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Inflation in the 1980's?

Remarks of

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I regret to report that I expect the 1980's will be characterized by ongoing serious but variable inflation. It may be helpful to review briefly the kinds of changes that occur in an economy as it is moved from a norm of expected price stability to a norm of expected ongoing inflation. In years past, this has been done largely by viewing the experience in other countries. However, we have now arrived at a point where data for the American economy also tell an impressive story. If the past 30 years are divided arbitrarily into two equal periods—1949-64 and 1964-79—and changes in a number of economic series over these periods are compared, we see that the periods are different in a number of respects.

Prices increased during both periods but much more in the latter than in the former. Consumer prices, for example, increased 134 percent in 1964-79, compared with 30 percent in 1949-64. Other measures of price change also show the stronger inflationary thrust in the recent period. And as you know, the pace of inflation has been quite variable, with strong surges in 1973-75 and again in 1978-80.

Interest rates moved generally upward through the 30-year period, with sharp peaks occurring in 1957, 1960, 1967, 1973-74, and 1978-80; each peak was higher than the preceding one. The average yields on both three-month Treasury bills and Aaa corporate bonds in the 1964-79 period were double, or more than double, the yields in the first period of moderate inflation. Quite clearly, interest rates are affected by inflation and the associated effects on savings and demand for credit. If the 1980's were to be afflicted with strong and variable inflation, they would almost certainly be afflicted with high and variable interest rates.

One of the most critical features of an inflationary environment is that the growth of aggregate production tends to slow down. Hence, the average person's standard of living rises less rapidly or not at all. This is demonstrated in the table by the slowdown in growth of industrial production and real gross national product.

Aggregate production reflects both size of work force and output per worker. The labor force has grown rapidly, partly because of a strong rise in the proportion of the population in the labor force—

A more inflationary economy grows less rapidly, has higher interest rates and unemployment and a faster increase of debt than a less inflationary economy

Series	1949-64	1964-79
Prices and costs	(Percent change)	
Producer price index	22	129
Consumer price index	30	134
GNP price deflator.....................	38	128
Hourly compensation, private business ...	83	161
Unit labor costs	33	138
Output and productivity	(Percent change)	
Real gross national product	78	64
Industrial production	111	86
Real plant and equipment spending	178	164
Output per hour, private business	62	29
	(Percent, annual average)	
Unemployment rate	5.0	5.4
Finance	(Percent, annual average)	
Three-month Treasury bills..............	2.3	5.7
Aaa corporate bonds...................	3.6	7.2
	(Percent change)	
Money stock (M-1)	47	133
Debt per capita	(Average outstanding)	
Personal	$1,004	$3,237
Business...........................	$1,276	$3,906
Farm	$ 112	$ 351
Debt-to-income ratio	(Percent)	
Personal	49	66
Business...........................	279	497
Farm	165	387

SOURCES: Board of Governors, Federal Reserve System.
Economic Report of the President.
U.S. Department of Commerce, Bureau of Economic Analysis.
U.S. Department of Commerce, Bureau of the Census.

59.3 percent in 1979, compared with 57 percent in 1974, at the peak of the preceding boom, and about 55 percent in the midsixties. Unfortunately, the same cannot be said of production per worker. Productivity has eroded seriously. Output per man-hour in the private business sector increased 62 percent during the first period but only 29 percent in the more inflationary second period. Gains in productivity arise, of course, through increases in expenditures for new plants and equipment, improvement in education and training of the labor force, and the organizational skills of management and application of workers at their jobs.

Spending for new plants and equipment rose somewhat less rapidly during the high-inflation period than during the preceding period, and a larger proportion of such expenditures was for environmental improvement, not improvement of production. Undoubtedly, the slower pace of investment was caused in part by the higher and more variable interest rates; by the greater uncertainty that seems inherent in inflationary periods; by the shortening of business planning and investment horizons; by the diversion of savings from conventional financial assets to real assets, such as real estate, scarce metals, art objects, and the like; by the impact of progressive tax rate structures and the taxing of inflation-induced capital gains and interest income at progressively higher rates; and by the diversion of credit to finance speculation. The net effect is to restrict saving and investment in the economy and to erode productivity.

Another fallout of an inflationary environment is a rapid buildup of debt. Instead of fostering saving prior to making large purchases, an infla-

tionary environment promotes the psychology "to borrow now, to buy now, to beat future price increases." The 1964-79 period displayed a rapid buildup in debt compared with the earlier period. For example, debt per capita in the second period—whether personal, business, or farm debt—averaged about three times the level in the first period. And while it is true that money income continued to rise strongly, it did not rise nearly as rapidly as debt. Consequently, the ratio of debt to income was sharply higher in the 1964-79 period than in the earlier period in all sectors of the economy. Should inflation persist and possibly accelerate, the preference for debt financing, as compared with saving, would continue in the 1980's. However, more and more lending arrangements probably would be indexed in some manner, as to both interest and principal.

The form in which people save would also continue to change. So, the move toward real assets in preference to financial assets would continue, as would the willingness to acquire positions of high indebtedness relative to income or net worth. This, of course, can be a source of economic instability for individual households and businesses, as well as the economy.

High and sustained inflation not only erodes the acceptability and effectiveness of long-established Government institutions and practices but also spawns additional Government regulations. The tax structure, for example, would likely come under increasing pressure as inequities surface and probably would be revised, possibly shifted more to indirect taxes as compared with taxes on income. But a more basic change is also likely to take place. Both tax avoidance and tax evasion would tend to rise as people perceive the tax system to be increasingly discriminatory if not, in some respects, confiscatory.

On the other hand, individuals who feel they are not getting a "fair shake" in the presence of inflation apparently are more inclined to seek Government assistance to achieve their objectives. Such assistance may be granted by direct action of Government or by Government actions that facilitate the exercise of power by private groups of common interests. Both normally involve additional Government regulations. Such regulations frequently increase costs or reduce productivity, or both, and hence augment inflation. The exercise of private power is indicated, for example, in the rising incidence of unionization among groups once thought not likely to resort to group action—policemen, firemen, teachers, etc. Insofar as organized common interest groups are successful in avoiding the erosion of their real income through the generalized effects of inflation on aggregate production, their actions tend both to perpetuate inflation and, possibly, to increase further the inequities caused by inflation.

A further example can be drawn from the international arena. With ongoing domestic inflation, prices of U.S.-produced goods may rise relative to those produced abroad. As imports tend to rise and supply rising proportions of domestic markets, both business and labor may petition the Government for protection. Insofar as protection is provided—either by restricting imports or by subsidizing domestic business and labor—domestic wage rates, costs, and prices tend to rise even more. The effects extend also to the stability and viability of the international financial structure. The U.S. dollar continues to serve as the major reserve currency for many countries and the currency in which much international trade is financed. If these functions are to be discharged effectively, the exchange value of the dollar should show a substantial degree of stability. Hence, other countries are keenly interested in prospects for price stability in the United States and the favorable effects such stability would impart to international finance and trade and to economic progress.

So, it should be obvious that the transition from relatively stable prices to ongoing inflation is indeed a traumatic one for an economy. Inflation should not be permitted to continue into the 1980's. But the inflationary forces are strong and deeply rooted in the economic and political processes. The American people appear not yet to be ready to demand that the measures needed to eliminate inflation in the 1980's be adopted forthwith.

An inflationary environment generates expectations of further inflation and adoption of policies and practices that make individual price and income declines difficult if not impossible to achieve. These "structural rigidities" in the economy virtually allow only upward movement in most prices.

