Monetary Policy in Developing Countries and the New Monetary Economics*

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I. Introduction

Several contributions to monetary theory in recent years have been denoted by Hall (1982) as comprising the "new monetary economics." These contributions include Black, Fama (1980, 1983), Sargent and Wallace, Wallace (1981, 1983), Karaken and Wallace, Hall (1981, 1983), Greenfield and Yeagar, and King. The issues addressed in this literature generally involve the roles of various governmentally imposed legal restrictions in the development of monetary institutions or what sorts of institutions will evolve in the absence of such restrictions. Examples of legal restrictions are bank reserve requirements, legal tender laws, and the prohibition of private currency issue. The results of this literature are sometimes quite striking. For example, Karaken and Wallace conclude that equilibrium exchange rates are indeterminate in the absence of binding legal restrictions.

Most (if not all) analysis in this literature to date either implicitly or explicitly takes place in the context of models or arguments in which the level of development of the economy

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restrictions imposed by government can also be an important determinant of demand). X will include the average price level with an elasticity of one if there is no money illusion, an income variable if money is the medium of exchange, lagged values of the money stock in the presence of a gradual adjustment mechanism, etc. A similar specification for the supply of nominal balances is

$$(2) \quad M^S = M^S(Y),$$

where M^S is the aggregate stock of money balances supplied, and Y is a vector of variables that influence the supply of nominal balances.

The stock of nominal balances is willingly held when X and Y are such that

$$(3) \quad M^D(X) = M^S(Y),$$

The condition that all money be willingly held is but one feature of a general solution, but consideration of condition (3) is still very useful. Suppose some exogenous event changes an element of X or Y and thereby changes the relative scarcity of money. This change *cannot* induce a change in the price of money, because it is by definition fixed at unity. Instead, pressure exists on other variables to adjust. Exactly how this adjustment takes place depends on the model under consideration. The following examples serve to illustrate this point.

A. The Full Information Market Clearing Model

Barro (1984) considers a model in which agents have perfect information about current and future exchange opportunities and in which prices move to clear all markets. The nominal money stock is exogenous, so Y may be treated as a shift parameter. Private agents have no money illusion and their desire to hold real balances depends on variables describing spending plans (consumption) and opportunity cost (the interest rate). A one-time increase in the stock of nominal balances induces an equiproportionate rise in the demand for nominal balances. With the other components of X unchanged, the demand and supply of *real* balances remain at their initial levels. The reduced scarcity of money means that its relative value must fall. Because its price is

D. The Transmission of Monetary Phenomena to Other Markets

The above discussions indicate that the unit of account function of money is one reason why changes in the relative scarcity of money can have impacts across a broad spectrum of markets. Specifically, suppose that an economy is characterized by a significant degree of price stickiness across a substantial subset of markets.[1] Money is special in such an economy because changes in its relative scarcity result in pressure on a great variety of prices while changes in the relative scarcity of any other good are reflected primarily in pressure on the price of that particular good. If nominal rigidities prevent the instantaneous attainment of the Walrasian general equilibrium price vector, such changes must be reflected in quantity adjustments. If these impacts are relatively predictable and involve variables of interest to policymakers, then policies that involve manipulation of the relative scarcity of money are potentially useful. Existing institutions are such that in most countries this manipulation occurs via changes in the supply of money, which is generally subject to a reasonable amount of control by policymakers.

Policy becomes difficult when the response of private agents to actual or prospective policy actions is highly volatile. (Instability in the public's desired ratio of currency to deposits is one source of such instability, because it has implications for the demand for bank reserves.) Nevertheless, the essential mechanism transmitting policy actions to the economy — the diffusion throughout the economy of induced disequilibria in the market for the asset that defines the unit of account — is the same regardless of the predictability of supply and demand behavior. Alternatively, suppose for some reason that "money" — the asset with policy determined supply — suddenly ceases to serve as unit of account in favor of some other asset. For example, suppose all French citizens begin quoting prices in terms of Deutschmarks.[2] In this case, the French franc becomes just another commodity (like apples) whose price is

[1] This somewhat casual introduction of price stickiness is a simple way of accounting for monetary nonneutralities. The key element of the present discussion is that the structure of economies of interest is non-Walraisian.

