Flexible Exchange Rates: A Transition Plan

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With the instability of present international financial arrangements no longer a matter of occasional crises but, instead, a chronic condition, increasing attention is being paid to the possibility of introducing greater exchange rate flexibility. Many economists have favored freely flexible rates and the arguments are well known. But these arguments refer only to the flexible rate system once it has been achieved, and there has been little published analysis examining the problems of transition to such a system.[1]

It can be argued that the transition problem is trivial: Let the United States simply announce this weekend that it is suspending all purchases and sales of gold and all pegging activities in the foreign exchange market. A good example of such an approach is that of the Canadian transition to flexible rates in 1950.[2] After a very short period of time – measured in weeks rather than years – Canada's foreign exchange market was operating smoothly and the transition was over. Of course, some will argue that the transition would be far less orderly for the United States, but the pat reply is that people are very resourceful in adjusting to changed circumstances, so that the market will be functioning well within a short time.

Any argument over the ease of transition after a precipitous move to flexible exchange rates by the United States appears to be largely academic because sensible *a priori* arguments can be made on both sides, and there is no evidence to appeal to that both sides would accept as relevant.

Furthermore, and this point is far more important, in my opinion political considerations rule out a precipitous move to flexible

[1] An exception is a recent paper by George N. Halm, "Toward Limited Exchange-Rate Flexibility," *Essays in International Finance, No. 73.*

[2] See Paul Wonnacott, *The Canadian Dollar,* 1948-1962 (Toronto: University of Toronto Press, 1965), pp. 75-79.

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exchange rates. A change as important as the abandonment of the international gold standard ought to be subject to the democratic political process. Under such circumstances the economic problems of transition become far from trivial.

The analysis of this paper takes as given the desirability of a system of flexible exchange rates with no direct governmental intervention into the foreign exchange market. This assumption is made in order to concentrate on the transition problem and to avoid repeating the well-known fixed-versus-flexible rate arguments.

In the remainder of this section, the political constraints which ought to be considered in formulating a transition plan are listed. In section II, a detailed transition plan requiring international agreement and cooperation is presented. But, should international agreement on a plan prove impossible, the United States should be prepared to adopt a unilateral transition plan. Such a plan is devised in section III. The cost of demonetizing gold is examined in section IV. Finally, in section V, several concluding observations are made.

In devising a transition plan, three political constraints appear important.

First, as stated above, decisions ought to be made through normal democratic political processes.

Second, the United States cannot ignore the commitments it has made in connection with the gold exchange standard without injuring its international political position. The United States has pledged to maintain the $35 per oz. gold price and has applied considerable political pressure on some countries to hold dollars instead of gold. To honor these commitments, the United States must enter into multilateral negotiations to gain agreement on changes in the status quo and, failing agreement, must compensate countries for losses they suffer as a result of unilateral action.

The third constraint, one involving a mixture of political and economic considerations, is that a transition plan must protect and, if possible, encourage extension of the progress since World War II on liberalizing international trade and capital flows.

Coming from an economist, these political constraints probably represent a naive view of international politics. The specification of the constraints could and should be refined. But the purpose of this paper is to examine the economics of a transition plan, and so the constraints will not be further discussed here.

A Multilateral Transition Plan

If the usual political processes are to be followed, the first problem is to find a way of averting speculative capital flows responding to foreseeable exchange rate changes during the transition to flexible rates. Some would contend that direct control of speculative capital movements would solve the problem, but it is very doubtful that such control is feasible since it is impossible in practice to distinguish between commercial and speculative trade credit and inventories. Attempts to control purely speculative flows would inevitably lead to complete exchange control.

Crawling Limits

The only possible way to maintain the present state of trade liberalization during the transition period is to insure that the rate of return to speculation is low. And the only way to keep the rate of return low is to adopt a "crawling limits" transition procedure. Under current IMF rules, countries keep their exchange rates on the dollar within one percent of par. Under the crawling limits proposal, these limits would widen, but only very gradually. For example, the upper limit might creep up continuously at the rate of .5 percent per year while the lower limit creeps down at the same rate.[3]

With crawling limits, speculation on the dollar exchange rate would produce a risk-free return of, at most, .5 percent per annum. For example, at the present time it is practically certain that the Deutsche mark would for some time stay at its upper limit in terms of the dollar. With this upper limit rising by .5 percent per year, the most to be gained by shifting out of dollars into marks is .5 percent per annum, but there would be some small probability of the mark becoming weak, thereby producing a loss. A United States interest rate .5 percent above what it otherwise would have been is the upper limit to the interest rate change necessary to completely neutralize the effect of the crawling limit on international capital flows. Similarly, if it were assumed that sterling would stay at the lower limit with respect to the dollar, the maximum return from shifting from sterling into dollars would be .5 percent. However, the maximum return from shifting from sterling into marks would be 1 percent per annum.

[3]This simple formula is modified below because the transition period would be too long if the crawl rate were constant at .5 percent.

The fact that the limits between two non-dollar currencies will widen at twice the rate selected for the dollar limit crawl rate must be considered in setting the crawl rate. A dollar limit crawl rate of .5 percent seems quite conservative and should not introduce serious problems of speculation between two non-dollar currencies. However, even a very modest crawl rate will produce a substantial degree of flexibility within a few years. Using the .5 percent crawl rate and continuous compounding, at the end of six years a foreign currency could fluctuate against the dollar in the band .961 P to 1.041 P, where P is the currency's par value in dollars. Of course, the band for two non-dollar currencies against each other would be twice as large.

The question of how long the transition period should be will be deferred to a later point in the analysis. At this point we will turn to the problem of maintaining adequate international reserves during the transition.

International Reserves During Transition

The transition will only gradually shift the burden of adjustment from the fixed rate adjustment mechanism to the flexible rate adjustment mechanism. It will be necessary, therefore, for countries to hold international reserves during the transition period. Gold and dollars must both be utilized as reserves because there is insufficient gold to use alone. The reserve problem centers around the relationship of gold to dollars. Indeed there is a serious dilemma which must be resolved.