It is possible, of course, to wring inflation out of an economy even with structural rigidities. A slackening of economic activity with reduced production, reduced capacity utilization, and reduced employment will eventually slow the rate of inflation. But the more pervasive the structural rigidities, the greater must be the depth and the dura-

tion of the recession needed to achieve a given slowing in the rate of inflation.

I am concerned that structural rigidities may be so widespread and so firmly ingrained in the American economy that the recession would have to be so severe or so long in order to wring inflation out of the economy by conventional monetary and fiscal restraints that it may no longer represent a viable solution. For example, some studies estimate an unemployment rate of about 9 percent for 5 to 8 years would be required to slow the inflation rate to less than 2 percent, given the structure of the labor and commodity markets.

Thus, an attack on inflation should be comprehensive. In addition to appropriate monetary and fiscal policies, other supporting actions should be taken in concert so as to reduce the level of unemployment and the duration of "no growth" required to exterminate inflation. Without elaboration, the minimum requirements of a comprehensive attack on inflation would appear to include:

1. Substantial reduction of the rate of rise in Federal Government spending plus balancing of the unified Federal budget;

2. Further slowing of the rate of expansion of money and credit to a pace consistent with a stable general level of prices;

3. Repealing laws and Government regulations that directly increase prices or establish floors under prices, such as minimum wages, price supports for agricultural commodities, transportation tariffs, tariffs and other restrictions on imports, etc.;

4. Repealing the indexing of social security and other program benefits;

5. Review and reevaluation of laws and regulations that have high compliance costs and, thereby, unnecesarily increase costs and prices or restrict production, with repeal of those found wanting on a cost-benefits basis;

6. Imposition of a freeze on wages and prices (incomes) for a period of one year so as to invalidate escalation provisions of existing contracts while deregulation is accomplished and fiscal and monetary policies become effective, with proviso that the freeze, after review at the end of one year, might be extended an additional six to nine months;

7. Redefining full employment, as an objective of economic policy, as that level of employment that is consistent with price stability.

This is a drastic package and probably quite unacceptable until we have had a more drastic experience with inflation than we had in the 1970's. The objective would be to eliminate inflation while minimizing unemployment, maximizing production, and removing "structural rigidities" precluding achievement of full employment and price stability on an ongoing basis.

SDR Substitution, the Dollar, or Multiple Reserve Assets: Where Are We Bound from Here?

By Leroy O. Laney

Discussions in international financial circles in the late 1970's increasingly suggested that the world may be destined for a multiple currency reserve asset system. Such discussions appear more prevalent during periods of U.S. dollar weakness in exchange markets, when holders of what has been by far the most important foreign exchange reserve asset in the post-World War II period are most aware of the exchange rate risk on their reserves.

As illustrated in Chart 1, the dollar underwent its most prolonged slide during this period since the shift to managed floating in 1973. Reports of permanent diversification into other reserve currencies, even by official monetary agencies, increased markedly during 1978 and 1979.[1] The German mark, Swiss franc, and Japanese yen have been the currencies most often mentioned as alternatives to the U.S. dollar, and there even has been some mention of a revived monetary role for gold—not perhaps by reinstating any kind of gold standard but simply by recognizing the potential of gold, valued at market prices, as an addition to central bank portfolios.

There has been some formal recognition of the official reserve asset diversification that reportedly has taken place in both national currency markets and Euromarkets.[2] The United States, while emphasizing factors that should continue to underpin an important role for its currency—such as the size of dollar capital markets, has indicated that it will not attempt to artificially perpetuate the dollar's role.

The potential new reserve center countries seem to have acquiesced to the point that they acknowledge some likely enlarged role for their currencies, even though these countries generally remain quite reluctant to assume major reserve center responsibilities because of the constraints on their relatively more open economies. Balance-of-payments capital flows accompanying greater reserve use of their currencies could tend to be much larger relative to their total monetary bases and broadly defined money supplies than for the United States. Official intervention by their central banks to counter effects on the exchange rate might strain

1. For a discussion of the dollar's place historically among international monetary assets, the overall role of the reserve center country, and official reserve asset composition under managed floating exchange rates, see Leroy O. Laney, "A Diminished Role for the Dollar as a Reserve Currency?" *Voice of the Federal Reserve Bank of Dallas*, December 1978, pp. 11-23. For some empirical results of private-sector currency diversification under floating, see Leroy O. Laney, "Currency Choice Under Uncertainty: Some New Evidence," *Voice of the Federal Reserve Bank of Dallas*, May 1979, pp. 3-12.

2. See, for example, the *Economic Report of the President, January 1980* (Washington, D.C.: Government Printing Office, 1980), pp. 177-79, and Bank for International Settlements, *Fiftieth Annual Report, 1st April 1979-31st March 1980*, pp. 154-56.

CHART 1. Trade-Weighted Average Value of the U.S. Dollar Since the Beginning of Generalized Floating Exchange Rates

110 (MARCH 1973 = 100)
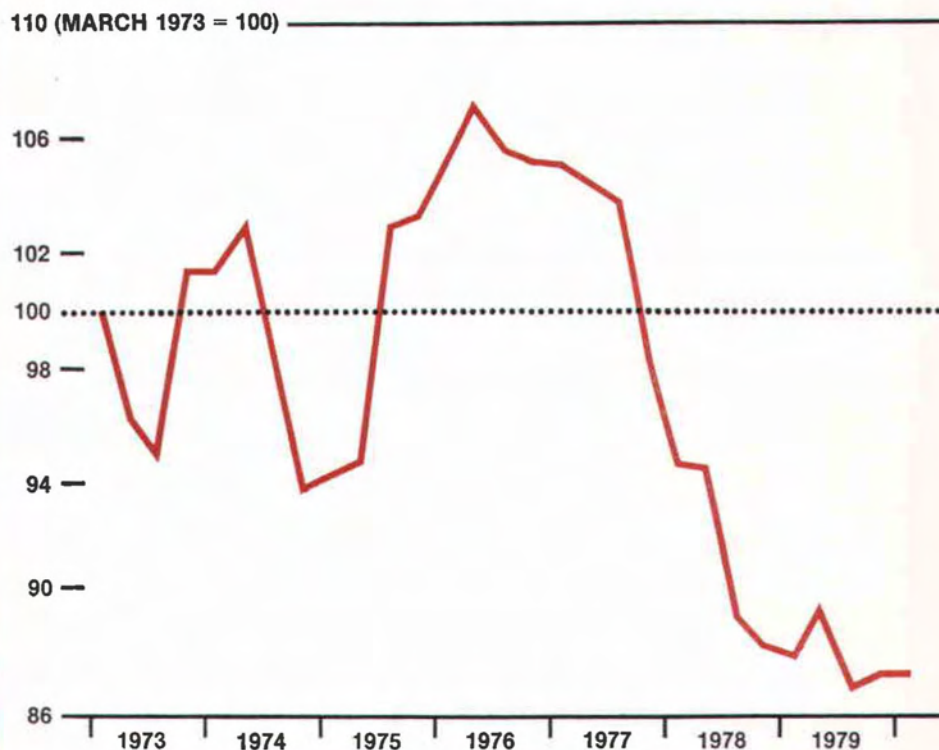
SOURCE: Board of Governors, Federal Reserve System.

monetary independence from such international influences, it has been argued, or at least it could necessitate undertaking substantial sterilization operations.

