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THE DEMAND FOR MONEY

H. Visser

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by

H. Visser
I. Satisfy and Inexpensive

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movements in GNP is thought to account for this phenomenon, with possibly an increased interest-elasticity of money demand at work as well. The cyclical movements call for further comment. Stone and Thornton (1987 p. 17) argue that an increase in money supply growth will increase nominal income growth, after a lag. During the transition period, income velocity will have declined. This need not, however, affect the fit of the money demand function, for during the transition period the rate of interest will be relatively low, which could account for the relatively high money holdings relative to GNP. Only if interest rates failed to fall sufficiently to explain the volume of money held, would excessive money growth provide a separate explanation of velocity changes.

This brings us to another possible explanation, with interesting theoretical implications. It is conceivable that the Walrasian money market may be out of equilibrium at any one moment, or, alternatively, that there may be a temporary equilibrium not in consonance with the actual values of the arguments in the money demand function, due to buffer stocks. Also, domestic demand for foreign money may impinge on the demand for domestic money, i.e., currency substitution may occur.

Before turning our attention to these explanations of empirically found instability of the money demand functions, we first discuss some problems associated with estimating money demand functions.

2. The money demand function

2.1 Inclusion of the lagged dependent variable: interpretations

In empirical research, money demand functions have usually been estimated by regressing real cash balances on the rate of interest and on gross national product or a related concept. The rate of interest, in most instances a short rate, serves to represent the opportunity cost of holding money whilst GNP is a proxy for the 'work' that (narrow) money has to perform as a medium of exchange. Alternatively, if the demand for broad money is estimated, GNP may serve as a proxy for wealth, as wealth holders are assumed to hold some fraction of their wealth in the form of liquid assets. It turned out that the addition of a lagged dependent variable gave a significant improvement of the goodness-of-fit of the equation. The 'standard' money demand function therefore looked like this:

\[ m_d \times = a_0 + a_1 i_t + a_2 y_t + a_3 m_d_{t-1} \]  

where \( m_d = M_d/P \) and \( M_d \) = volume of money demanded, \( P \) = general price level, \( i \) = rate of interest and \( y \) = real GNP.

If the equation is written in logarithms, the coefficients represent elasticities.

From a theoretical point of view, there are some problems with this money demand function. First of all, the variable measured is not money demand, but the volume of money actually existing, i.e., the money supply. Equating money demand with money supply implies the assumption of swift adjustment after a shock in either money demand or money supply. The addition of the lagged dependent variable \( m_d_{t-1} \) serves to capture a lagged adjustment of money demand to its long-term equilibrium value.
where \( \text{md}^* = \text{long-term money demand} \). Eq. (1) follows from eq. (2) by assuming a partial adjustment mechanism:

\[
\text{md}_t = \text{md}_{t-1} - (1 - \theta) \text{md}_{t-1}
\]

so that

\[
\text{md}_t = \theta \text{md}^*_t + (1 - \theta) \text{md}_{t-1}
\]

from which eq. (1) follows after relabelling \( \theta b_0 = a_0 \), \( \theta b_1 = a_1 \), \( \theta b_2 = a_2 \) and \( (1 - \theta) = a_3 \).

The empirical data fed into money demand functions generally are calculated on a quarterly basis, and lags in adjustment running to multiples of a quarter are highly questionable in financial markets, as these are characterised by low transactions costs (Goodfriend's, 1985 p. 210, argument that portfolio adjustment costs cannot account for a gradual adjustment because those costs are largely fixed and adjustment would be made at one stroke seems flawed, however: in an economy with a large number of agents, aggregate adjustment can well be spread over time as economic agents adjust at different points in time). Some people argue that adjustments are indeed slow and that money balances serve as buffers. Their views will be taken up in section 4. First we mention Goodfriend's (1985) solution. Goodfriend assumes that income (and possibly interest) is generated by a first-order autoregressive process. Money demand tends to depend more on expected variables than on actually realised variables. If money demand is regressed on realised rather than expected variables, money demand will be under(over-)predicted when expected income is above (below) its mean value. As income is positively autocorrelated, lagged money, Goodfriend says, will tend to be above (below) its mean value when income is above (below) its mean; \( a_2 \) is biased downward as an estimate of \( b_2 \). Lagged money therefore enters the money demand function with a positive coefficient, offsetting the under(over)prediction of money demand when income is above (below) its mean value. This implies that the coefficients in the money demand function may change not only as a result of change in the 'true' money demand function (money demand as a function of expected variables), but also because of a shift in the income (and/or interest) generating process. Goodfriend (1985 p. 223) suggests that such a shift might result from a change in monetary policy.