If the dollar price of gold fluctuates, Gresham's Law insures that the good money will drive the bad out of foreign exchange reserves.[4] If dollars and gold are both to be voluntarily held in reserves, then the dollar price of gold must remain fixed forever. Fixing the price only during the transition period is not sufficient since expectations of a change in the price after the transition period is over would lead to the elimination of either gold or dollars from foreign reserves. The dilemma is obvious: one aim of a flexible rate system is to do away with commodity money.

[4]This is not the inverse of Gresham's Law as might seem at first glance. Where the choice as to which currency to use rests with the payor, he will pay with the cheap money and hoard the good so that the bad money drives the good money out of circulation. But where the choice rests with the receiver, he will insist on being paid with the good money and so the good money will drive out the bad. When a deficit country sells reserves in order to obtain the foreign currency needed to intervene in the foreign exchange market, the country buying foreign reserves will insist on buying the good reserves. (On the proper statement of Gresham's Law, see Irving Fisher, *The Purchasing Power of Money*, rev. ed., p. 112 ff.)

The dilemma can be resolved by having all countries share jointly in the gains or losses on gold according to a predetermined formula in which an individual country's gain or loss is completely independent of the total amount of its reserves as well as its gold/dollar proportion. To achieve this independence a transition fund is set up, perhaps under the IMF.

The Transition Fund

The transition fund would work as follows: The transition agreement would assign a quota to each country, possibly the same percentage quota as now used by the IMF. At the end of the transition period, each country would be obligated to pay into the fund a gold assessment. The gold assessment of a country is determined by multiplying its quota percentage by the total stock of official monetary gold. A country holding more gold than its proportionate share would be required to pay in all its gold, but it would receive immediate payment in dollars for the excess over assessment. A country with less than its proportionate share would be required to pay in the deficiency in dollars. Given this formula, the dollars paid in by countries with gold deficiencies would, of course, just match the dollars paid out to countries with gold excesses.

Each country would have a percentage share in the transition fund given by its quota. Following the end of the transition period, the fund would sell off the monetary gold in the private gold market, which governments could enter if they liked, according to a predetermined formula.[5] For example, the transition plan might provide that the fund would auction off the gold for dollars in equal amounts over the course of ten years. The fund would distribute the dollars received from gold sales to the various country "shareholders"; and, after the last gold sales, the fund would have no assets and would be terminated.

Given the likelihood that the free market gold price would fall below $35 per oz. under the pressure of gold sales by the transition fund, each country would want as small a share in the transition fund as possible. The determination of these shares would no doubt be the subject of much bargaining at the transition plan conference.

[5]Countries now restricting private holding of gold presumably would eliminate the restrictions, thus increasing the private demand for gold.

The Dollar Certificate

The transition fund arrangement destroys the incentive for countries to switch between gold and dollars during the transition period. However, there is a defect in the plan as described so far: countries have no protection against United States inflation which, of course, reduces the real burden of dollars held abroad. This problem, which would surely affect foreign willingness to adopt the transition plan, can be avoided by creating dollar certificates with a purchasing power clause.[6] All dollar reserves held by foreign governments and central banks at the beginning of the transition period would be converted into the dollar certificates.[7] Like gold, the certificates would bear no interest,[8] and the number outstanding (including those held by the United States) would be held constant throughout the transition period. The United States would stand ready at any time to redeem the certificates for current dollars at a redemption price given by application of the purchasing power clause. The United States could also reissue certificates previously redeemed, but it could not create new certificates on its own initiative. Because of the Gresham's Law problem discussed earlier, the price of official gold must be fixed at 35 certificate dollars per oz., which means that the current dollar price of official gold would be the same as the current dollar value of the certificates.

The restriction of the number of dollar certificates to the initial stock of official dollars is necessary to assure that the certificates remain perfect substitutes for gold. Certificates would become an inferior form of reserves if the United States could issue indefinite amounts to finance balance of payments deficits. United States deficits, if any, would have to be financed by drawing down its gold stock, reissuing any previously redeemed certificates, and/or borrowing abroad on whatever terms could be arranged.

During the transition period, the two-tier gold market should be retained. Otherwise, it is likely that there would be costly sales of

[6]The purchasing power clause could use a United States price index, or a dollar price index of internationally traded goods.

[7]In order to avoid problems during the period when the transition plan is being debated, the plan might provide that the dollar reserves as of the date when the plan is announced, rather than as of the beginning of the transition period, will be converted into dollar certificates.

[8]The United States might pay a small rate of interest on dollar certificates to compensate certificate holders for the risk that the U.S. might abandon its commitments.

private gold hoards to central banks in anticipation of a fall in the gold price when open market sales of monetary gold begin. In addition, since gold production is currently three to four times actual gold usage in industry and the arts[9], it would be costly and inefficient to support the gold mining industry during the transition period.

The stock of world reserves would be fixed in constant dollar terms, while changing in current dollar terms according to the current value of the price index. Given the increasing exchange flexibility, the constancy of world reserves during the transition period should not be a source of difficulty.

The dollar certificate proposal is designed to maintain the real value of dollars held abroad, thereby satisfying one of the political constraints stated in section I. While it is difficult to deny that the dollar certificate is likely to have a more stable real value than a dollar with a gold guarantee, the gold mystique is still strong enough that some may desire that the United States maintain the gold value of dollar liabilities. But it is impossible to design a scheme to maintain both the dollar's gold value and its real value at the same time. The position taken here is that the real value is fundamental.