Under these circumstances, discussion was revived for instituting a larger role for the International Monetary Fund's Special Drawing Right (SDR) as the primary store of official international liquidity. The SDR, born in the 1960's when the U.S. dollar was still fixed to gold, originally was

Institution of the SDR substitution account has encountered, and is likely to continue to encounter, several obstacles. But it is demonstrated here that even if these obstacles are overcome, some incentives for reserve asset diversification may still exist.

linked to gold and, thus, to the dollar. But the floating of exchange rates in the early 1970's resulted in redefinition of the SDR in 1974 as a basket of 16 national currencies. Defining the SDR's value in such a way means, of course, that it is likely to be more stable than any single currency, since exchange rate risk is diversified among the various components of the basket. A "substitution account," administered by the International Monetary Fund (IMF), has been proposed whereby holders of existing official U.S. dollar balances could exchange them for SDR-denominated claims. If official monetary agencies were to hold a major portion of their international reserves in SDR's, it is contended, valuation risk on these reserves would tend to be less than if a single currency, such as the dollar, were held instead.

Institution of the SDR substitution account has encountered, and is likely to continue to encounter, several obstacles. But it is demonstrated in this article that even if these obstacles are overcome, some incentives for reserve asset diversification may still exist. As long as participation in the substitution account is voluntary, SDR proportions in optimally diversified official reserve asset portfolios might be smaller than many advocates of the substitution account have envisioned. As the current regime of managed floating exchange rates matures, we may move closer to a multiple reserve asset system with or without a substitution account.

Substitution account problems

Conceptually, a substitution account would consolidate outstanding official U.S. dollar foreign exchange reserves by taking them in as assets, issuing in their place SDR-denominated claims on the account that would be held as assets by participating central banks. The account is intended to affect the composition of reserves rather than their level. Substitution account claims might not be equivalent to previously created SDR assets, and the interest yield on them would not necessarily be the same. Basic purposes of the two are different, in that existing balances were created to augment international liquidity and aid in adjustment while the substitution account would have as its purpose the reduction of the risk inherent in holding reserves. But since one overall goal is to enhance the role of the SDR in the international monetary system and since this would not be achieved by having existing balances and substi-

The SDR currently is defined by a basket of 16 national currencies, and its yield is determined by a weighted average of interest rates in five major countries

TABLE 1. Special Drawing Right Capital Valuation and Interest Rate Weights

| Currency | Capital valuation | | Interest rate percent weights[1] |
	Units of currency in SDR basket	Percent weights at exchange rates of Jan. 31, 1980	
U.S. dollar	0.400	30.4	49
German mark	.320	14.0	18
U.K. pound	.050	8.6	11
French franc	.420	7.9	11
Japanese yen	21.000	6.7	11
Dutch guilder	.140	5.5	—
Italian lira...........	52.000	4.9	—
Canadian dollar......	.070	4.6	—
Belgian franc	1.600	4.3	—
Saudi Arabian riyal ...	.130	2.9	—
Swedish krona	.110	2.0	—
Iranian rial	1.700	1.8	—
Austrian schilling	.280	1.7	—
Spanish peseta	1.500	1.7	—
Norwegian krone.....	.100	1.6	—
Australian dollar	.017	1.4	—
		100.0	100

1. Formula computes weighted average of three-month Treasury bill rates in the United States and the United Kingdom, three-month interbank rates in West Germany and France, and the unconditional call money rate in Japan.
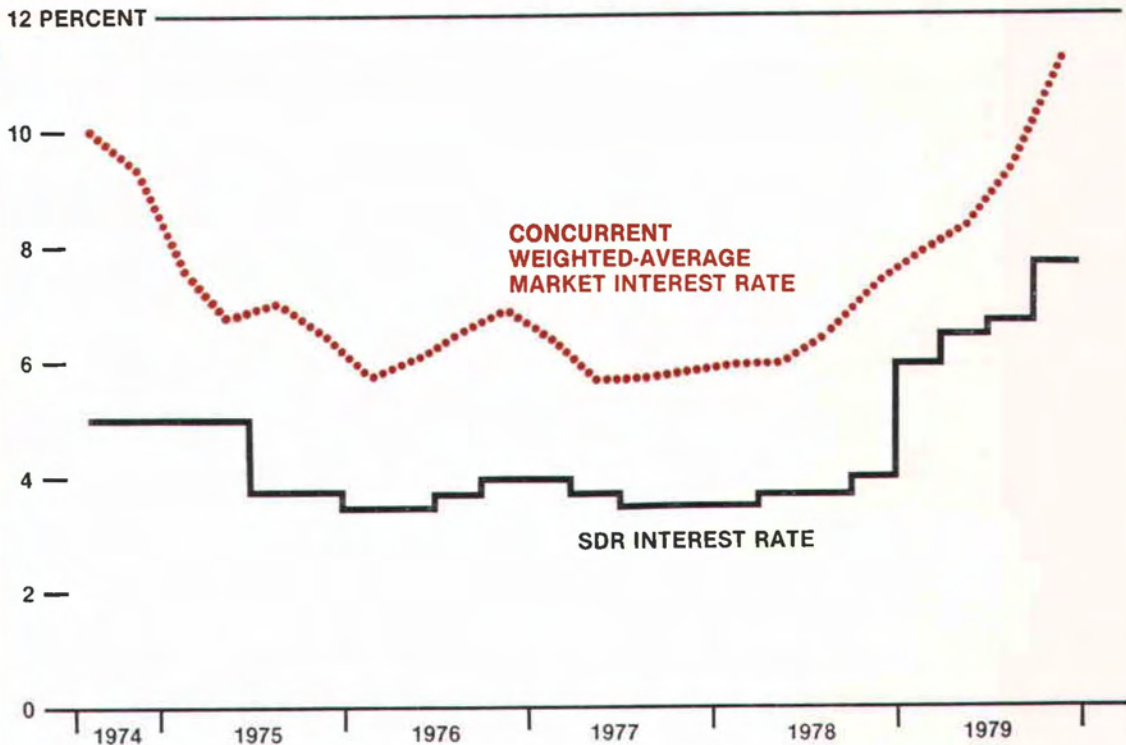SOURCES: International Monetary Fund.
Federal Reserve Bank of Dallas.

tution account claims treated as two separate assets, some similarity of yield and basic definitional characteristics may be desirable.

Table 1 presents currency units defining the existing SDR, along with their percentage weights at the end of January 1980. The importance of various currencies in the definition was originally determined by the countries' shares in world exports in the 1968-72 period, with the U.S. dollar's share modified somewhat to account for its financial importance. One redefinition occurred in July 1978, when the Saudi Arabian riyal and the Iranian rial replaced the Danish krone and the South African rand in the basket. Under existing IMF plans the basket is subject to further revision at periodic intervals. The next such review may extend to nondollar currencies as well the modification of currencies' importance to reflect financial significance, based on the amount of a country's

CHART 2. SDR Interest Rate and Concurrent Weighted-Average Rate

12 PERCENT

CONCURRENT
WEIGHTED-AVERAGE
MARKET INTEREST RATE

SDR INTEREST RATE

1974   1975   1976   1977   1978   1979

SOURCE: International Monetary Fund.

currency held in the reserves of other IMF members.[3]

The yield on the SDR is determined at present by a fraction of a weighted market rate, computed as indicated in Table 1. This fraction was 60 percent from mid-1974 through 1978. At the beginning of 1979, it was changed to 72 percent on creditor SDR positions and 80 percent on debtor positions. Since only a fraction of the computed weighted market interest rate is paid on existing SDR assets, this yield is inferior generally to that obtainable by investing in currencies directly. In Chart 2 the

actual SDR interest rate over time is compared with the weighted-average market rate that prevailed concurrently with it. (The SDR yield itself is actually determined by using the market formula rate in a prior period.)

