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MONEY, CREDIT AND EURO-DOLLARS  
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Two interesting papers<sup>1/</sup> at this session treat different aspects of the Euro-dollar market. Ronald McKinnon describes some of the services performed by the market and distinguishes between money and credit. The distinction is elementary, but important because it is often neglected. Neglect has given rise to incorrect inferences about the effect of the Euro-dollar market on inflation, as McKinnon notes. Dale Henderson and Douglas Waldo analyze the effect of putting reserve requirements on Euro-dollars. They show that, in a model with a single rate of interest and fixed exchange rates, reserve requirements on Euro-dollars reduce the variance of the money stock -- demand deposits and currency -- around its target value. With fluctuating exchange rates, the result is ambiguous. One point should be emphasized, but isn't; the effect of reserve requirements on Euro-dollars depends on monetary and other institutional arrangements and on assumptions about the new substitutes that will develop in response to the change. McKinnon points out that taxation of interest payments, trade liberalization and other arrangements cannot be neglected.

Intermediation <sup>2/</sup>

Intermediation produces differences between money, defined as currency and demand deposits, and bank credit, defined as the earnings assets of all banks. To show the way in which Euro-dollars affect bank credit and money, I start from the consolidated balance sheet. Let  $R$  be bank reserves;  $E$  be bank earning assets (credit) and let  $D$  and  $T$  be demand and time deposits respectively. Then

$$E = D + T - R$$

(1)

is the consolidated balance sheet for the banks, including as banks all issuers of deposits subject to check. If we add and subtract currency, C, we have

$$E = (C+D) + T - (R+C) \quad (2)$$

The sum C+D is money; the sum R+C is the monetary base. The growth of any type of time deposits -- intermediation -- increases credit (E) relative to money at a given value of the base. T includes all time deposits, Euro-market and domestic, on the banks' balance sheets.

A shift from demand deposits to time deposits reduces money but leaves credit unchanged, if there are no further effects of the shift. Lower reserve requirements for time than for demand deposits imply that the shift increases time deposits relative to demand deposits; credit rises relative to money. The reason for the change is the difference in reserve requirements. With no reserve requirements on Euro-dollar deposits and reserve requirements on domestic deposits, the shift from one to the other releases excess reserves and permits money to expand or forces contraction. A central bank can, if it chooses to do so, control the base and prevent the entire change in money or credit, but not both.

The example shows that conclusions about the effects of intermediation depend on regulations and on policies. If, we extend the analysis to show explicitly the many types of time deposits -- passbook accounts, certificates of deposit and Euro-dollars -- equation (2) becomes larger, but the same principle applies. Regulation of interest rates, differences in reserve requirements and other regulated costs are a principal reason that changes in the public's desired mix of financial assets change money and credit by different amounts. <sup>3/</sup>

With fluctuating exchange rates, countries can control the base if they choose to do so. There need be no effect of intermediation on the base. With fixed exchange rates, shifts between Euro-dollars and domestic certificates of deposit can change the distribution of international reserves and the monetary base.

I see no problem of defining credit and the domestic money stock in the presence or absence of Euro-dollars. Banks may choose not to consolidate all of the liabilities and assets of overseas branches on their balance sheet. If this is a general practice, banks' total assets and liabilities are understated, but money, defined as currency and demand deposits of domestic residents, is affected only if offshore or Euro-banks issue deposits, subject to check, denominated in domestic currency units. McKinnon and others assure us that this is not commonly done.

In the absence of regulation and controls on interest payments on deposits and required reserves, banks would offer rates related to the real services rendered by particular deposits and the cost of providing those services. Term to maturity, or expected holding periods, would surely be one of the features that affect nominal yields on deposits. In the absence of restrictions on interest payments and other regulations, banks have an incentive to alter rates paid in response to market rates; interest rate changes would become more frequent and portfolio changes less frequent. Those who want deposits available on demand -- a real service -- would sacrifice interest payments. Currency and demand deposits of domestic residents would be clear enough to identify and to control if proper methods of control are used.

## Regulation and Control of Money

The Euro-dollar market appears to grow fastest when it is most advantageous to avoid the prohibitions and restrictions imposed by central banks and governments, particularly the U.S. government. The growth of the market is, in part, a result of innovation that reduced the excess burden of regulation. Nevertheless, some of the burden remains. It is less costly to change relative rates of interest than to shift balances between institutions, and it is wasteful to use resources to develop institutions and practices that circumvent regulations and restrictions.

The discussion of intermediation alerts us to the fact that any study of the effects of regulation of Euro-dollars or of the effect of reserve requirements on Euro-dollars depends on the set of regulations and restrictions that accompany the reserve requirements on Euro-dollars. For example, Henderson and Waldo show that the effect of reserve requirement on Euro-dollars is different when exchange rates fluctuate and interest is not paid on required reserves than when required reserves bear interest. Sections 4 and 5 of the Henderson and Waldo paper rely on the assumption that domestic time deposits (and long-term Euro-dollar deposits) are not subject to reserve requirements. It is not surprising that Henderson and Waldo find that shifts between bank liabilities subject to reserve requirements induce less variance in interest rates than shifts between deposits subject to reserve requirements and other deposits. Under flexible rates, variability of exchange rates substitutes for some of the variability of interest rates.