The dollar certificates outstanding at the completion of the transition period may remain outstanding indefinitely if countries want to continue holding them. The United States, however, should stand ready to redeem them in current dollars at the rate implied by the current level of the price index. Certificates redeemed after the end of the transition period would be retired, never to be reissued. The redemption process would probably be gradual because a rapid redemption and sale of the dollars on the foreign exchange market would depress the dollar exchange rate and encourage some countries to retain the certificates until the dollar was stronger on the foreign exchanges.

The length of the transition period is yet to be discussed. In principle, there is an optimal length for the transition period determined by several competing factors. On the one hand, a relatively high crawl rate would rapidly increase the range of possible exchange fluctuations, thereby quickly shifting the adjustment process from the fixed rate mechanism to the fluctuating rate mecha-

[9]In a recent paper, Fritz Machlup has estimated 1967 production (including U.S.S.R.) at about $2,000 millions at $35 per oz. while he estimates industrial and artistic exhaustive demand (i.e. excluding increases in inventories) at about $500 millions. See Fritz Machlup, "The Price of Gold," *The Banker*, Vol. 118, September 1968, pp. 782-791.

nism and reducing the possibility of a collapse in the international financial system. Furthermore, it is likely to be easier to maintain the required amount of political cooperation over a shorter transition period. On the other hand, a rapid crawl rate would lead to a rapid realignment of some exchange rates in the early years of the transition period requiring countries with initially overvalued currencies to maintain interest rates high enough to reduce capital outflows to manageable proportions; such interest rates might prove more restrictive domestically than is desirable. Finally, the band must be wide enough at the end of the transition period that with high probability exchange rates will be well within the band making it possible to discard the limits altogether and terminate the transition period on schedule.

A few simple calculations may provide some feel for the problem. It seems not unreasonable to require that the limits be at least 15 percent on either side of par at the end of the transition period. Furthermore, it would seem that a dollar crawl rate of .5 percent per annum, which would lead to a 1.0 percent crawl rate for each limit for non-dollar currencies against each other, would be quite manageable in terms of effects on the domestic stabilization policies of major countries. With a .5 percent crawl rate, the limits on the dollar exchange rate would in thirty-two years be 19 percent above and 16 percent below par. But this seems rather too long a transition period.

A more attractive procedure would be to begin with a low crawl rate to allow realignment of exchange rates to eliminate the major disequilibria that exist today, and then to increase the crawl rate in the later stages of the transition period. One possibility would be to set the crawl rate at .5 percent for the first five years, .75 percent for the next five years, and 1.0 percent for the next ten years. By the time the crawl rate is increased, there will have been some realignment of exchange rates and a corresponding reduction in balance of payments disequilibria so that the adjustment to the higher crawl rates should not be difficult. With this schedule, it would take twenty years to achieve the same limits as achieved above in 32 years with a constant crawl rate.[10] With reasonably responsible internal policies, exchange rates should be well within these limits at the end of a twenty-year transition period, so there should be no difficulty in abolishing the limits altogether at that time.

[10] After five years, the limits would be 3.4% below and 3.6% above par. After ten years, the limits would be 7% below and 7.5% above par.

Unilateral Action by United States

If an international agreement cannot be reached, the United States ought to take unilateral action rather than support the fixed exchange rate system through a combination of domestic deflation and trade and capital restriction. A plan for unilateral action would also strengthen the United States' bargaining position which would be quite weak if unilateral action were ruled out. Furthermore, the very presentation of a multilateral plan would suggest that the United States has such a pessimistic view of the fixed rate system that it might well act unilaterally anyway. Unless a convincing plan of unilateral action were made public simultaneously with the multilateral plan, fears as to the nature of possible United States unilateral action could cause an immediate exchange crisis of mammoth proportions.

In devising a unilateral plan, the crux of the matter is, as with the multilateral plan, to provide for a gradual transition so that large speculative profits cannot be assured. The basic plan might be as follows: The United States would start lowering its buying price of gold by one percent per year, and raising its selling price by one percent per year. The United States would assume no further responsibility for fixing exchange rates. However, any foreign country that wanted to do so could buy gold from or sell gold to the United States at any time at whatever the current United States buying or selling prices are.

Thus, a country could intervene in the foreign exchange market, if it chose to do so, to prevent a depreciating dollar from causing losses for its citizens holding dollars. The country would be protected with respect to its official holdings of dollars insofar as it was willing to use the dollars to buy gold. If it did not want to buy gold, then its holdings of dollars could be used either to buy United States goods, or sold for other currencies, or simply held. The country could also, if it so chose, sell its gold to the United States for dollars. In this way, the United States would satisfy its many pledges to maintain the price of gold, not by actually maintaining the price, but by giving countries an option of buying or selling gold before the price changed significantly.

To protect itself against the possibility that its buying price would be a support price for the private market, the United States should make clear at the outset that there are limits to the amount of gold it will buy. After netting out United States gold sales to a country, the

maximum amount (in ounces) of gold the United States should buy from that country should be the country's official monetary gold stock on the day when the unilateral plan is announced. Conversely, countries might desire to buy more gold than the United States had available. The United States must, therefore, retain the right to redeem dollars in the foreign currency of the country involved. The foreign currency would be obtained either by borrowing from the foreign government or by floating bonds in the country's private capital market. Any country refusing to permit the United States to borrow would be denied the privilege of exchanging its dollars at the price guaranteed by the United States.

If the United States chooses to redeem dollars in foreign currency, the rate should be determined as follows: let $P_{U.S.}$ be the current United States selling price of gold; and let P_f be the par value price of gold in the foreign currency,[11] where the par value is taken as of the date the United States adopts its unilateral plan; and let R be the number of units of foreign currency per dollar; then

$$R = \frac{P_f}{P_{U.S.}}$$

This formula is the equivalent of the United States taking borrowed foreign currency to the foreign central bank and buying gold from it at the price P_f, which remains constant over time, and then selling this gold back to the foreign central bank for dollars at the price $P_{U.S.}$, which rises by one percent per year.

