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CONTROLLED FLEXIBILITY
IN THE
FOREIGN EXCHANGES

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International Finance Section

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Having contributed Princeton Essay No. 76, *Private and Official International Money: The Case for the Dollar* as recently as April of 1969, I owe the intrepid reader a sharply differentiated product and an explanation. The 1969 essay described the American dollar as international money by exploring the demand by private foreigners and central banks to hold dollars, the supply response via movements in the American current-account surplus and the capital account (financial intermediation), and the problem of seigniorage. In short, the world dollar standard was analyzed by asking questions common to all monetary mechanisms, whatever their domain. In contrast, the present essay focuses on problems of monetary management as related to optimal exchange-rate flexibility in market economies *other* than the United States.

This distinction is important because the United States is the center or “*nth*” country in the Bretton Woods par-value system, and a flexible exchange rate is not an option open to American policymakers. This loss of exchange-rate flexibility need not be a handicap, because the dollar is also international money and, for purposes of monetary policy, the United States can behave relatively autonomously—almost as if it were closed to foreign trade. In the first sections of this essay, it will be assumed that this autonomy is exercised wisely so that the center country and, hence, the world economy remain “stable”—in the sense to be defined presently.

For all other countries, however, the choice of an exchange-rate mechanism for adjusting international payments is a key element in the effectiveness of national monetary policy. Indeed, the operation of central banks in the foreign exchanges is simply one mode of changing the domestic money supply, which is fully as important as open-market operations or rediscounting. The parallels are described in Section I below. This unified view of monetary policy breaks with the theoretical tradition of treating the exchange rate and money supply as separable policy instruments.

Once the underlying unity between internal and external national monetary policy is established, it is possible to apply accepted monetary theories to the choice among different forms of exchange-rate flexibility. In particular, if a Keynesian view of monetary processes is adopted, the complementary foreign-exchange mechanism can be deduced from the underlying theoretical structure. This is done in Section II, where a *narrow band*, under carefully specified conditions, *is shown to be the external counterpart of Keynesian monetary policy. The quantity theory of money*—under certain assumptions more suitable for long-run analysis—*implies its own foreign-adjustment mechanism in the form of a gliding parity*, as shown in Section III. Optimal policy within either a Keynesian or a monetarist framework requires understanding of the domestic and foreign aspects of each complete model.

“Assigning” an exchange-rate mechanism to a particular monetary theory and the goals that go with it avoids the implicit theorizing inherent in simply listing pros and cons of various exchange-rate systems under widely varying assumptions. The number of “dilemma cases” of policies torn by apparently conflicting goals is correspondingly reduced.

The essay, however, is not a purely theoretical exercise. Data on divergent price-level movements in consumer and wholesale price indices over the past seventeen years are developed in Section IV for the major industrial countries. These price indices have a direct bearing on the operations of a gliding parity under the quantity theory, which is particularly relevant for rapidly growing economies. An attempt is also made to define “stable” behavior by the United States in statistical terms and appropriate “rules of the game” for various countries operating under the dollar standard. In this connection, Section V analyzes a recent Report by the Executive Directors of the International Monetary Fund, which reexamined the Bretton Woods par-value system without recommending any changes towards increased flexibility.

I. THE IMPORTANCE OF THE FOREIGN EXCHANGES FOR NATIONAL MONETARY POLICY

If the Bank of England enters the bond market to support the price of gilt-edged securities, such purchases create “high-powered” money. Similarly, if the central bank enters the foreign-exchange market to purchase dollars by selling pounds sterling to maintain a predetermined level of the exchange rate, the same creation of high-powered money occurs. Donald Mathieson of Columbia University has calculated that about 95 per cent of the net issue of high-powered money in Germany from the mid-1950’s to 1968 was created through the foreign exchanges. That is, virtually all of the German seigniorage associated with currency

issue and growth in commercial-bank reserves was used by the Bundesbank to accumulate foreign exchange or to finance official transfers of capital abroad.

Even when there is no net creation of high-powered money by the acquisition of foreign reserves, domestic monetary policy can still be governed by the foreign exchanges. The Canadian sojourn with a fixed exchange rate from 1962 to 1970, accompanied by a strict limitation on the acquisition of American dollars and gold, imposed a pattern of domestic-money issue which was virtually identical to that followed in the United States. Thus, there is no single quantitative measure of the impact of the foreign exchanges on the monetary policies of market economies, although the importance of the foreign sector is not in doubt.