If asset shifts are induced by reserve requirements, imposing additional reserve requirements will not, generally, reduce the deadweight loss. The

reason is that the cost of differences in reserve requirements and the prohibition of interest payments changes with the rate of inflation and the development of unregulated assets. Henderson and Waldo do not consider this problem.

I believe the effect of new substitutes is important. The extension of reserve requirements to Euro-dollars will increase the risk borne, or the cost paid, by asset owners who circumvent the regulation by shifting to covered foreign currencies instead of lower yielding Euro-dollars. <sup>4/</sup> To avoid the shift, all financial assets must be subject to equivalent reserve requirements. This is not only unlikely; it is impossible in a world of maximizers.

Recent experience supports this view. When regulation Q was extended to savings and loan associations and mutual savings banks, the extension was justified as a means of preventing competition for deposits. A main result was the development and expansion of less regulated substitutes, including Euro-dollars, money market funds and overnight repurchase agreements. The profitability of the thrift institutions has not been protected. The cost of regulation is a tax on the owners or the remaining depositors.

A more general consideration comes from the theory of taxation. Reserve requirements are a tax on the owners of capital in financial institutions. Such taxes distort the allocation of resources. Imposing comparable taxes on competing institutions does not, under most circumstances, remove the distortion. The distortion is likely to increase together with the amount of resources used to circumvent the tax.

The best way to reduce the relative size of the Euro-dollar market is to remove interest rate controls on deposits, pay competitive market interest rates on the required reserves of domestic banks or eliminate reserve requirements. Henderson and Waldo recognize the benefits that these changes would

bring, at some points in their analysis, but they do not draw the proper conclusion. One reason is that they do not consider allocative efficiency or the burden imposed by regulations and controls.

Elimination of domestic reserve requirements and other reforms that reduce deadweight losses would not eliminate the Euro-dollar market. As McKinnon notes, the Euro-dollar market is more than just a means of escaping regulation. The market provides real services efficiently and is therefore likely to remain and grow if unregulated or to be replaced by an alternative if taxed or regulated out of existence by concerted action of all central banks and governments.

#### Postscript

Many of the issues in the printed version of Ronald McKinnon's paper overlap the issues in the paper he gave at the conference. In this section, I comment on some of the additional issues raised in the printed version, particularly the conclusions he draws for monetary policy in Britain and the United States. Although I do not agree with several of McKinnon's conclusions, I fully agree with the emphasis he gives to liberal trade arrangements. McKinnon pays too little attention to efficiency and growth and emphasizes the average, rather than the marginal, share of trade in an economy, but he makes the right recommendation when he urges countries to permit substitution of foreign for domestic goods to facilitate adjustment to financial and monetary change.

The core of McKinnon's argument is that liberal trade policies are not sufficient for financial stability. Financial stability is not defined precisely, but the context suggests that fluctuations in exchange rates are

less desirable than fluctuations in monetary aggregates. I cannot find where McKinnon is very definite about the reasons why he prefers one to the other, but there is no doubt about his conclusion. He praises the Singapore Monetary Authority for choosing fixed, but adjustable, exchange rates, and he urges the Bank of England to do the same. "[I]n the presence of virtually unlimited possibilities for currency substitution, the relative value of sterling in terms of some hard currency should be maintained directly by the Bank of England -- with the monetary base adjusting passively to these foreign exchange transactions." See McKinnon (pp. 21-2). McKinnon does not add a fiscal policy to his monetary policy, and he does not point out that the Bank of England cannot continue to act as lender of first resort to the government and the banking system. These omissions remove his analysis a large way from practice because, in practice, the Bank of England fixes a short-term interest rate and buys all the government debt offered by the market at that rate of interest. As a consequence, neither the base nor the exchange rate is controlled. <sup>5/</sup>

I am not sure what McKinnon means by the statement: "Unlimited possibilities for currency substitution" arise because Britain is a "euro-currency" center. <sup>6/</sup> Nor, do I accept that the location of a euro-currency center in Britain makes monetary control or floating more costly to Britons. A fixed exchange rate increases the possibilities for substitution between domestic and foreign assets by offering convertibility at a fixed rate. With fixed rates, the central bank must permit "unlimited substitution" at a fixed price; domestic prices and base money are subject to more, and exchange rates to less, day-to-day variability. With floating rates, the base is controlled, the price level is less variable and the banks issue or contract

intermediary (time) deposits when there is a net capital flow to or from London. As equation (2) (above) shows, bank earning assets rise relative to money when time deposits expand and contract relative to money when time deposits fall. Strict control of the base does not keep money or credit constant; both depend on the behavior of banks (intermediaries) and the public. Fluctuating exchange rates shift exchange rate risk to the private sector but do not eliminate substitution between foreign and domestic assets or short-term capital movements. It is true that when exchange rates are permitted to change, currency substitution can never be as close to perfect as under fixed exchange rates if there is, at least, some cost to hedging exchange rate risk.

