, considers the question of whether capital inflow is in fact best modelled independently of the current account, investment decisions, or other aspects of the macro-economy.
Footnotes

1 Johnson [1958]; reprinted in Frenkel and Johnson [1976]. See the latter, p. 49.


4 Rhomberg and Heller [1977], pp. 2-3.

5 Kuska [1978].

6 Mundell [1968]; a relevant extract is reprinted as chapter three of Frenkel and Johnson [1976].

7 Claassen [1976] includes an interesting application of Keynes' motives for holding cash to the demand for international reserves.

8 In the original paper there is also included overseas demand for domestic government bonds; this demand is dropped here in the interests of simpler exposition with no effect on the conclusions of the analysis.

9 Here and elsewhere Δ implies first difference.

10 In Kouri and Porter [1974], CD - ΔRA appears to be subsumed into ΔD so that ΔW = CAB.

11 Inclusion of a foreign demand for domestic government bonds (H*) as in Kouri and Porter results in Δr and ΔH* simultaneously determined and TC dependent on but not influencing Δr and ΔH*.
References