Suppose our national central bank consists of two agencies: an open-market "committee" responsible for all purely domestic operations in pursuit of monetary policy such as open-market operations or rediscounting, and an exchange-stabilization "fund" responsible for all foreign-exchange operations in pursuit of the *same* monetary policy. Besides having a first-order impact on the holding of domestic money by domestic nationals, the choice of the external parity directly determines the prices of tradable goods in terms of the domestic currency. In this sense, the fund can be a stronger monetary instrument than the committee because it uses arbitrage in the international commodity markets to determine internal prices directly. Under free trade and an international-payments mechanism that functions tolerably well, the law of large numbers would predict that a group of countries constituting the world economy may be more stable than any one economy in particular and, indeed, this seems to have been true since the Second World War. Thus, the fund's willingness to decumulate or accumulate reserves in exchange for domestic money, while maintaining free international payments, can stabilize commodity prices and output within individual economies—at least in the short run.

The maintenance of Italy's foreign-exchange parity in the internal inflation of 1962-1963 had a strong stabilizing influence domestically, which was upset only when the government tried to prevent Italian commercial banks from borrowing in the Eurodollar market. The short but sharp German recession of 1966-1967 was smoothed by a huge export expansion which could not have occurred if its parity had floated upwards in response to the internal deflation. In 1968, the French inflation and internal crises were stabilized by drawing down external reserves to maintain the external parity. A sharply depreciating exchange rate may well have made it impossible for the government to bargain with the workers in money terms. The inflationary policy of the Wilson

government in Britain in the first half of 1970 might have had a far sharper impact on internal prices if the British parity had not been stable.

The optimal degree of stability in the foreign-exchange parity is, however, unlikely to be the same for all countries at all times. Greater exchange flexibility and national monetary autonomy may be desirable for large countries that have relatively small foreign-trade sectors, and where a stable external parity has, therefore, less of a smoothing impact on domestic prices and output. Furthermore, if the long-run-growth experience of countries is very different, divergent movements between the prices of tradable and nontradable goods may also increase the desirability of controlled flexibility—apart from the question of openness of the economy. The correct response of the monetary authorities to each particular problem depends on the choice of an appropriate theoretical framework—be it Keynesian or monetarist. *Assuming stability in the exogenously determined prices of internationally traded goods and that the goals of the central bank's committee are consistent with those of its fund, we now turn to the problem of integrating exchange-rate management with the corpus of accepted monetary theory.*

II. THE KEYNESIAN LIQUIDITY-PREFERENCE THEORY OF THE RATE OF INTEREST

Since my main concern is foreign-exchange policy, I shall drastically simplify orthodox Keynesian monetary theory for closed economies. I shall make heavy use of the admirable classification system developed by David Fand in "Keynesian Monetary Theories, Stabilization Policy and the Recent Inflation" and of the historical perspective provided by J. R. Hicks' "Automatists, Hawtreyians and Keynesians," both in *The Journal of Money, Credit and Banking*, August 1969. The reader might refer to these papers for assurance that the simplifications employed here are reasonably accurate.

Although there are many variants of the Keynesian orthodoxy, all hold that changes in the nominal stock of money affect the final demand for goods and services primarily through the prices of securities in capital markets rather than through any direct "wealth" effect. Insofar as monetary policy has any influence at all, it operates through "the" rate of interest as the intermediate policy variable. The *negative* relationship between the quantity of real money and real interest rates is defined by the liquidity-preference function; and, in a closed economy, there is the presumption that monetary authorities can in fact control the *real* rate of interest and the *real* stock of money by varying the nominal stock of money. Hence, the real rate of interest and the real stock of money are *not endogenous* to the economy but can be, to some significant degree,

manipulated by the monetary authorities—a view quite different from that held by monetarists, as we shall see.

Unsurprisingly, since the authorities can increase the real stock of money by increasing nominal cash balances, the Keynesian world is one where the price level is stable and expected to remain so over the relevant time horizon. More precisely, any given proportional change in the nominal stock of money leads to a substantially smaller proportional change in the price level. Empirically, the assumption of stable prices and price expectations seems most plausible when there is substantial unemployment and slack in the economy (prices being fairly sticky in not moving downward) or when individuals have had historical experience with a stable price level at close to full employment and believe that the authorities are “committed” to, and will be successful in, maintaining this stability. Relaxation of either assumption can shorten—possibly quite drastically—the time horizon over which the model is operative. In other words, the use of deviations of the money supply and of the rate of interest from their norms in order to expand or contract the economy is at most a “short-run” control device, although it may be quite important even so.