In a small, less developed, open economy like Singapore, individuals may be indifferent about whether they allow the home price level to fluctuate because the growth of base money fluctuates or, alternatively, permit relative prices to fluctuate because the exchange rate fluctuates. Britain is richer than Singapore and has a larger share of (non-traded) services in GNP, so it may be more desirable for Britain to reduce fluctuations in money wages and in the prices of final goods and accept the social cost caused by fluctuations in exchange rates. Hedgers and specialists are available to reduce the costs and, if the hedgers and speculators are efficient, the costs are minimized.

Switzerland is a small open economy that sells financial services to the world. Stability of purchasing power relative to the dollar enhances the value of the financial services Switzerland sells; the value of the services would decline if the Swiss chose to stabilize the dollar exchange rate. But Switzerland also sells durable manufactured goods to Germany and other countries of the Common Market. Exchange rate stability reduces the variability of the relative

prices and costs of Swiss and non-Swiss producers. Hence, Switzerland chooses to let the dollar exchange rate fluctuate and to stabilize the mark-franc exchange rate, for months or years at a time.

The example of Switzerland brings us to a conclusion very different from the conclusion reached by McKinnon. The sale of financial services, and the amount of intermediation done by Swiss banks, is increased by floating the Swiss franc relative to the dollar. A stable British price level would, I believe, also increase the attractiveness of London as a center for euro-currency and other financial services.

In his discussion of the United States, McKinnon comes very close to the argument that I just made for Britain and Switzerland. He is, of course, correct if he claims that, with a stable dollar price level, the U.S. would have a comparative advantage in the financial services industry. The dollar is a principal medium of international exchange and unit of account. A dollar with stable purchasing power in terms of goods would lower the cost of using the medium of exchange as a store of value.

McKinnon's final sections discuss the control of money in the United States. He favors a policy of controlling the monetary base to achieve a stable price level. And he notes, correctly, that large capital flows to and from the United States often resulted from the combination of high inflation and controls that prohibit payment of interest on demand deposits and on required reserves, limit the payment of interest on time deposits and raise the cost of intermediation in the United States relative to the cost abroad. In the absence of controls, interest rates and exchange rates would adjust and capital flows would be smaller.

McKinnon argues, however, that a "eurocurrency" market in the United States would reduce Federal Reserve control of (narrowly defined) money. His argument is that substitution between domestic money and "eurocurrency" would reduce stability of the demand function for money on which the Federal Reserve must rely to control money. He recognizes that "eurocurrency deposits" are usually a million dollars or more and are time, not demand, deposits or currency. He recognizes, also, that intermediation changes bank credit, relative to money, and does not affect the demand for narrowly defined money if the exchange rate is allowed to adjust and banks are permitted to pay interest on demand deposits. The problem he fears is that in the future inflation "could escalate to increase the burden of non-interest bearing reserves...and induce Americans to write dollar checks on accounts overseas as a means of payment within the United States."

Inflation will escalate only if the Federal Reserve fails to control money. If the Federal Reserve combines this failure with a prohibition of interest on required reserves, people will seek opportunities to avoid holding or using dollars. The availability of a substitute means of payment would, under the circumstances McKinnon posits, increase welfare.

The source of the problem is inflation and regulation, and the proper solution is to reduce both. Rate changes are a low cost substitute for portfolio reallocation and innovation to avoid controls. I believe the moral McKinnon should draw differs from the one he draws. Remove the restrictions in the United States and reduce inflation, so the public willingly holds and uses the familiar forms of money as a medium of exchange.

## FOOTNOTES

- 1 I have written a postscript to discuss the paper that Ronald McKinnon preferred to substitute for the paper given at the conference. I have modified my comments to reflect the change, but extensive revision was not required. In the postscript, I comment on the additional material that McKinnon offers.
- 2 This section is based on the traditional Brunner and Meltzer analysis of intermediation that is available in several papers.
- 3 The real, service yield on money is larger than the service yield on time deposits; that is to say, money is a medium of exchange. Changes in the rate of inflation may affect the desired composition of financial assets in an unregulated (but insured) banking system.
- 4 Controls or reserve requirements on Euro-dollars by a single country, or small group, illustrates the point. The reserve requirements reduces the yield of the deposits subject to reserve requirements much more than it reduces the stock of Euro-currency.
- 5 At the time of writing (December 1980) Mrs. Thatcher's government has asked the Bank to reconsider its policy procedures.
- 6 I use the term "euro-currency" to refer to time deposits denominated in foreign units of account.