This plan, then, throws to foreign countries the choice as to whether to limit exchange rate fluctuations. But, the United States shares the burden of exchange intervention. The precise exchange intervention points chosen by any particular country will depend on its attitudes toward gold and dollars, and on its forecasts as to future exchange rate and free market gold price fluctuations. Each country will fall into one of three classes.

1) A gold bloc may emerge in which each country belonging to the bloc buys and sells gold at a fixed gold parity. A gold bloc country would prevent the dollar from depreciating below the point at which it can buy dollars and then use the dollars to buy gold from the United States at a net cost in its own currency equal to its gold parity. The limit to the appreciation of the dollar would be

[11] By par value price of gold is meant the foreign currency price of gold implied by a country's declared par value on the dollar, given a gold price of $35 per oz.

determined in a similar manner. If net sales of gold to the United States ever approached the country's limit determined by its initial gold stock, the country would be forced to permit the dollar to appreciate further, unless it could borrow dollars in the United States or elsewhere. On the other hand, if the dollar depreciated and the United States, after running out of gold, began to redeem dollars in borrowed foreign currency, each gold bloc country would have to decide whether to accumulate claims on the United States, the claims being denominated in the country's own currency. It is likely that a country would intervene, at least when the dollar depreciated somewhat below the gold parity intervention point, because the greater the depreciation of the dollar, the higher the rate of return from intervening, thereby inducing the United States to borrow. [12] The intervention points will, of course, change over time as the United States buying and selling prices for gold gradually spread apart.

2) A dollar bloc may emerge in which countries peg their currencies more or less rigidly to the dollar. Such countries would have to hold dollar reserves and to adapt their policies to those of the United States.

3) Finally, a pragmatic profit-maximizing bloc may emerge. These countries would be wedded to neither gold nor dollars, but would hold whichever assets promised the highest return. Since the downward crawl of one percent per annum in the United States gold buying price would produce a negative yield to gold holding while dollar assets would have a positive interest yield, a pragmatic bloc country would probably convert all of its gold into dollars at an early date. Only if the expected rate of increase of the free market gold price were above the United States interest rate minus one percent, would a pragmatic bloc country want to hold onto its gold. As time went on, it would be even less profitable for a country to convert dollars into gold because of the immediate loss produced by the spread between the United States buying and selling prices for gold. There is no natural intervention point to prevent appreciation of the dollar; a pragmatic country would simply sell off gold and/or dollars as it thought best to limit the appreciation. A lower limit to depreciation of the dollar, however, is determined by the point at which it becomes profitable for a country to buy dollar exchange,

[12] The rate of return is greater than the nominal interest rate on the loan by virtue of buying dollars at a discount from the gold parity intervention point.

use the dollars to buy gold from the United States, and then sell the gold on the free market. This intervention point may be either above or below the gold bloc intervention point defined above, depending on whether the free market price of gold is above or below the country's original par value price of gold. If the United States is redeeming dollars in borrowed foreign currency, then the intervention point is subject to the same considerations as discussed above for the gold bloc countries under these circumstances.

In all three cases, countries may intervene before exchange rates have moved to what we have called intervention points. Such intervention might take place in an attempt to create more stable market conditions and/or on the basis of purely speculative considerations resulting from expectations as to exchange rate movements.

As the United States buying and selling prices for gold become farther and farther apart, the number of gold transactions will diminish, and eventually there will be no further transactions at the official buying and selling prices. When it is clear that no further transactions are likely, the commitment to buy and sell should be rescinded and the remaining monetary gold stock disposed of by periodic sales on the free market.

Surprisingly enough, the unilateral plan would not seem to violate the Articles of Agreement of the International Monetary Fund if the Articles are strictly construed and so long as the United States does not have to avail itself of the option of redeeming dollars in borrowed foreign currency rather than in gold. The relevant language appears in Article IV:

Section 2. *Gold purchases based on par values*

The fund shall prescribe a margin above and below par value for transactions in gold by members, and no member shall buy gold at a price above par value plus the prescribed margin, or sell gold at a price below par value minus the prescribed margin.

Section 3. *Foreign exchange dealings based on parity*

The maximum and minimum rates for exchange transactions between the currencies of members taking place within their territories shall not differ from parity

(i) in the case of spot exchange transactions by more than one percent;

Section 4. *Obligations regarding exchange stability*

(a) Each member undertakes to collaborate with the Fund to

provide exchange stability, to maintain orderly arrangements with other members, and to avoid competitive exchange alterations.

(b) Each member undertakes, through appropriate measures consistent with this Agreement, to permit within its territories exchange transactions between its currency and the currencies of other members only within the limits prescribed under Section 3 of this article. A member whose monetary authorities, for the settlement of international transactions, in fact freely buy and sell gold within the limits prescribed by the Fund under Section 2 of this article shall be deemed to be fulfilling this undertaking.

Section 2 permits the United States to set a buying price for gold below par, and a selling price above par. The obligation to keep currency transactions within one percent of par as stated in Section 3(i) is, according to Section 4(b), fulfilled if a country freely buys and sells gold within the restrictions imposed by Section 2.

The unilateral plan would clearly not be within the spirit of the Fund Agreement. One of the purposes of the Fund is "to promote exchange stability . . ." [Article I (iii)]. However, the strict constructionist could argue that "exchange stability" is not the same as "exchange rigidity" and that fluctuating exchanges may promote exchange stability and other purposes of the Fund such as,

> to facilitate the expansion and balanced growth of international trade, and to contribute thereby to the promotion and maintenance of high levels of employment and real income, and to the development of the productive resources of all members as primary objectives of economic policy. [Article I (ii)]

While the United States would apparently not violate the Articles by adopting the unilateral plan, it might force other IMF members to do so. If other members supported their currencies within one percent of par, they would either have to risk accumulating additional large amounts of dollars, or risk having to take losses on gold as the United States gold price spread grew ever larger. Other members could avoid this problem only by switching to a policy of buying and selling gold freely to members in order to avoid the obligation to peg exchange rates within one percent of par.