In the case of broad money, the relevant scale variable is not so much current income as permanent income, as a proxy for wealth. As in Goodfriend's approach, current income is not the 'true' scale variable. Replacement of current income by permanent income in the money demand equation might remove a large part of the discrepancy between short-term and long-term money demand (cf Laidler 1985 p. 244). An unexpectedly high current income would not at first affect broad money demand, but if it continues, permanent income and therefore the volume of money demanded will increase. It may be noted that the inclusion of permanent income in the money demand function leads to a function very similar to eq. (4). Let permanent income be generated through a partial adjustment mechanism:

\[
y^p_t = y^p_{t-1} + \phi(y_t - y^p_{t-1})
\]
Let the money demand function be similar to eq. (2), with $y_t$ replaced by $y^p_t$, so that

$$md_t = b_0 + b_1i_t + b_2y^p_t$$  \hspace{1cm} (6)

Substitution of eq. (5) in eq. (6) gives

$$md_t = b_0 + b_1i_t + b_2(1 - \phi)y^p_{t-1} + b_2\phi y_t$$  \hspace{1cm} (7)

and substitution of $y^p_{t-1}$ with the help of eq. (6) finally gives

$$md_t = b_0\phi + b_1i_t + b_2\phi y_t - b_1(1 - \phi)i_{t-1} + (1 - \phi)md_{t-1}$$ \hspace{1cm} (8)

which, but for the inclusion of the lagged interest rate, is identical to eq. (4). Expectations formation through partial adjustment mechanisms could therefore also account for the good performance of lagged money in the money demand function (as emphasised by Kohli 1987, though Laidler 1982 p. 52 is less sanguine on empirical grounds). If expectations of income are generated by a similar process as described in eq. (5), eq. (8) could be valid for the demand for narrow money as well.

All this may be relevant to cases where the arguments in the money demand function change and the money supply adjusts passively to money demand (or as Laidler 1982, 1984, 1985 sees it, on the level of individual experiments), but not where money market equilibrium is disturbed by a money supply shock or the money supply does not fully adjust to changes in demand. In principle the interest rate could ensure equilibrium, but that might imply frequent and wide fluctuations in the interest rate, which may happen on the call money market, but not on the market for time and savings deposits, which is relevant in this respect. Laidler (1984 pp. 24-25) suggests that the rate of interest first of all serves to equilibrate the market for debt instruments, which it could not do if called upon to neutralise each and every manifestation of excess demand or supply on the (Walrasian) money market, but this argument neglects the fact that there is a whole spectrum of interest rates or, alternatively, presupposes a fixed structure of interest rates.

2.2 Notes on the arguments in the money demand function

Apart from the form and the interpretation of the money demand function, there are also question marks over the individual arguments in the function. First, if the money demand function is written out in real variables, it is implicitly assumed that money demand adjusts without delay (or rather with a short delay, given that quarterly data are used) to price level changes. Quintyn (1986 p. 280) found that lags actually do occur, and that these tended to get longer over the 1970s.

Next, the use of a rate of interest or a few rates of interest to represent the opportunity cost of holding money is in itself not controversial, but the usual assumption that narrow money carries no or at the most a very low rate of interest seems mistaken. If interest is paid on narrow money, the opportunity cost of holding money should not be measured by the rate of interest on money substitutes, but by the difference between the two rates. As banks offer payment facilities at no or a low cost to deposit holders, demand deposits earn an implicit rate of interest. For Belgium and the Netherlands, these implicit interest payments have been estimated to amount to 7 to 8 per cent.
As the interest rate on money substitutes, such as savings deposits, is higher and seems to fluctuate more widely than the interest differential, it might be thought that interest elasticities calculated on the basis of the level of savings interest rates would be lower than those based on the interest differential. The opposite proved to be the case, however, in runs performed by Barro and Santomero (1972) for the United States over the period 1950 - 1968 (the results cannot be called conclusive, given that annual observations were used and that the income elasticities differed widely).

A related problem is that money is not only a substitute for other financial assets, but also for goods. This would imply that, especially in times of high inflation, the (expected) rate of inflation should be included as an argument in the money demand function as well. This is because the higher the rate of inflation, the less attractive holding money is vis-à-vis holding physical goods. But this poses difficulties for empirical research, because of collinearity between the rate of interest and the expected inflation rate.