[2] In such a scenario, whether French citizens would continue to hold their own currency is clearly an important question. For purposes of the example assume that a well-defined demand for francs is maintained.

arguments, one must understand the distinction between the numeraire and the unit of account. The numeraire is the tangible good that serves as the base of the price system, while the unit of account defines the denomination of prices. The two need not coincide, i.e., the unit of measure of the numeraire need not be the unit of account. For example, gold was the numeraire and dollars (as opposed to ounces of gold) the unit of account in the gold standard era in the U.S. The standard tied the value of a dollar to a certain weight of gold. In such a system, policy actions (i.e., changes in the relative scarcity of the asset that defines the unit of account) must involve either intervention in the market for the numeraire good or re-definition of the unit of account in terms of the numeraire.[3]

Fama characterizes current fiduciary monetary institutions in terms of the above framework as follows: the units measuring the monetary base (dollars) serve as the unit of account. Legal restrictions such as bank reserve requirements and the prohibition of private currency issue work to establish a well-defined demand for the base, and the government has a monopoly on its supply. By virtue of such control, the government can manipulate the relative scarcity of the asset that defines the unit of account and thereby influence the economy via the mechanisms discussed in section II above.

Fama (1980) points out that the ability to influence the relative scarcity of the unit of account is in principle unrelated to the operation of credit markets. He makes this point quite forcefully in a parable about a currency-less economy of the future in which reserve requirements are imposed on spaceships. Because spaceships are presumably valuable in this economy, the legal restriction creates a meaningful demand for "reserve certificates." As long as these certificates define the unit of account,[4] the essential mechanism relating policy actions (manipulation of the relative scarcity of reserve certificates) to the other market is

[3] The latter policy action is known as debasement and has been widely practiced. Hall (1981) gives a somewhat amusing chronicle of debasement of the British pound sterling from an actual pound at the time of its establishment of William the Conqueror (Reign: 1066-87) to the 0.015 pounds of silver the "pound" would buy in 1981.

[4] Why reserve certificates should define the unit of account in this economy is an open question. One obvious scenario is that government requires prices to be quoted in terms of the reserve unit.

The use of a given kind of money (currency and deposits) for most or all transactions in an economy is probably a sufficient condition for the viability of a unit of account based on the unit by which that money is denominated. In section IV, the argument is advanced that currency substitution can in principle cause this condition to be violated, thereby posing a potential threat to the viability of the unit of account. Furthermore, section IV also argues that by virtue of such a threat, currency substitution may complicate monetary policy determination to a greater extent than has been previously recognized.

A necessary condition for use of a given unit of account is that the good that defines it have the attribute of scarcity. Prices in terms of gold or cattle are sensible. Prices in terms of dirt, air, or seawater are meaningless because the abundance of these goods makes relative valuation in terms of them difficult if not impossible. In section V, the argument is advanced that widespread unorganized money market activity can in principle result in the absence of scarcity of the numeraire good in a fiat money economy. More generally, such activity on a relatively broad scale can severely complicate manipulation of the relative scarcity of the asset that defines the unit of account.

IV. Currency Substitution

In recent years a great deal of attention has been paid to the currency substitution (CS) phenomenon — see Girton and Roper, Miles, Ortiz, and Bordo and Choudhri. Probably the most interesting result of this literature relates to the insulation properties of flexible exchange rates. The essential insight is that exchange rate movements induced by foreign phenomena (such as a change in foreign income or inflation) can influence the domestic demand for money and thereby induce changes in the relative scarcity of the asset that defines the domestic unit of account. As discussed above, such changes can manifest themselves in a number of ways, so the domestic economy is in general not fully insulated from foreign disturbances.

As traditionally discussed, CS occurs because foreign currencies are an alternative store of value. That is, CS occurs primarily because of a *speculative* motive. As such, the anticipated rate of

actions. Another possibility is that foreign currency becomes the economy-wide unit of account in a subset of transactions — perhaps those involving illegal activities or certain specific goods. Again, monetary policy actions will probably have reduced influence in these markets. In either case, changes in the relative scarcity of foreign currency has direct effects rather than operating indirectly through the expected rate of depreciation.