The Cost of Demonetizing Gold

Under any reasonable economic definition of cost, for the world as a whole, the direct cost of demonetizing gold is negative; that is to

say, there is a positive gain to be had from demonetizing gold. By direct cost is meant the cost of selling off the monetary gold stock to private individuals. The indirect costs and benefits, which result from the monetary stability (or lack thereof) of a gold standard, are the very benefits from adopting a flexible rate system which have been taken for granted in this paper. But since the direct cost is always an issue in any discussion of demonetization of gold, it is useful to examine the issue with some care.

Once incurred, the costs of gold production are irrelevant for future decisions; opportunity costs, not sunk costs must be examined. Ignoring all of the indirect effects concerning monetary stability, it is obvious that, at this point in time, to simply store the existing stock of gold is the most costly alternative. Rather than pay storage costs, it would be cheaper to dump all the gold into the depths of the ocean. Of course, a better alternative exists. The monetary gold should be sold to the private sector at the highest price possible. Whatever the gold brings when it is sold to the private sector will be a net gain as compared to simply letting the gold sit idle in vaults. Assuming that gold lost its monetary demand, both public and private, the price of gold would sink to a level that would create an excess of current industrial and artistic demand over current production, thus using up some of the current stock. This situation would continue over a period of years until the stock was exhausted. The benefits from using up the stock would consist of the release of resources presently used in gold mining and in the industrial and artistic services yielded by the gold as it was used.

While it is perfectly clear that, for the world as a whole, the direct opportunity cost of demonetizing gold is negative, there are still questions of the distribution of gains and losses. Under the multilateral plan, governments would share in the true gain according to the predetermined quotas, while recording bookkeeping losses, since gold would be carried on the books at 35 certificate dollars per oz. and sold for something less. Under the unilateral plan, the United States might be forced to bear some losses on gold purchased from other nations. With a buying price starting at $35 per oz. and declining at one percent per year, the United States could end up buying all foreign official gold at prices close to $35 per oz., amounting to an outlay of approximately $29 billion. However, the United States would realize something on its pre-plan gold stock (currently about $11 billion at $35 per oz.) which would otherwise sit idle in vaults.

Under the extreme assumption that the United States purchased all the foreign official gold, the break-even disposal prices would be $25 per oz.; and, even if the disposal price were $15 per oz., the net loss would amount to only twelve billion dollars. Actually, the possibility that the United States would experience inflation might make countries reluctant to exchange gold for dollars, and some profits might be made through the spread between buying and selling prices for gold. At any rate, the net costs are likely to be relatively small, especially when compared to the cost imposed by monetary instability under fixed rates.

While detailed knowledge of the gold industry would be required to produce any numerical estimates of the effects on the price of gold of demonetization, the formal nature of the problem is clear. First, an estimate of the stock of monetary gold to be sold to the private sector is needed. In the case of the multilateral transition plan, this stock would equal the present official gold stock, since the two-tier gold market would keep the official gold stock at its present size, less any monetary gold purchased by governments from the transition fund. In the case of the unilateral plan, the figure required is an estimate of the amount of gold the United States would have by the time the spread between the buying and selling prices becomes so large that no further transactions occurred. The maximum amount would be the present official gold stock.

For convenience, it may be assumed that the annual sales would be large enough that sales plus production would exceed usage, the difference accumulating in private speculative stocks. This assumption implies that the gold price would be unaffected by the exact size of the annual sales, assuming constant marginal costs of storing gold; so that, for analytical purposes, we may assume that all the gold is sold at once at $t = 0$. Under these conditions, the size of the annual sales determines only who stores the stock, government or private parties, and not the price. It is then necessary to specify the time at which sales would begin.

If private parties are to hold speculative stocks of gold, the gold price must be expected to rise steadily over time at a rate equal to the interest, storage, and risk costs of storing gold. This means that, at $t = 0$, the gold price must be at a level, say P_O, such that there is an excess flow demand (from industry and the arts). The gold price will gradually rise over time according to $P_t = P_o e^{rt}$, where r is the annual rate of carrying costs. Eventually P_t becomes high enough that current gold production just covers the flow demand, thus reducing ex-

cess demand to zero, and ending the sales out of gold stocks. At this point, the gold stocks should be exhausted. If they are not exhausted, then the initial P_0 was set too high.[13]

At the current time, production (including U.S.S.R.) is about 57 million ounces per year while usage is about 14 million ounces per year. The accumulated stock, including both official stocks and estimated private stocks, is about 1,800 million ounces.[14] From these statistics, it is clear that, in the event that gold were demonetized and official stocks sold, the price would have to drop far below $35 per oz. The price would probably drop far enough to entirely eliminate gold production for a number of years while industrial and artistic demand worked down the stock.

Concluding Observations

This paper has presented two transition plans, a multilateral plan and a unilateral plan. In practice, it is likely that some, though not all, countries would be willing to join the United States in implementing a multilateral plan. In this case, the plans could be adapted so that a group of countries would adopt the arrangements of the multilateral plan among themselves while adopting the unilateral plan arrangements *vis a vis* other countries.

It is hoped that the plans presented will encourage more thinking on transition problems. Additional analysis is needed to develop the feasible plans of this paper into optimal plans. In particular, the size

[13] The mathematical statement of the problem is as follows: Let the excess flow demand function for gold at time, t, be $D_{Et} = D_E(P_t,t)$; let the stock of gold to be sold off be S_0; and let the carrying costs for storing gold be r per annum. Furthermore, let T be the time when the price has risen to a level such that the excess demand is zero. Since the price trajectory must be $P_t = P_0e^{rt}$, T is found as a function of P_0 such that $0 = D_E(P_0e^{rT}, T)$. Let this function be $T = T(P_0)$. We can now write the solution as the value of P_0 such that

$$S_0 = \int_0^{T(P_0)} D_E(P_0e^{rt}, t)\, dt.$$

Depending on the nature of the excess demand function, multiple solutions to the above equation are possible. In the event of multiple solutions, the one involving the highest value of P_0 would, of course, be the market solution.