One obstacle to institution of the substitution account has been the liquidity of the SDR. Another has been the financial solvency of the account itself.

If the SDR is to compete with national currencies—especially one for which money markets are highly developed, such as the U.S. dollar— its liquidity obviously is important. But since the SDR is not held and traded in private markets, it cannot be used as an intervention medium by central banks. Some currency balances for inter-

3. For discussion, see J. J. Polak, "The SDR as a Basket of Currencies," *International Monetary Fund Staff Papers* 26 (December 1979):627-53.

vention, even if minimal, would be required then, in addition to the SDR-denominated substitution account claims. If central banks prefer these relatively more liquid currency balances to be larger than just a minimal amount, perhaps because of conversion costs among other things, or if they prefer to hold more than one such currency, the tendency toward a multiple reserve asset system might not be completely eliminated.

It has been suggested that the SDR's private use could be enhanced by redefining it as a basket of a smaller group of currencies, confining candidates for inclusion to those major currencies in which deeper capital markets exist. This could enable forward markets to develop in the SDR, since individual currency components could be hedged forward. It could allow a balancing of SDR assets against obtainable liabilities, and vice versa. (It may be argued, in any case, that the present SDR basket contains some currencies included more for diplomatic than for purely economic reasons.)

But it is only a short step further to argue that optimal weights in such a revised basket would be likely to vary across countries and individual potential private holders, depending in part on the unit against which currency risk and return are measured. And private markets are quite capable of inventing their own currency baskets when the demand for them arises, tailored to specific needs.[4] Interestingly, however, none of the privately conceived currency composites that have been proposed under more flexible exchange rates have really caught on either. Ultimately, extensive private use of the SDR might be possible, but the record to date does not generate optimism on this.

The issue of the substitution account's solvency may be a more intractable problem, partially for political reasons. It arises from the account's balance sheet. If the account is sponsored by the IMF but is not backed by any of the Fund's own resources, dollar assets must be balanced against SDR-denominated liabilities. If the interest yield on the account's dollar assets falls below the yield the account commits itself to pay on its liabilities for any prolonged period, then the account's sol-

vency could be endangered. And if the exchange rate of the dollar falls relative to the SDR, solvency could be questioned also.

This solvency issue, therefore, revolves around who will guarantee the substitution account's financial soundness. It has been suggested that the United States provide such a guarantee, but this is likely to continue to prove politically unrealistic. Since much of the account's assets would consist of U.S. Treasury securities, the guarantee could entail, for example, the controversial payment of higher interest rates by the U.S. Government to the account than to other holders of Government debt. And direct exchange rate guarantees would involve the U.S. Government, and ultimately the U.S. taxpayer, in assuming the exchange rate risk of foreign central banks. Basically, if the United States were inclined to ensure the yield and exchange value of its foreign dollar liabilities, it could do so without invoking IMF auspices.

One recently discussed attempt to overcome the solvency problem involves backing the account's SDR-denominated liabilities with some portion of the IMF's gold stock. In addition to providing an exchange rate guarantee, this might allow payment of a higher yield on the SDR claims. Since this gold is owned ultimately by IMF members, however, their approval is required. Opposition to this plan has come primarily from the developing countries that have benefited from the sale of IMF gold.

At the IMF Interim Committee meeting in Hamburg in April 1980, inability to agree on the issue of guarantees backing the account primarily was responsible for failure to move ahead with its establishment. Since this issue must be resolved and then ratified by various member legislative bodies, current expectations are that it may be several years at least before any form of the substitution account will come into operation.

But the following analysis addresses neither the liquidity nor the solvency issue directly. It focuses instead on the fundamental desirability of the SDR as a reserve asset choice in a portfolio context.

4. Several such private-sector currency baskets that have been used since the advent of managed floating are discussed in Joseph Aschheim and Y. S. Park, *Artificial Currency Units: The Formation of Functional Currency Areas*, Essays in International Finance, no. 114 (Princeton: Princeton University, Department of Economics, International Finance Section, 1976).

Reserve asset choice as a portfolio problem

Central monetary agencies do not manage their foreign exchange portfolios in the same manner as do private entities. Official foreign reserves are held for international adjustment and exchange market intervention; and central banks as such

An optimal asset mix depends on both an efficient
portfolio frontier and the preferences of the investor
regarding desired return and risk

CHART 3. Portfolio Selection Among Three Hypothetical Assets
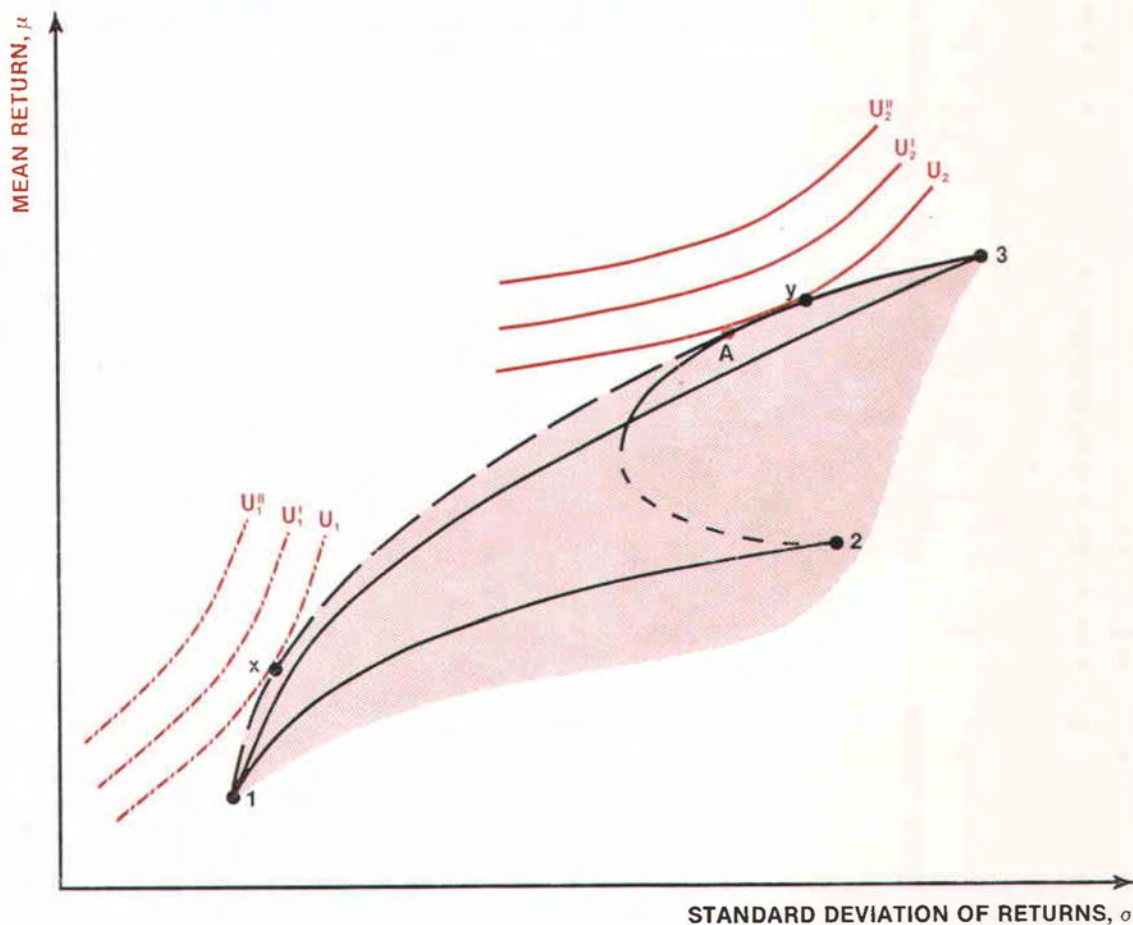
are not judged overtly on the basis of profitability on their reserve assets, nor on how much uncovered exchange rate risk they assume. Central banks can even assume exchange rate risks that would be judged imprudent in the private sector, since most official foreign exchange is not covered forward.