The above discussion suggests that the implications of CS could depend critically on whether the CS threatens the viability of domestic currency as the unit of account. In this context, whether CS is motivated by speculative or transactions considerations appears to be of some importance. A major item for further research involves a specific examination of the factors influencing unit of account determination.[5]

V. Unorganized Money Markets

In many developing countries, severely binding legal restrictions such as deposit interest rate ceilings have resulted in the development of unorganized money markets (UMMs — also called "curb" markets) in which loan agreements are made that evade these restrictions. Wai surveys the characteristics of these markets. Most of the literature in this area examines the role played by these markets in facilitating or inhibiting financial intermediation. Of particular interest is the extent to which government legal restrictions result in "financial repression" that retards development. McKinnon and Shaw contend that higher (governmentally controlled) time deposit rates raise output and lower inflation by increasing the amount of financial intermediation and thereby facilitating the availability of credit to finance production. Van Wijnbergen maintains that the McKinnon-Shaw hypothesis rests on the assumption he finds implausible. Chang and Jung develop a general model in which the competing hypotheses

[5] One likely feature of research in this area would involve consideration of economies characterized by bimetallism in which both gold and silver coins served as media of exchange. The guinea was adopted as a measure of gold by Britain in 1663 (see Hawtrey, 1950, p. 236) and survives today as a phantom unit of account denoting one pound plus one shilling. Study of unit of account use in situations where gold and silver coins fluctuate in relative value could yield some insight into the issues of interest.

economy. In practice, most countries allow free convertibility between currency and bank reserve deposits, and policy is undertaken by changing the relative scarcity of reserves. Currency is generally not a scarce item. With UMMs, however, increased scarcity of bank reserves need not induce a multiple contraction of loans and deposits. Instead, loans and deposits might respond to such scarcity by leaving the official system and finding a place in curb markets.[7] Although a great deal of research remains to be done in this area, the manipulation of reserve scarcity by policymakers in such a way as to have predictable effects on the economy seems to be severely complicated by the presence of UMMs.

In the presence of institutions that make the manipulation of relative scarcity of bank reserves quite difficult, one alternative for policymakers is to concentrate on the relative scarcity of currency and not worry about bank reserves. As noted above, Fama (1983) maintains that such an approach can achieve price stability with no interference in credit markets; the chief advantage in the present context is that the relative scarcity of currency might be more subject to manipulation than the relative scarcity of reserves. In fact, if curb market "banks" use currency as "reserves," such a policy could approximate a reserve oriented policy in an economy with no curb markets.

These waters are somewhat uncharted, however, because the response to a change in the relative scarcity of currency is unclear — particularly with regard to an excess demand. Even though individuals might prefer to use currency in some transactions, the number of transactions that necessarily *require* currency is unknown (currency requirements are surely proportionately much greater in developing countries than in developed countries, however). Because the official banking system usually offers the only viable accounting system of exchange (especially for small transactions), an excess demand for currency might drive deposits and loans out of curb markets and into official banks.

An excess demand for currency might also encourage the use of substitutes. Although any small denomination bearer cer-

[7] While the precise nature of this phenomenon remains to be explored, it seems to bear a theoretical similarity to the financial innovation phenomena observed in the U.S. in recent years as various regulatory constraints have become binding. For a discussion of these issues, see Hester.

in certain transactions, however, the unit of account function of domestic money is threatened with respect to those transactions.

The presence of unorganized money markets in effect implies an unregulated banking system operating alongside the official system. Because unregulated banks are not subject to reserve requirements, the demand for reserve deposits at the central bank is influenced by funds moving between the official system and curb markets. In principle, the widespread proliferation of curb markets could threaten unit of account viability by reducing the demand for the numeraire good (currency and reserve deposits) to such an extent that it no longer exhibits scarcity. While such a threat is not likely to occur in practice, the arguments of Fama (1980, 1983) suggest that policies aimed at influencing the relative scarcity of currency in economies with widespread curb market activity might be considered as alternatives to the traditional approach of influencing the relative scarcity of bank reserves.

In conclusion, currency substitution and/or widespread curb market activity have potential implications for the unit of account function of money that could seriously complicate monetary policy determination. This paper has provided an overview of many issues that relate to this point, and further research into the determination of unit of account choice appears to have some promise in the context of understanding monetary phenomena in developing economies.

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