When estimating the demand for broad money, one has to face the problem that the dependent variable is built up of disparate elements, some of which carry explicit interest while others do not. The demand for some elements will positively react to interest rate changes, others negatively. Also, the demand for non-interest-bearing money is likely to be more closely linked to the level of economic activity than the demand for interest-bearing components, which are held more for savings than for transactions purposes. In its calculations of broad money or liquidity (M2), The Netherlands Bank therefore include short-term time and savings deposits with a correction for the velocity of circulation or speed of turnover (i.e., the relation between total withdrawals and average balances over a year). The lower the velocity (between an upper bound of 2 and a lower bound of 0.5), the lower the fraction included in M2. In this way, the difference in degree of liquidity or 'moneyness' is taken account of. On a more general level, aggregation over imperfect substitutes is fraught with difficulties. Attempts have recently been made to take account of the differing degrees of liquidity of the various components of the broad money supply through the construction of so-called Divisia indexes. The degree of liquidity is measured by the difference between the interest yield on a high-yielding illiquid asset and the interest yield of the monetary asset in question, representing the opportunity cost of holding that asset. The various components of the monetary aggregate are weighted by this difference to arrive at the Divisia money quantity index. The idea behind this procedure is that the interest differential which the holder of the monetary asset is willing to forego represents the utility of that asset's liquidity to that holder. It is the price paid for liquidity. Changes in the Divisia index are calculated by summing the percentage changes of the individual components of the monetary aggregate weighted by their share in the aggregate. At higher levels of aggregation Divisia indexes tend to give a better statistical fit than unweighted aggregates (see Porter and Offenbacher 1984 and Barnett, Offenbacher and Spindt 1984 for the USA, 1959 - 1982), but not dramatically so. One problem is that if interest rates are regulated, interest rate differentials give a distorted measure of the liquidity of a monetary asset. Besides, there is still the implicit interest on demand deposits in the form of the payments mechanism which can be used virtually free of charge.

Finally, gross national product is a poor measure of the 'work' that money as a medium of exchange has to perform. The same goes for related
concepts, such as gross domestic final demand, equalling GNP minus inventory adjustments and net exports. The idea underlying this concept is that spending on goods drawn from inventories or on imports calls for transaction balances without affecting GNP directly (substitution of GNP by gross domestic final demand does not seem to make much of a difference in outcome, cf Stone and Thornton 1987 p. 7). Money demand has also been related to gross national expenditure, made up of GNP plus imports minus exports, on the ground that people may hold domestic money to purchase imports, especially in the United States, but also in other countries (Bomberger and Makinen 1980 report a better fit, as measured by $R^2$, with this concept for 12 out of 16 countries studied for the two decades ending in 1975). Such concepts do not represent the total money value of transactions, even abstracting from the phenomenon of the underground economy. Variations in the degree of vertical integration in industries or in the volume of, e.g., financial transactions, given GNP, may therefore change the volume of money demanded independent of changes in interest rates and GNP. This means that the parameters of the money demand function may shift, i.e., it may cause instability in the money demand function. It may be noted that this cause of instability is not identical with the one to be discussed in the next section, which concerns the technology of the payments mechanism. It will be clear that parameter instability in conventional money demand functions should come as no surprise. Instability over longer periods is of course to be expected, as the underlying relationships change continuously. Even if they did not but the true money demand function were non-linear, linear estimates would show parameter instability (see on the econometrics of parameter instability Kool 1989). For policy purposes, long-term instability poses no problems, but short-term instability certainly does. In this connection, Wenninger (1988) suggests that the apparent stability of the 1950s to about 1973 may have been rather unique and is not likely to be repeated.

3. Financial innovations and institutional changes

Money as a medium of exchange helps to facilitate transactions involving goods, services and financial assets. Payments are not only made by handing over currency but also by transferring deposits held with financial institutions. As the technology of monitoring those deposits and of effectuating those transfers evolves over time, the quantity of (narrow) money demanded for given values of determinants such as income (as a proxy for the volume of transactions) and interest is likely to exhibit a long-term tendency to fall. Transactions costs diminish.