The importance of the rate of interest and how it operates to determine aggregate investment is a matter of some dispute among Keynesians and near-Keynesians. In 1919, Hawtrey noted the apparently substantial impact of small changes in the discount rate of the Bank of England—“Bank Rate”—say from 3 per cent to 4 per cent per annum. He concluded that these perceived increases in the real rate of interest caused business firms to reduce working capital—stocks of finished and semi-finished materials of all kinds—so as to contract significantly the whole economy. Keynes himself took the view (in *The General Theory*) that the important restrictive effect was a rise in the cost of financing new fixed investments of plant and equipment as determined by the “long” rate of interest. Of course, Hawtrey’s and Keynes’ views need not be mutually exclusive, but confidence in the Bank of England’s determination to maintain price-level stability was important for either view. Although this “term-structure” problem is still a major unresolved issue, for our purposes it is sufficient to note that interest rates on financial assets are important policy instruments under either variant of Keynesian theory.

The exchange-rate mechanism set up at Bretton Woods in 1945 was consistent with substantial national autonomy in setting rates of interest. The par-value system prevented “beggar-thy-neighbor” policies designed to promote mercantilistic expansions of trade surpluses. Fairly tight controls were maintained over international flows of financial capital and

the fund's liberalization objectives were focused primarily on freeing commodity trade from foreign-exchange restrictions. The private international capital market seemed moribund. The situation was indeed consistent with the Keynesian theoretical schema for autonomous national monetary policies facilitated by different real rates of interest. (The absence of capital flows and well-developed lines of international credit also created an international-liquidity problem, which was handled at the time by the European Payments Union, the International Monetary Fund, and government-to-government lending under the Marshall Plan.)

Leaving aside the question of how judiciously and effectively national governments exercised the autonomy open to them in the immediate postwar, the European return to convertibility in 1959 and the revival of an enormous and thriving international capital market in the 1960's has drastically curtailed national autonomy—other than for the center country—in setting rates of interest. As a result, the system of virtually fixed exchange rates under Bretton Woods is no longer consistent with independent Keynesian monetary policies—whether or not one feels the underlying Keynesian theory is appropriate. Rates of interest are quite closely bound together by international arbitrage—except in the “accidental” situation when the market is discounting a major exchange-rate change—and can no longer be useful instruments of *internal* monetary control.

The basic analytical question then is the following: if one adheres to Keynesian liquidity-preference theory and holds that national monetary autonomy in setting interest rates is important for domestic stability, what modification in the Bretton Woods system of “almost” fixed parities is called for? One solution is the retrogressive one of securing international agreement to block international flows of financial capital. However, the elaborate network of international finance has been instrumental in the truly amazing resurgence of international trade in goods and services. Capital movements cannot be divorced from the trade flows between highly open economies, and effective controls would have to be detailed and extensive, with the freedom and efficiency of commodity trade correspondingly reduced—as is true in Eastern Europe now and used to be true within Western Europe. Clearly, this retrogressive solution of repressing capital flows for restoring national monetary autonomy must be ruled out as too costly.

Accepting more or less complete international mobility of capital, one might ask whether an individual country can achieve national autonomy in interest-rate policy by allowing more flexibility in its exchange rate. Keynes toyed with this possibility in the *Treatise* and in other writings.

The issues are quite subtle. For example, a freely floating exchange rate without any "parity" commitment—implicit or explicit—may be perverse for this narrowly-defined purpose of freeing domestic monetary policy in a Keynesian sense. In particular, *a freely floating exchange rate could be inconsistent with stable domestic price expectations—the cornerstone of Keynesian liquidity-preference theory.*

The Band Hypothesis

The foreign-exchange counterpart of Keynesian liquidity-preference monetary theory is a (believably) fixed parity with a moderately wide band around it, rather than a freely floating rate. Moreover, this band would not even glide, but would be stationary as long as the international economy remained stable, in a sense to be defined more precisely later on. The band permits consistency between internal and external instruments of monetary policy *within* the Keynesian framework. Alternatively, the band may not matter much if one adopts a different intellectual point of view or, equivalently, makes assumptions under which the liquidity-preference theory becomes irrelevant as a basis for policy prescriptions.

The operation of the band as the external arm of domestic monetary policy is easily demonstrated. Suppose aggregate internal demand is deemed excessive. The authorities can raise the internal rate of interest above world rates by reducing the domestic money supply via its open-market committee *and* its exchange-stabilization fund. The committee raises the bank rate and/or sells bonds, and the fund sells foreign exchange (dollars) in order to collect and retire domestic currency. Both operations reduce the domestic money supply in the balanced fashion necessary for monetary policy to be effective in an open economy. The internal interest rate rises rapidly above its norm and the domestic currency rapidly appreciates to the top of its band.

Now the expectation is that the domestic currency will depreciate gradually downward toward its parity at the center of the band. Thus, the domestic short-term rate of interest can remain above world interest rates as international arbitrageurs discount the expected change in relative currency values so that inflows of capital are discouraged. This effect is formalized in the *forward*-exchange market by forward quotations on the domestic currency going into discount—the familiar interest-rate-parity theory (IRPT). However, movements in the spot rate have to be believable for the IRPT to become operative. A moderately wide band would permit this, but a completely fixed exchange rate would not.