[14] These figures refer to 1967, and are derived by dividing the dollar figures in Machlup, op. cit., by $35.

of the limit crawl rate needs further examination. But any transition plan must meet certain basic political requisites. It must be possible to discuss the plan and negotiate its details without causing an international financial crisis. Since the United States would be breaking an implied contract to maintain the price of gold at $35 per oz., it must attempt to negotiate a multilateral plan acceptable to other nations or, failing agreement, must compensate foreign governments for losses caused by a unilateral abandonment of the gold standard.

There is much to be said for the point of view that economists should design programs with desirable economic properties without worrying about political feasibility. But the political requisites discussed in this paper are not mere matters of party or international politics; they involve the basic notions of the democratic process and of compensation for losses forced upon others when previous commitments are broken. Advocates of flexible exchange rates have, so far, almost entirely ignored these issues in their concentration on the steady state advantages of exchange flexibility. But, as this paper has attempted to show, a transition to flexible rates within certain basic political constraints raises important economic problems. These problems ought to be analyzed by economists and not merely left to the political representatives of governments negotiating at some international conference.

DISCUSSION

ELI SHAPIRO

In addition to serving as a discussant, I thought it might be useful if I also attempted to contribute a minor sermon. In the first role I would start by asserting that philosophers, like vegetables, are profoundly affected by their environment. To support this first assertion I would submit the following: in June, 1969 the Federal Reserve Bank of Boston saw fit to call a conference, the major unstated purpose of which can be interpreted to be to mount yet another assault on the "monetarists." More subtly, the June conference could have been called an assault or a call to arms to stop Milton Friedman who had been so effective in boring from within – to borrow a Marxist phrase never used against Friedman before. His (Friedman's) boring-from-within was so effective that it even ensnared such a great 19th century libertarian as Senator Proxmire who was led to demand figures on, and explanations from, the Fed on the money supply for which it was presumably responsible.

We are gathered here this week as guests of the Boston Fed to discuss the international payments system. While I have not yet received and therefore have not yet read all of the papers on the program, I note that one paper is devoted to a spirited defense of the fixed exchange rate system; three papers take for granted some degree of flexibility in exchange rates and are concerned with how to get there or why we should. Of the remaining sessions, I am assuming at least one-half will have something favorable to say about flexible rates and variants thereof. I would guess, therefore, that over 50 percent of the program is devoted to the virtues of yet another thorn in the sides of the central banking authorities – flexible exchange rates!

As a preacher, I could remark about the power of positive prayer. Being Eli Shapiro and not Norman Vincent Peale, my theology was learned in a different department of the university. Hence, I conclude my sermon by remarking flatteringly on the powers of positive economics. While Milton Friedman has had somewhat more allies in his attacks on fixed exchange rates than he did on his attacks on credit markets or whatever variant of monetary policy the non-believers supported, the growth of interest in the subject matter

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of both Boston Federal Reserve Bank seminars is the greatest testimonial to the courage, scholarship and singlemindedness of Milton Friedman, a man who has often been described as a person with a whim of iron.

In concluding this sermon, I would like to forestall the possibility of the charge of being a sychophant of the so-called Chicago School by freely admitting that in the over 30 years I have known Milton he has gotten as large a share of my blood in debate as he has of others. I do think, however, in a world of attack on the university, the singular success of Friedman is my measure of the need for free and unfettered scholarly research on subjects of great interest to scholars. For indeed, it is hard to believe that 1 percent of the monetary economists in the world, both domestic and international, in as short a period as 20 years would have believed that a June and October conference on their respective themes would ever have been called by a regional representative of the Federal Reserve System. Much as I would like to attribute a major role to Milton Friedman's scholarship, it impinges on me as a scholar to have him share this credit with developments in the environment which have arisen to plague central bankers. Since Frank Morris has already informed us of the subject matter of the proposed third conference, my plea is that for its fourth conference the Federal Reserve Bank of Boston should choose the theme "Was the Plaguing of the Central Bankers Self-Induced or Imposed?" I am convinced this would make an interesting and lively seminar with a prospectively high payoff for the public.

As I see the problems, developments that have been taking place in the environment over the last 20 years have changed and thrown up a set of problems to which measures for their solution are required. Furthermore, as a consequence of both of these seminars, there is a search for more automaticity in the corrections, or corrective responses, and a desire for less dependence on judgment, feel and other intuitive nouns as guides to policy. I believe we owe a debt of gratitude to Bill Poole for wisely choosing to deal with a problem that is often shoved under the rug. As he so correctly points out at the end of his paper, there is a good deal of debate and confusion in the debate which is due to the absence of a distinction between, as he describes it, the steady state flexible exchange rate system and the kinds of problems that might be associated with their introduction. And I think he is quite correct and quite wise in devoting his energies and his intelligence to trying to deal with the transition problem. If indeed he takes for granted the desirability of a free exchange rate,

one has to demonstrate the way in which you achieve this state.