It has been suggested that a kind of ratchet effect is at work. When interest rates are high, it pays to spend time and effort on the development of financial innovations. Cases in point are concentration accounts, to which funds deposited in other accounts are automatically transferred at the end of every working day, zero balance accounts, which allows a firm to do without transaction balances at banks, yet giving them the opportunity to write cheques, and automated teller machines. Having been introduced, these innovations are not reversed when interest rates fall again, because the costs involved are mostly set-up costs, such as the costs of putting in computer hardware and software (Dotsey 1984). This could be one way of explaining a shift over time of the parameters of the money demand function. Not only the constant is likely to have fallen in value, it is also to be expected that the interest elasticity of narrow money demand (exclusive of interest-bearing deposits) has increased as a result of financial
In the 1960-1975 period, there was a substantial increase in foreign exchange reserves and a corresponding reduction in the international monetary system's reliance on gold. This was due to the expansion of the free float of currencies and the move towards floating exchange rates. The Bretton Woods system, which had been the cornerstone of the international monetary system since its establishment in 1944, was beginning to show signs of strain. The system was unable to cope with the growing volume of transactions and the increased demand for foreign exchange. The shortage of dollars led to a relaxation of the exchange control regulations, which had been in place since the end of World War II. This led to an increase in the volume of transactions and the introduction of demand deposits, which were able to meet the increased demand for money.

However, the relaxation of exchange controls also led to a reduction in international liquidity. The Bretton Woods system had been designed to provide a stable and predictable system of exchange rates, but the move towards floating rates and the increase in the volume of transactions led to greater volatility. This was especially true in the case of the British pound, which was pegged to the US dollar and was subject to speculative attacks. The pound eventually floated in 1972, and the introduction of demand deposits and the relaxation of exchange controls were unable to prevent the crisis.

In conclusion, the events of 1970-1971 were a significant turning point in the history of international monetary relations. The crisis was a result of the inability of the Bretton Woods system to cope with the growing volume of transactions and the increased demand for foreign exchange. The crisis led to a relaxation of exchange controls and the introduction of demand deposits, but it also showed the limitations of the Bretton Woods system and the need for a new international monetary order.
mation needed for making decisions. This means, as Knoester (1980 pp. 19-22, 1984) argued, that banks and the public may absorb a disequilibrium between money demand and money supply through non-price quantity adjustments, i.e., through the use of their money holdings as buffers (in the case of banks, whose role seems only to have been mentioned by Knoester, these adjustments take place in the form of changes in the volume of free reserves or of net foreign assets). This is not an altogether new idea. Back in 1923 Keynes, when explaining the quantity theory, noted that moderate changes in base money may for a time fail to work out in higher prices, because the recipients of additional cash may initially prefer not to spend it (Keynes 1971 p. 66).

As noted above, it may be objected that transaction and information costs in the financial sector are relatively low and can hardly explain the holding of buffer stocks. A portfolio of financial assets can quickly be rearranged and interest rate changes should bring money demand back to the level of money supply. First, however, interest rates may, as we have seen, after all not be so very flexible in the short run. Second, with portfolios made up of a wider range of assets, including goods and real estate, a monetary disturbance will directly influence the (stock) demand for goods as agents try to restore portfolio balance (cf. Patinkin 1972). Insofar as money is net wealth, the demand for other assets will increase even at unchanged prices, by dint of the real-balance effect. Net wealth or not, people will attempt to rearrange their portfolios. If prices are flexible, these adjustments can take place at a rapid pace through price adjustments that in their turn provoke quantity adjustments. If prices are sticky, these substitution effects cannot occur, but there may be non-price quantity adjustments instead through what Knoester calls 'spill-over' effects (Laidler, 1982 p. 46 and 1985 p. 247, rather confusingly tends to comprise these effects under the heading of 'wealth effects', though they may happen with inside money as well). Such adjustments may well be spread over a number of months or even quarters. The excess balances (which may be negative) over the long-term desired money stock, i.e. the buffer stocks, are willingly held, in a sense, because economic agents plan a gradual adjustment. This might explain the apparent instability resulting from money supply shocks and the lags found in empirical money demand functions (cf Cuthbertson and Taylor 1987 p. 103).