National constraints or binding international agreements can limit official currency diversification also. For example, participants in the European joint float traditionally have restricted holdings of other members' currencies to negligible amounts. And some nations holding significant foreign exchange reserves may be unable to diversify, even though their overall exchange risk would be less if they could do so. Some countries with currencies that are the object of greater diversification out of dollars in a managed floating environment may be forced to acquire the unwanted dollars through intervention to prevent their own currencies' rise, so that the dollar proportion in their official foreign exchange portfolio becomes greater than they would otherwise wish it to be.

Notwithstanding all this, with respect to the context in which the substitution account has been proposed and with respect to the motives for central bank reserve asset diversification in general, it seems quite appropriate to invoke a standard portfolio framework. The incentive prompting official diversification is quite similar to that motivating a private entity: a diversified portfolio reduces risk for a given level of expected return. And a number of central monetary agencies are able to diversify more over time, primarily outer countries with large foreign reserves and few constraints on their composition. This group includes oil-producing nations and some nonoil developing countries but is by no means confined to them, since some relatively industrialized countries also can respond to diversification incentives.

The static mean-variance portfolio selection technique used in the following empirical illustration minimizes total portfolio variance over a range of portfolio returns. In this manner an efficient portfolio frontier can be generated, with each point along the frontier associated with a dominant set of portfolio asset proportions. This is illustrated in Chart 3 for three hypothetical assets plotted in risk-return space. The extent to which bilateral combinations of assets 1, 2, and 3 can reduce risk depends on correlation of returns

> **The asset proportions in any kind of portfolio will depend on the assets allowable for inclusion, on expected returns and risks associated with each of them, on their correlations with each other, and importantly on the level of total portfolio return desired.**

among them. If fluctuations in assets 1 and 2 are perfectly correlated positively, for example, no incentive for diversification exists because, intuitively, they behave as one asset. If fluctuations in assets 1 and 2 are perfectly correlated negatively, then some level of return exists for which risk can be completely eliminated.[5]

In the chart a lower correlation between assets 2 and 3 is depicted than between assets 1 and 2 and between assets 1 and 3. (Only the upper por-

tion of this bilateral portfolio border between assets 2 and 3 is "efficient" in the sense that along the lower portion a higher return is achievable for the same risk.) For more than two assets the efficient frontier is the envelope of the bilateral relationships. In the chart this envelope extends from the point occupied by asset 1 through point A to asset 3. From point 1 to point A, asset 1 combines in varying proportions with some fixed proportional combination of assets 2 and 3 that prevails at point A, so that all three assets appear in optimal portfolios. From point A to point 3, only assets 2 and 3 appear in efficient portfolios.

This analysis could be developed further, but it is clear that the asset proportions in any kind of portfolio will depend on the assets allowable for inclusion, on expected returns and risks associated with each of them, on their correlations with each other, and importantly on the level of total portfolio return desired. This last aspect is determined by the investing entity's attitudes toward risk and return—that is, by how risk-averse it is. One whose attitudes are represented by the group of utility contour lines U_1 is

5. Mathematically for a two-asset case, portfolio variance,

$$\sigma_p{}^2 = x_1{}^2\sigma_1{}^2 + x_2{}^2\sigma_2{}^2 + (2x_1x_2\sigma_1\sigma_2)\rho_{12},$$

is minimized for each level of portfolio return,

$$\mu_p = x_1\mu_1 + x_2\mu_2,$$

where σ_p is the standard deviation of the portfolio, x_1 is the proportion of the portfolio held in asset 1, σ_1 is the standard deviation of asset 1, x_2 is the proportion of the portfolio held in asset 2, σ_2 is the standard deviation of asset 2, ρ_{12} is the correlation between assets 1 and 2 $(-1 \leqslant \rho_{12} \leqslant 1)$, μ_p is the mean return of the portfolio, μ_1 is the return on asset 1, and μ_2 is the return on asset 2.

Usually, a constraint is also imposed that the portfolio be fully invested:

$$x_1 + x_2 = 1.$$

Often, one is imposed that the optimal proportions be confined to assets or long positions only:

$$x_1, \; x_2 \geqslant 0.$$

Given other parameters, $\sigma_p{}^2$ will be reduced as ρ_{12} approaches -1.0. If $\rho_{12} = 1.0$, the expression for portfolio variance reduces to

$$\sigma_p{}^2 = (x_1\sigma_1 + x_2\sigma_2)^2$$

or

$$\sigma_p = x_1\sigma_1 + x_2\sigma_2.$$

If only asset 1 is held, $\sigma_p = \sigma_1$, and if only asset 2 is held, $\sigma_p = \sigma_2$; but there is no gain from diversification. At the other extreme, if $\rho_{12} = -1.0$, then the portfolio variance expression reduces to

$$\sigma_p{}^2 = (x_1\sigma_1 - x_2\sigma_2)^2$$

or

$$\sigma_p = x_1\sigma_1 - x_2\sigma_2.$$

For some combination of assets 1 and 2 here, $\sigma_p = 0$.

An index value of 1.0 indicates exchange rate
parity with the world price level at the beginning
of the period; most potential reserve assets
did not stay even, and those that came closest
to doing so were the more volatile ones