Lessons from the Elimination of the Peg

While he has not talked about this, I do believe it is appropriate, before I comment on some of his suggestions, to remind you that one of the issues in the debate is the degree of speculation and upset in financial markets that would result from a change in our fixed rate system. I have often thought that there is a good deal of information to be gained from an understanding of a similar range of problems which surrounded the widespread debate about the elimination of the peg — finally consummated in March of 1951. The standard variant of the debate after 1945 was to see who could make headlines in the *New York Times;* economists are not fools, nor are they loath to accept publicity. So the game became one of announcing that if you eliminated the bond-support program, Government bonds would fall to 80. That got headlines in the *Times,* so the next headline seeker went to 65 percent of par and got even bigger headlines, and ultimately you got down to predictions that bonds would fall to about 46 as a consequence of eliminating the bond-support program. Be that as it may, we eliminated that bond-support program in March of 1951. There was a certain amount of disturbance in the market and the Fed did indeed actively intervene to "correct disorderly markets"; there were a few flurries of difficulty associated with the issuance of the Reifler 3¼'s and in May of 1953 when General Motors Acceptance Corporation put out an issue. The private market was battered for a few days which induced the Fed to enter into the market as a purchaser of bonds. So what you had, in effect, was the elimination of the peg and some intervention in the intervening period to prevent disorderly markets from arising. Now this "poor" bond market that was going to fall apart on the basis of the elimination of the support program has shown enormous durability and viability, to say nothing of the depth, breadth and resiliency in volume. For I remind you that in 1968 there were in excess of $22 billion corporate bond issues gross, a number roughly fourfold the amount issued in 1950. It seems to me the market has been very effective and growing in volume. Moreover, it is not without interest that at the time of the bond-support program 70 percent of the smaller volume of issues was directly placed and only about 30 percent was publicly offered, whereas in 1968 those proportions are completely reversed. I am not arguing this as

evidence; I think it is an interesting episode to enable us to get a fix on how viable the financial markets are in response to changes in established practices.

I would infer one lesson from the bond-support elimination. It may be necessary to have a central bank or the monetary authority intervene in the foreign exchange market during the transition from a fixed exchange rate regimen in order to avoid disorderly developments – a point that Poole apparently does not wish to adopt in his particular system. I would presumably grant him his wish to eliminate the intervention after the transition partly on the grounds that Robert Triffin worried about this morning, namely, how could you get agreement among the central banks.

Poole's Plan for Transition from Fixed to Flexible Exchange Rates

Mr. Poole concentrates on the problem of transition from fixed to flexible exchange rates. By the "fixed" exchange rates he does not mean "permanently fixed" rates but the present "adjustable peg" system; "flexible" exchange rates are "completely flexible or freely floating" exchange rates, not including any "limited flexible exchange rates" system such as the crawling peg or the wider band.

Mr. Poole's main ideas for the transition can be presented briefly as follows:

1. Assumption: Desirability of a system of flexible exchange rates
2. Transition Process:

a. *Present System*	*Transition*	*Goal*
Fixed exchange rates	Multilateral transition Unilateral transition	Flexible exchange rates

b. Recognition of the importance of political constraints in the transition process

If the United States could get the international cooperation, argues Mr. Poole, the multilateral transition plan would be implemented along the following line:

> First, a "crawling limits"* procedure would be adopted to prevent any currency speculation.
>
> Second, a transition fund would be set up to prevent a country

*The "crawling limits" might better be called the "expanding limits" or "double-edge crawling limits" since the limits would expand or crawl both ways in upper *and* lower directions.

from accumulating its reserves during the transition in an excessively asymmetrical gold/dollar proportion.

Third, the dollar certificates would be issued with a purchasing power clause in order to compensate for the weakening value of the dollar reserves due to any inflation in the United States.

Mr. Poole's prescription for the unilateral transition plan follows a different and much simpler procedure. If the transition could not be achieved through international cooperation, the United States would start lowering its buying price of gold by 1 percent per year, and raising its selling price by 1 percent per year.

After a period of time, the gap between the buying and selling prices of gold would be sufficiently widened as to isolate the dollars from gold completely and the dollar would find its own parity with other currencies within the flexible exchange rate system.

Mr. Poole's ideas for the transition are supposed to work in such a way as to "meet certain basic political requisites" (page 25). He emphasizes the fact that any transition plan should meet such conditions as to be negotiated "in details without causing an international financial crisis" (page 26).

Weaknesses of the Plan

However, the weakest point in his proposed plan is the very fact that the plan is perhaps politically almost impossible to discuss or negotiate openly and through "normal democratic political processes" (page 3). His multilateral transition plan would require a prolonged discussion and negotiation on an international scale.

Considering the fact that the SDR's have taken nearly half a decade to be put into practice (and the SDR's are only a "minor" evolutionary step within the existing Bretton Woods spirit of a fixed rate system), I am led to conclude that it would be extraordinarily difficult to make, through a normal democratic process on an international scale, such decisions as to abandon the present gold-exchange standard, adopt a freely flexible exchange rate, and to devise an elaborate scheme for the transition process as envisaged in the paper.

Perhaps a more realistic transition to the flexible exchange rates, again accepting his assumption, might be achieved through adoption of an exchange rate system with limited flexibility on a transitory basis as follows:

Present System	*1st Stage Reform*	*2nd Stage Reform*	*Goal (3rd Stage Reform)*
Fixed rates	Wider band (or crawling peg)	Combination of wider band and crawling peg	Flexible rates

There is another concern in Poole's paper which does bother me a little bit. I refer to his argument that the United States must honor its commitments and therefore must guarantee the gold value of these commitments through the various devices that were mentioned in the paper. There are two sorts of issues that arise here. One of them is the question of guilt. Is the failure of the system exclusively the responsibility of the United States? There seem to be many differences of opinion as to where to assess the guilt and seemingly by giving a purchasing power guarantee, the implication is that the United States is the sole guilty party. Moreover, there is another problem which is raised in my mind for example, for those official institutions who have *voluntarily* converted into gold. That is their decision, and they take the losses and gains associated with it. For those who have been *forced* in some sense to hold dollars instead of gold, there is a question of whether on pure equity grounds, they deserve to be compensated. If official institutions had held dollars instead of gold since 1950, and if we assume that the average interest rate earned was 3 percent on balance, they would by this year have accumulated 75 percent more wealth than they would have by holding gold. If the gold price were halved, they would still be ahead. Moreover, the power of a compound interest table being what it is, if they had only held these dollars since 1960 instead of 1950, they would be wealthier by 30 percent as a result of continuous compounding. It seems to me that there is a good case to be made for the United States charging an investment advisory fee to these official institutions for they would have earned nothing by holding gold.