It has been noted by several authors (such as Davidson and Ireland 1987) that individual economic agents hold money precisely because it acts as a buffer. Receipts and expenditures cannot be exactly planned or forecast, or are very difficult, time-consuming and therefore expensive to do so, and money holdings serve to accommodate discrepancies between the two. Agents do not strive for a certain exact value of their money holdings, as presupposed in the deterministic money demand models such as the Baumol/Tobin inventory theoretic models. Instead, they wish to keep their money holdings within a band and will monitor these only at intervals, not continuously (see for a model incorporating stochastic cash flows and upper and lower levels of cash balances the pioneering work of Miller and Orr, e.g. Miller and Orr 1968). Of course, temporarily low money holdings by one agent will normally be balanced to a a large extent by temporarily high holdings by another agent, and the conventional aggregate money demand function may be quite stable. A shock, either real or monetary, may however lead to relatively low or high balances for most of the agents. Only when the upper or lower limits of their individual money holding functions are reached will agents adjust their spending and portfolio allocation.
plans. This provides for a lag in money demand conceptionally different from the one discussed in the preceding paragraph, because it concerns the time needed for adjusting plans rather than the time needed for executing them (in this vein Goodhart 1984 p. 257). All this means that on an aggregate level a money supply shock or a real shock will first affect income velocity before action is taken to adjust spending and portfolio allocation. The idea of upper and lower thresholds is in fact a variant of a transactions cost approach. Monitoring inflows and outflows of cash costs time and the results are not worth the effort of continuous monitoring.

A point in favour of this approach is that it can explain the empirical finding that the short-term income elasticity of money is quite low, say around 0.2 for the U.S., whilst long-term elasticities tend to be rather nearer unity (cf Akerlof and Milbourne 1980). Baumol-Tobin-type deterministic inventory-theoretic models predict income elasticities in the 0.5 - 1 range (see Visser 1974 pp. 75-79). In the context of such models, numerical examples show that the gains to be reaped by following strictly the optimisation rule are negligible, at least for households (Akerlof and Milbourne 1980). Cheaper methods of cash management may diminish or already have diminished the importance of buffer stocks as explained in this approach, though.

The idea of a temporary quasi-equilibrium in the monetary sphere is also used by Hines to resolve the conflict between the liquidity preference and loanable fund theories of interest rate determination (Hines 1971, note that Laidler is prepared to drop the liquidity preference theory). In Hines's analysis, goods suppliers who sell an unexpectedly high number of goods during a period, may use the concomitant unexpec-tedly high volume of incoming cash either to reduce outstanding debt or to hoard it in anticipation of increased expenditure (e.g., to restore inventories) during the next period. Instead of labelling this situation a quasi-equilibrium, one may also see it as an equilibrium situation, with planned expenditure one of the arguments in the money demand function, i.e., an incorporation of Keynes's finance motive in the money demand function (cf. Keynes 1937). In this solution there are no discrepancies between short-term and long-term money demand functions and no buffer stocks proper. Instead, money demand is related to the planned values of the arguments in the demand function (which is akin to some of the interpretations of the money demand functions discussed in section 2.1).

A related idea is Cuthbertson and Taylor's notion of a forward-look-ing buffer stock model (1987 p. 118). They note that a change in the money supply may lead to a revision of expected income and price levels. If then expected values of these variables determine the money demand, demand is swiftly adjusted to supply, at least to a great extent. Again, there are no buffer stocks proper, because there is no significant difference between money supply and (long-term) money demand to be explained.

Another way of introducing buffer stocks, suggested by Kohli (1987 p. 194), is to make the demand for money a function of wealth. This will of course have more relevance for broad money than for narrow money. Wealth may fluctuate and a distinction between permanent and transitory wealth can be made. If transitory wealth is held to a large degree in the form of (broad) money, then a money demand function which does not include transitory wealth may well be unstable. Money acts as a buffer because it absorbs transitory wealth. No statistical support has been found for this idea, though (Kohli 1987 p. 195).

The relevance of the idea of buffer stocks, or quasi-equilibrium, or temporary equilibrium, for the money demand function is that instab-
lity in money demand, found in econometric research, need not really reflect unstable money demand (cf. Mahajan 1980). Instead, it may result from time-consuming adjustment processes. This may be taken to mean that single-equation models cannot capture the transmission process of monetary impulses (cf. Laidler 1984 p. 29). The empirical evidence is inconclusive. Bordo, Choudri and Schwartz (1987) found results for Canada that were not inconsistent with the idea of narrow money acting as a buffer stock, but Kohli's extensive research, using several forms of the money demand function, failed to find any support for a buffer function of money (Kohli 1987).

5. Currency substitution

The other explanation of the apparent instability of the money demand function mentioned above is currency substitution. This idea, preached with unremitting zeal by R.I. McKinnon, implies instability in the demand for domestic currency, as foreign currency may act as a substitute for domestic currency in economic agents' portfolios (e.g., McKinnon 1979 Ch. 10, 1982, 1984). Currency substitution may either be direct or indirect. Direct currency substitution occurs when economic agents, e.g., expect a depreciation of their home currency and shift into foreign currency. McKinnon does not think this kind of currency substitution to be dominant, and empirical research does indeed give no reason to attach much weight to it for developed nations (cf., e.g., Lane, Radcliffe and Willett 1984, Batten and Hafer 1984, Batten and Hafer 1985). In countries suffering from rampant inflation, foreign currencies may of course replace domestic currency to an appreciable extent. It should be noted that direct currency substitution would hardly create instability in the money demand function if the definition of the money stock included foreign-currency-denominated deposits held in domestic banks, as in the Dutch definition of broad money.