CHART 4. Values of Potential Official Reserve Assets
in Terms of World Inflation
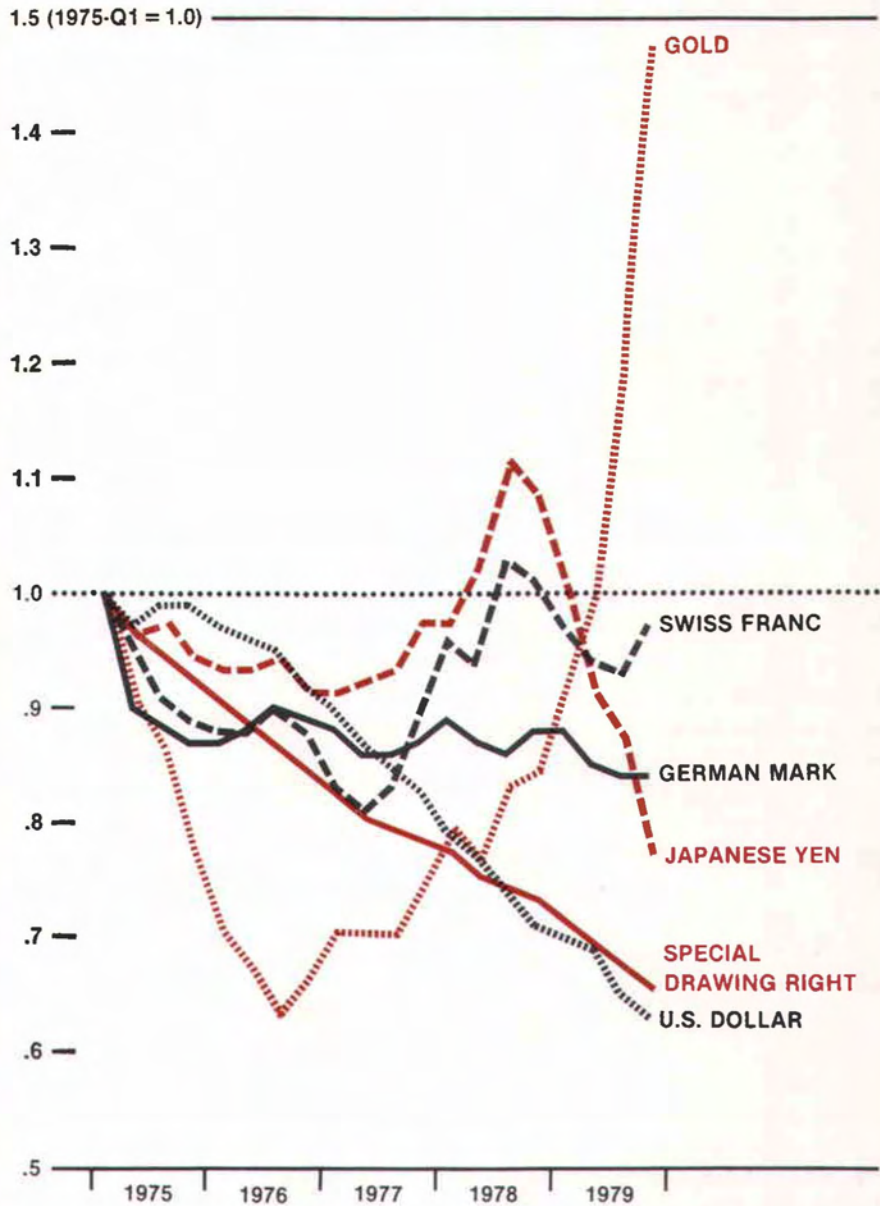
SOURCES: International Monetary Fund.
Federal Reserve Bank of Dallas.

Interest yields offset exchange rate returns
somewhat but not exactly, and reserve assets
demonstrate a wide range of variability

TABLE 2. Average Percentage Return and Variability
of Chosen Potential Official Reserve Assets,
1975-Q1 Through 1979-Q4

Asset	Average exchange rate returns[1]	Average interest returns	Total average returns	Standard deviations of total returns
Special Drawing Right...	−8.26	5.54	−2.72	1.28
U.S. dollar	−9.48	7.36	−2.12	6.62
German mark	−2.69	4.74	2.05	8.44
Swiss franc	1.68	1.93	3.61	17.05
Japanese yen	−3.88	7.29	3.41	17.30
Gold	15.18	—	15.18	48.23

1. Average annualized exchange rate changes in relation to a weighted average of world
consumer prices. See Chart 4.
SOURCES: International Monetary Fund.
Federal Reserve Bank of Dallas.

more averse to risk than one for which U_2 is representative. If U_1 were relevant, tangency point x dictates holding some of all three assets. Lower risk is undertaken by accepting the prospect of a lower portfolio return. A less risk-averse investor, for whom tangency point y is relevant, would hold only riskier assets 2 and 3, undertaking a greater portfolio risk for the prospect of a higher return.

These rudimentary aspects of portfolio analysis can be applied to the official reserve asset mix, just as they can to any other kind of portfolio decision. The next section presents empirical results of doing so.

Some empirical official asset mix results
The following reserve portfolio application serves more as an illustration than as advice about an optimal asset mix in a prescriptive sense. Since the measures of asset risk and return used here are computed from past data only, less can be inferred about what these measures will be in the future or whether they are truly representative of the ultimately subjective central bank attitudes toward various assets. Still, some aspects of the official reserve asset mix that become evident may not be obvious superficially.

Potential reserve assets included in the following example are the SDR, the U.S. dollar, the German mark, the Swiss franc, the Japanese yen, and gold. The SDR naturally is included to shed light on voluntary use of a hypothetical substitution account. For empirical purposes here it is assumed

that the substitution account claims would be defined in terms of existing SDR's, and a yield of 80 percent of the weighted-average market rate is assumed initially. Assuming a different but similar definition, or a higher yield, can affect specific outcomes somewhat but does not alter overall conclusions. The dollar obviously is included because of its current and historical role as the most important reserve currency. And the German mark, Swiss franc, and Japanese yen are entered because of the recent attention each has received as an emerging reserve currency, either on a global or on a regional scale. Interest yield on the currencies is approximated by three-month deposit rates in national markets. Finally, gold is included because of the monetary status it retains in some eyes, in spite of actions during the past decade to demonetize it. But inclusion of gold does not impart to it any role that it formerly played as an international standard of value, and no income yield is added for it.

Once potential assets are specified, the necessity of choosing a yardstick against which to gauge asset risk and return arises. This decision can be important because, depending on this measuring unit, outcomes can vary. Measuring international reserve asset fluctuations in terms of home currency might be relevant for any central monetary agency that implicitly compares gains or losses on its international reserves with those on the domestic component of its portfolio. But in the case of many countries for which this kind of analysis is

most relevant, this domestic component is not significant. If it is assumed that a country holds foreign reserves ultimately as a claim on the world's resources through its imports, then the prices of major imported items, or some import price index, might be a more appropriate gauge of risk and return on international assets. Any of several such measures might be desirable, and each would vary for the individual country to which the analysis is applied.

In the more general case at hand, a weighted-average index of prices of world consumer goods was chosen as an appropriate unit of account, and fluctuations in international reserve assets were measured against the index.[6] How each asset included here has fared in terms of this index over the chosen period is illustrated in Chart 4, quarterly from the first quarter of 1975 (the first full year after the SDR was redefined to float separately against individual currencies) through the end of 1979. The values of the SDR and the U.S. dollar, relative to this index of world prices, have declined steadily over the period. Since the dollar is the most important currency in the SDR basket,

this correspondence is understandable. Stronger currencies in this interval—the German mark, Swiss franc, and Japanese yen—have fared better in staying even with world inflation but have been more volatile. Gold lags in the first part of the period, but its steep climb toward the end makes it the best inflationary hedge—if a great deal more variability is acceptable.

The arithmetic means of exchange rate returns for these assets are shown in the first column of Table 2. Average interest returns over the period, in the second column, reveal that the weaker currencies in terms of exchange rate change are those with higher interest rates, so that some compensation is involved. But it cannot be asserted, as is sometimes done, that cancellation of exchange rate change by nominal interest yield makes holders indifferent among currencies with respect to real rates of return. Sizable differences across assets still exist in the figures presented in the third column of the table. And holders would certainly not be indifferent with respect to asset risk, since the last column reveals quite a broad spectrum of asset stability.[7]

The parameters calculated in Table 2 for the assets, and their covariances over the period, can be input to the standard portfolio analysis discussed in the previous section.[8] In the first set of results presented here, the only portfolio constraints imposed on the optimal asset mix were that dominant proportions sum to 1 and that proportions all be positive. (The latter presumes analysis only of monetary authority positions in assets. Negative proportions equivalent to central monetary agency net borrowings of international

6. Consumer price indexes for the countries whose currencies compose the existing SDR basket were weighted by the SDR percentage weights in Table 1. These currency weights vary slightly over time because of exchange rate changes, and it would be possible to use these changing weights in computing the weighted index for each period. But the method chosen imparts constant importance to a given national inflation rate over the interval under consideration. (Other dates for these fixed weights also are a possibility, but the weights do not vary enough to affect outcomes here significantly, this effect being more than masked by other factors.)