One of the objectives of Bill Poole's proposal, and one of the constraints on it, is to encourage the retention or extension of progress that the IMF system has made in gains in trade and capital. I think there are two sorts of remarks I would like to make on that. These are my judgments; they are widely debated, I would be the first to admit. I think a great deal of credit that the IMF system gets is richly deserved. On the other hand, it is not all black and white. For it seems to me that subsequent to 1960, and if one looks only at the United States rather than the rest of the countries of the world and if one looks only at the capital account of the United States beginning with the Interest Equalization Tax, one can make a

reasonable case for the fact that the IMF system has resulted really in a retardation of what are liberal objectives with respect to trade, with respect to capital, with respect to aid, and other forms of tied grants. So that there is some merit to the proposition, at least subsequent to 1960, that the sort of confusion between means and ends that engendered the IMF system at Bretton Woods would be, in fact, enough to drive Aldous Huxley mad, for the ends are now the means in a perversion of the system – at least in reference to much of United States policy, although not all. Moreover, it seems to me that you impose a rather large constraint on reform proposals if you ask of the flexible exchange rate that it be accountable for growth of trade and capital without reference to the fact that you haven't made as much progress on trade and capital since 1960 under the IMF system. Perhaps you are imposing more of a demand on the flexible system than we are prepared to really impose on a fixed exchange rate system.

Timing Problems

Another thing that is troublesome in following up the interesting discussion of alternatives outlined in Bill's paper is that we really have no specification of the extent of disequilibrium at the time that transition is undertaken. Poole starts with a peg that is crawling at ½ of 1 percent per annum and immediately recognizes that the transition would be too long. He does cite, as an offset to reduce speculative capital outflows, the desirability of an interest rate policy that would presumably compensate for the crawl that was introduced. Now it does make a big difference on how long you have to crawl, and by how much you have to crawl over any given interval for it makes a big difference in terms of the internal political problems of the level of interest rates which is required to offset the inducement to speculative capital outflows. My own particular guess is that with even a ½ of 1 percent increase for a couple of years, coming as it does on the top of our interest rate behavior in the last couple of years, the Federal Reserve authorities might have a very severe political problem in maintaining their independence, given the nature of the biases that are expressed by some of the more vocal members of the Congress of the United States, which I understand is the boss of the Federal Reserve System.

A second problem that arises in connection with the timing is that there seems to be only one thing that Friedman and Bill Martin seem

to agree on, and that is that the monetary authority only has a short-run effect on interest rates. Hence, if the adjustment and interest rate policy require a longer period of time the presumption is – both Friedman and Bill Martin would say – in effect we do not have that power if the dimensions of the rate rise are that serious. Now Bill Poole suggests that compounding by ½ of 1 percent would provide a substantial degree of flexibility in the system, and, as I say, that issue turns on what your judgments are as to the extent of the disequilibrium at the time of the introduction of the system. This suggests, in effect, my belief that a realignment of currencies may be necessary first. The problem that arises is how do you get this realignment without putting the cat among the pigeons – that is to say, inducing speculative capital outflow at the time that such a realignment is being considered.

Another feature of the first of the plans is that reserves are still needed, although for a relatively short period of time or as long as the transition period is involved. It seems to be in Poole's system of multinational arrangement that the real dollar amount of reserves is fixed, and under the circumstances unless the peg crawls very rapidly, it may be that the system is sort of choked up by inadequate reserves. One of the problems of the system currently, that leads us to be concerned about it and discuss it, is the difficulty of the reserve creation process under the present system. Now let me say further that in connection with the unilateral proposal of Poole, the presumption is that you would have a growing gap between the buying and selling prices of gold, and over time that gap would be sufficiently widened to isolate the dollar from gold completely and presumably then the dollar would find its own parity with other currencies within the flexible exchange rate system. It isn't at all clear to me whether we can, in fact, achieve such a state of affairs. This is not an economic matter, I think; it is a matter of judgment of the negotiations and the conditions necessary for that unilateral transition plan. For example, there may be political constraints such that it would be highly impractical to have the unilateral announcement by the United States of a process to demonetize gold. If a catastrophic monetary crisis hit the United States, and the only feasible way out were to adopt the flexible exchange rate, it seems to me that it might be more desirable to announce the separation of the dollar from the gold right away rather than by a protracted process of lowering the buying price of gold 1 percent per year, and raising the selling price of gold 1 percent per year. On the other hand, if

there were no such crisis, but nevertheless the United States announced unilaterally its intention of changing the dollar value of gold by 1 percent per year successively, the world might lose its confidence in the dollar and try to shift out of the dollar, thereby creating the need for an immensely difficult rescue operation by the monetary authorities. I suspect that it would probably force the United States to float the dollar right away rather than allow several years of the transition period, as envisaged by Mr. Poole.

Now there is another nest of problems which is solved in a more cursory way than I care to see. For example, the issue of what do you do if you run out of gold. According to Bill Poole, the United States must retain the right to redeem dollars in the foreign currency of a country involved, and the foreign currency, says he, would be obtained by either borrowing from the foreign government or by floating bonds in the country's private capital market. Well, a lot of the problem with the present system is that national sovereigns don't view this as the sort of circumstances which they would permit or else we would have far fewer crises, it seems to me, than we currently have. Finally, in his paper Bill Poole says any country refusing to permit the United States to borrow would be denied the privilege of exchanging its dollars at the price guaranteed by the United States. This strikes me as a violation of the first precept he has, which is a guaranteed gold price. These are a group of concerns. I don't mean in any sense to denigrate the paper. I think the problems dealt with are important – particularly important in a policy-implementation sense. I simply think that more ought to be done with them.