The length of time and the amount by which the domestic interest rate can be kept above the world rate are directly related to the width of the

band. Without considering the complex problem of the term structure of interest rates on various security classes (which has been explored by Michael Porter of the International Monetary Fund), let us simply illustrate the effect with a one-year security. Suppose authorities wish to raise immediately the interest rate on notes maturing in one year from, say, 4 per cent to 6 per cent, with the expectation that the yield on such securities will be back to their norm of 4 per cent by the end of the year. The equivalent foreign-exchange operation is to raise immediately the spot rate by 2 per cent above its parity, and then let it decline smoothly over the course of one year back to its parity. For a given width of the band, there is an evident tradeoff between time and size of the effective interest differential: the more the domestic interest rate is raised above the world rate in the present, the shorter is the time interval over which this difference can be sustained. Moreover, the autonomy in setting rates of interest which the band affords is confined to short- rather than long-term securities.

Would an indefinitely wide band increase the freedom of national authorities to manipulate the domestic real rate of interest? The answer is negative, because significant movements in the exchange rate would upset stable domestic-price expectations and, most importantly, upset the notion of "normal" parity at the center of the band, towards which the exchange rate inevitably gravitates. In this sense, it would be similar to a freely floating rate. (Incidentally, the idea of a normal parity need not always be the subject of formal agreement in order to be effective. There have been periods when the Canadian dollar floated informally within narrow limits and the normal parity was felt to be a one-to-one correspondence with the American dollar—although the strength of this informal feeling is a matter of debate.) Thus, there is a subtle conflict between considerations in support of a narrower band and a somewhat wider one.

Could small exchange-rate movements within the band significantly destabilize domestic prices? Carrying forward our assumption that the foreign-currency prices of internationally-traded goods are stable, the discrete appreciation to the top of the band associated with the tight money policy discussed above would reduce the prices of tradable goods in the domestic currency. This price fall would, in part, offset the contraction in the *real* supply of money that the policy was designed to effect. The increase in the real rate of interest would be correspondingly dampened. Hence, for the band to support a Keynesian monetary policy requires that the impact of small and temporary movements in the exchange rate be relatively greater in the capital market on interest rates than it is on commodity prices—which seems reasonable enough if short-term interest rates move 50 per cent, that is, from 4 to 6 per cent, in re-

sponse to a 2 per cent appreciation. Moreover, the appreciation itself would have a temporary depressant effect in the commodity market so as to reinforce the objectives of the tight-money policy, apart from the Keynesian effect on the rate of interest.

The degree to which the reduction in commodity prices in domestic currency, from the appreciation, offsets the fall in the real stock of money varies directly with the openness of the economy. When the proportion of tradable goods in total output is high, the reduction in internal prices may be significant and spread fairly rapidly. If the proportion is moderate or low, the effect on the aggregate domestic-price level can, reasonably, be considered small and lagged so as to be easily ignored. Very simply, a small and highly open economy can be expected to have less control over its own real stock of money and real interest rate than a large closed one. Fortunately, the small one would also need the control less, because of the greater smoothing effect of the stable international economy. Hence the more open economy would, *ceteris paribus*, operate within a narrower band and, optimally, exercise less autonomy.

In summary, monetary autonomy in the Keynesian mode requires the central bank's fund to have access to foreign-exchange reserves and the freedom to use them within a well-defined band—much as the committee uses a stock of domestically marketable bonds. If, instead, an external deficit requires rebuilding of national reserves, the fund might have to forego sales of foreign exchange so that the foreign-exchange value of the domestic currency would no longer appreciate sharply when internal monetary policy becomes tight. Domestic rates of interest would then no longer rise and, according to Keynesian theory, monetary policy would lose its restrictive impact. The economy, however, would acquire foreign reserves as a result of the capital inflow, and the tradeoff between this consideration and that of achieving internal tightness would become manifest. In short, a Keynesian monetary policy to deal with short-run instability may not be operable if the exchange rate is substantially mis-specified and stable-price expectations are not a reasonable working hypothesis. More attention is paid later to the appropriate alignment of exchange rates with foreign and domestic prices within the context of the "long-run" quantity theory of money.

Dilemma Cases and the Assignment Problem

We have shown that a stable band *and* access to exchange reserves are sufficient to permit authorities to exercise some degree of internal ease or tightness over the relatively short time horizon appropriate in Keynesian monetary theory. If the mechanism chosen for adjusting the foreign exchanges is inappropriate, then an apparent dilemma may de-