McKinnon's argument hinges on indirect currency substitution. This takes place through the capital market. His reasoning is as follows. Assume that at a certain moment in time economic agents revise their expectations of the return on foreign bonds upward, e.g., because they expect the home currency to depreciate. They wish to sell domestic bonds and to buy foreign bonds, which causes an upward pressure on the domestic interest rate and, perhaps, a downward one on the foreign interest rates. With a given money demand function and, in a floating-rate system, a given money-supply, interest rates cannot move. The increased demand for foreign bonds then works out in a rise in the exchange rate, to a level where an expected future fall compensates the relative fall in the attractiveness of domestic bonds. In the rest of the world the money supply has risen and is again willingly held, at a reduced rate of interest. With fixed exchange rates, capital exports will occur. The domestic money supply falls and the foreign money supply increases, until foreign and domestic interest rates differ by an amount expressing the relative attractiveness of foreign and domestic bonds to investors. McKinnon's message is that exchange rates should be held constant, because with flexible exchange rates a depreciation of a country's currency is likely to provoke inflation. He further assumes that the world money demand function is stable in the sense that a stabilisation of world money supply growth results in a stabilisation of the world rate of inflation. In order to stabilise world money growth, the leading industrial nations, the United States, Japan and the Federal Republic of Germany, should act together. They should, in particular, coordinate their domestic credit expansion.
Liquidity inflows or outflows through the balance of payments should, moreover, not be sterilised. If one country sterilised, the world money supply would be affected. This is what happens in a key-currency system where international reserves are held in the form of interest-bearing debt of the key-currency country. U.S. private sector balance-of-payments deficits, e.g., first leads to dollar payments by American residents into accounts held by (the banks of) non-residents. Subsequently, those dollars are often used to buy American debt from American residents, resulting in return payments into the bank accounts held by those American residents. The net result is an unchanged American money supply, whilst the non-American money supply has risen (because the non-American private sector will have sold the dollars it received to domestic banks against domestic currency; it is those banks who buy American debt). If both countries sterilise, portfolio balance within a country might be precluded at the given rate of exchange, resulting in a continuous capital flow (see on sterilisation and the money supply in a two-country model De Grauwe 1983). Depletion of foreign-exchange reserves and exhaustion of international credit may then put an end to stable exchange rates, and to a stable price level.

Dornbusch (1984 p. 9, 1987 p. 16) argues that, if investors increase their preference for foreign bonds, it is the supply of foreign bonds that should be adjusted, not the supply of money. Sterilised intervention means that the monetary authorities sell foreign exchange and buy domestic debt. Investors follow their wishes to substitute foreign for domestic debt and the domestic money supply remains unchanged. If money demand is a function of the rate of interest but not of the composition of the portfolio and furthermore independent of exchange rate expectations, as in the case of direct currency substitution, the rate of interest will remain unchanged as well. Against this, McKinnon (1984 p. 33) maintains that a wish on the part of investors to create or change an interest differential between countries should not be frustrated. With free capital movements, there would be no end to intervention and sterilisation. Attempts to stabilise the domestic money supply are bound to fail in the face of massive capital movements and serve no useful purpose, to McKinnon's eyes. Better to let domestic money supplies change, so that the interest rate differentials sought by investors can materialise. There is no reason to prevent exchange rate expectations or (other) risk differentials being expressed in interest rates.

McKinnon's proposal is intriguing, but one wonders if the relationships stressed by him are crucial enough to make the system work in practice in the way envisaged by him. For one thing, it is doubtful if one can meaningfully speak of a world money demand function and, if so, whether it is as stable as McKinnon asserts (Spinelli 1983). For another, interest rate differentials between countries do not simply seem to reflect expected short-term exchange-rate movements (Goldstein and Haynes 1984). Furthermore, McKinnon somewhat off-handedly assumes that capital flows will accommodate any trade or current account imbalance in a fixed-rate system without any problem. Be that as it may, the empirical evidence thus far does not corroborate McKinnon's explanation of money demand instability. But his attempt to spell out the preconditions for exchange-rate stability must be applauded.
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