Since a national currency ultimately is a claim on the goods of its country and since the SDR is defined as a composite of the basket currencies, the SDR's real value was approximated by measurement against this weighted index. Other potential international reserve assets were then measured against the same index by multiplying by their SDR exchange rate. (Because the computed price index tends to be less volatile than most bilateral currency exchange rates, results of this procedure may bias SDR variability, or measured risk, downward. But since this aspect must be considered vis-a-vis one of the assets in any case and since an ultimate conclusion here highlights the possibility that the SDR may not dominate official reserve portfolios, this bias at least gives the SDR's desirable characteristic—its low risk—the benefit of the doubt.)

Qualitatively, similar outcomes would be likely using other measures of world inflation over the period or any series that has tended to move with it, such as an import price index for many individual countries.

7. The use of standard deviation or variance to measure foreign exchange risk can be questioned, since foreign exchange return distributions, like those of many other assets, tend to be non-normal. Instead, such distributions are likely to be leptokurtic, with more observations in the tails of the distribution and fewer about the measure of central tendency. But this measure may serve as an approximate gauge in our example. Conclusions similar to those here would be likely to emerge using other measures of risk as long as ordinal variability rankings remain the same. In Janice Moulton Westerfield, "An Examination of Foreign Exchange Risk Under Fixed and Floating Rate Regimes," *Journal of International Economics* 7 (May 1977):181-200, it is found that standard deviation can be a misleading measure of exchange rate variability. But it is also found under the flexible rates of the 1970's that variability ranking of currencies from using standard deviations is the same as from using two other measures of variability.

reserves might be allowed by relaxing this constraint, since borrowed reserves can often be substantial relative to gross asset positions.) The resulting efficient portfolio border, along with points in risk-return space occupied by individual assets, is shown in Chart 5. The chart inset indicates the dominant asset mix associated with various levels of official reserve portfolio return and risk.

The absolute minimum portfolio risk occurs here at a return of −2.70 percent, at which point the SDR dominates the asset mix almost entirely and only a very small proportion is held in U.S. dollars. If central monetary agencies were so risk-averse that this point was relevant, the SDR would indeed dominate official reserve portfolios, a substitution account would be subject to substantial voluntary use, and a minimal amount of U.S. dollars could be held for intervention purposes. But this would come at the cost of a negative total return on official reserves that could be hard to ignore.

8. The general algorithm used here minimizes an objective function (in matrix notation),

$$-\lambda \mu X + X'QX,$$

subject to the linear constraints:

(1) $C_1 X \leqslant b_1$,
(2) $C_2 X \geqslant b_2$,
(3) $C_3 X = b_3$,
(4) $X \geqslant 0$,

where μ is the vector of asset returns, X is the vector of optimal asset proportions, and Q is the variance-covariance matrix of returns. By iteratively choosing various values of λ, equivalent to the slope of the efficient portfolio border at some maximum return and minimum risk, the locus of efficient points in risk-return space can be traced and optimal asset proportions associated with these points can be identified.

Constraints 1, 2, and 3 can be specified by the choice of some appropriate matrices C_1, C_2, and C_3 and vectors b_1, b_2, and b_3 to confine various assets to less than, greater than, or equal to some given proportion. In the problem at hand, they can easily be adapted to characterize various institutional constraints on reserve asset composition. In outcomes presented here, constraint 3 was used to impose the fully invested portfolio constraint (so that the sum of proportions equals 1) and to specify given levels of portfolio return. Constraint 2 was used in some iterations to confine the U.S. dollar proportion to greater than a given fraction of total reserves. Imposition of constraint 4 is tantamount to analyzing only the asset side of the central bank's balance sheet.

This algorithm is an adaptation of the QPF4 program available from the Rand Corporation, Santa Monica, California.

The SDR proportion in the dominant mix diminishes rather quickly relative to the dollar and other currencies as higher portfolio returns are specified, even when these are still negative. At zero portfolio return, the point at which it might be possible to say holders were at least staying even on official international liquidity in terms of world inflation, the SDR constitutes only 14 percent of the optimal portfolio, with the dollar at 39 percent and the mark close behind at 34 percent. The SDR disappears from the optimal mix just slightly above this point, at a positive portfolio return of only 0.45 percent.
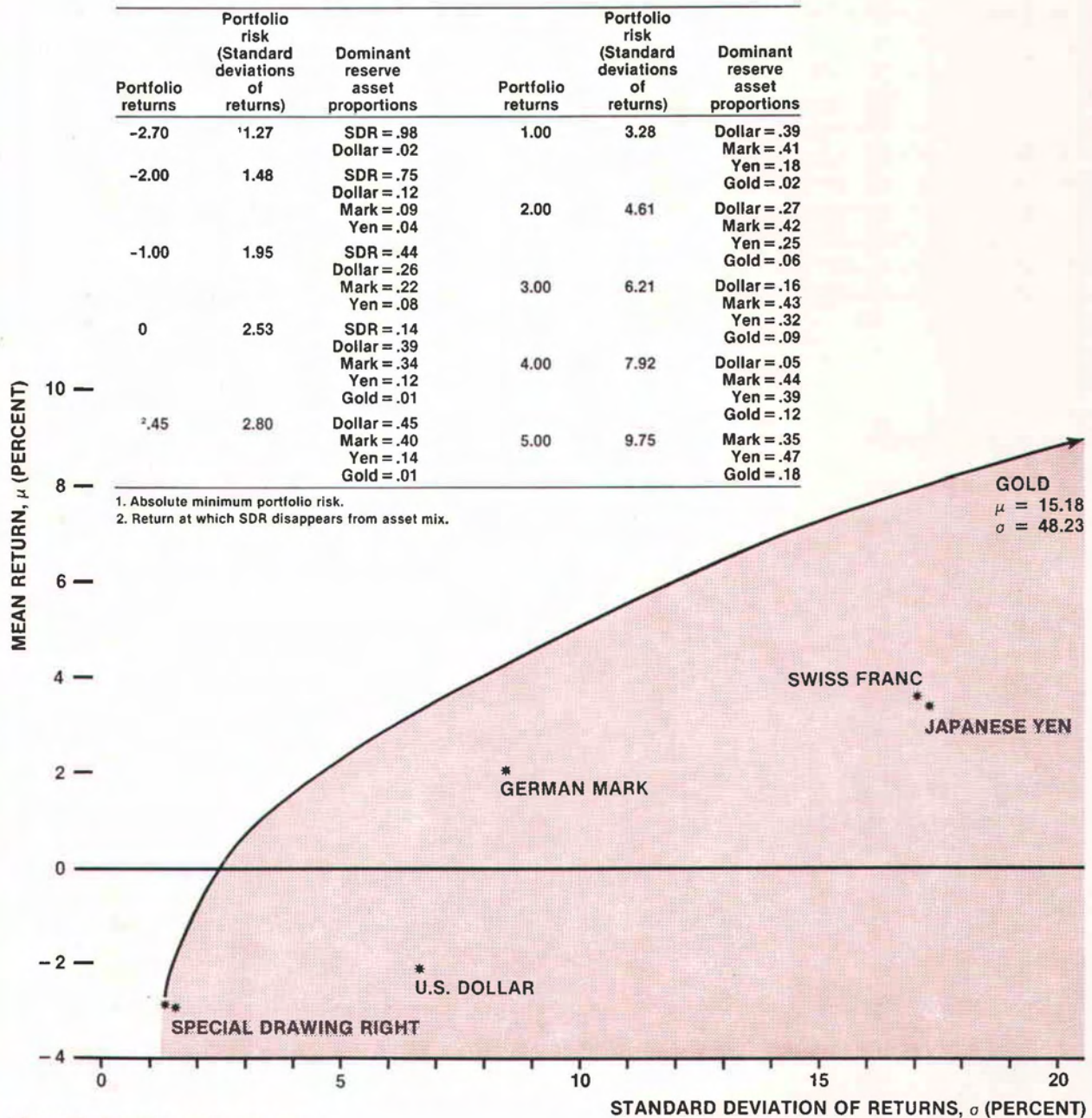
The dollar achieves its highest proportion among points presented in the chart inset at the point at which the SDR is eliminated. But this proportion is only 45 percent of the total portfolio. As portfolio return is raised after this point, the dollar loses out to the mark and the yen, being eliminated at just above 4.00 percent. (Absence of the Swiss franc in optimal asset solutions here is likely to derive from the correspondence of its fluctuations to those for the German mark. Although the franc is a somewhat higher return currency than the mark in Table 2, its variation is greater also.) At higher return levels the stronger currencies dominate completely, and gold accounts for an increasing share of the portfolio.

But these higher returns can be achieved only by assumption of increasingly greater risk. Since it is fair to say that central monetary agencies are generally even more conservative than private counterparts faced with the same foreign exchange portfolio decision, less inclined to conceive their ultimate objective as one of realizing a profit from foreign exchange exposure, the higher-return segments of the portfolio frontier are probably less pertinent.

In the absence of any ability to specify explicitly a utility trade-off between return and risk for central monetary agencies, it might be reasonable to postulate that they would want at least a positive return in terms of the standard against which the return is measured and would be willing to assume some minor risk to achieve it. This would place them in a range where, in this example at least, the SDR plays a relatively minor role while the dollar continues to play an important one. But the dollar's role is not as important in this range of very low positive returns as its present share of official foreign exchange assets indicates. It is encroached upon here by other currencies, primarily

Optimal reserve asset proportions vary sharply, depending on overall portfolio risk and return; the SDR drops out here at a very low positive portfolio return level

CHART 5. Efficient Official Reserve Portfolio Returns, Risks, and Asset Proportions

Portfolio returns	Portfolio risk (Standard deviations of returns)	Dominant reserve asset proportions	Portfolio returns	Portfolio risk (Standard deviations of returns)	Dominant reserve asset proportions
-2.70	[1]1.27	SDR = .98 Dollar = .02	1.00	3.28	Dollar = .39 Mark = .41 Yen = .18 Gold = .02
-2.00	1.48	SDR = .75 Dollar = .12 Mark = .09 Yen = .04	2.00	4.61	Dollar = .27 Mark = .42 Yen = .25 Gold = .06
-1.00	1.95	SDR = .44 Dollar = .26 Mark = .22 Yen = .08	3.00	6.21	Dollar = .16 Mark = .43 Yen = .32 Gold = .09
0	2.53	SDR = .14 Dollar = .39 Mark = .34 Yen = .12 Gold = .01	4.00	7.92	Dollar = .05 Mark = .44 Yen = .39 Gold = .12
[2].45	2.80	Dollar = .45 Mark = .40 Yen = .14 Gold = .01	5.00	9.75	Mark = .35 Yen = .47 Gold = .18

1. Absolute minimum portfolio risk.
2. Return at which SDR disappears from asset mix.

GOLD
μ = 15.18
σ = 48.23

SWISS FRANC

JAPANESE YEN

GERMAN MARK

U.S. DOLLAR

SPECIAL DRAWING RIGHT

MEAN RETURN, μ (PERCENT)

STANDARD DEVIATION OF RETURNS, σ (PERCENT)

SOURCES: International Monetary Fund.
Federal Reserve Bank of Dallas.

the mark and to a much lesser extent the yen, rather than by the SDR. If some hypothetical central bank utility function were tangent to the efficient portfolio border along a segment in which the SDR's share tends to be minor but a relatively balanced mix of national currencies dominates, then a multiple currency reserve asset system would be a quite probable evolution.

These outcomes are affected to some extent by the assumed yield on the SDR. The elimination of the SDR from the portfolio at low total return levels comes partly from the low return on the SDR itself, and the intention to pay 100 percent of whatever future weighted interest rate formula applies for a future substitution account has been established. If the SDR yield in this example were raised from 80 percent to 100 percent of the current weighted market interest rate, resulting in an average SDR yield of 7.03 percent rather than the 5.54 percent in Table 2, the SDR share at zero portfolio return would be raised to 36 percent. The SDR would not be eliminated from the portfolio until a positive 1.00-percent portfolio return is specified, with its share declining steadily over the interval from zero to 1.00 percent. This still may not augur a greatly enhanced role for the SDR, but it does indicate how sensitive outcomes can be to alternative assumptions.

While the unconstrained outcomes here point to a currency mix in which the nondollar currencies, especially the German mark, share a more equal role with the U.S. unit, it is unlikely that they will dominate over the dollar.

Other asset proportions under this 100-percent SDR yield scenario are not changed qualitatively. The remaining 64 percent of the portfolio at zero portfolio return is divided broadly among other assets: 26 percent dollars, 26 percent marks, 11 percent yen, and 1 percent gold. At the 1.00-percent portfolio return level at which the SDR is purged, the portfolio is composed of 39 percent dollars, 40 percent marks, 18 percent yen, and 3 percent gold.

In focusing solely on the return and risk aspects of the various assets as computed here, the results are unrealistic to the extent that they do not incorporate other factors affecting denomination of official assets. Importantly, there is no explicit consideration of the role the relative depth of various capital markets can play and the obvious implications for the liquidity of assets held. This may bias the above results in favor of the SDR, least liquid among the alternatives, and against the currencies, especially the dollar, for which developed capital markets exist.

One recent estimate places the U.S. dollar share of global officially reported foreign exchange reserves at 77 percent for the end of 1978.[9] If the dollar share is constrained to be at least this large in the above problem, then the SDR's share is quite small when it appears at all, even in the more negative return portfolios. At a portfolio return of −1.00 percent, with the dollar constrained to 77 percent, the remaining proportions are 12 percent German marks, 8 percent Swiss francs, and 3 percent Japanese yen. Interestingly for our relatively simple model, this is fairly close to the actual nondollar official foreign exchange proportions that many have seen evolving recently.[10] But portfolio standard deviation at this point is computed to be 4.14 percent, noticeably greater than the 1.95 percent that Chart 5 shows at the same return level for the unconstrained portfolio. And the negative return itself also supports the perceived unrest with a foreign exchange mix that has such a large dollar share. (Alternative SDR yield assumptions have no effect on these computations since the SDR does not appear in this dominant asset mix.)

While the unconstrained outcomes here point to a currency mix in which the nondollar currencies, especially the German mark, share a more equal role with the U.S. unit, it is unlikely, in the intermediate term at least, that they will dominate over the dollar. A marginal increase in their role

9. See "Reserve Diversification and the IMF Substitution Account," *World Financial Markets,* Morgan Guaranty Trust Company of New York, September 1979, pp. 5-14.

10. One recent estimate of the German mark's share of official foreign exchange reserves at the end of 1978 was 11.3 percent of reserves other than West Germany's own. See "The Deutsche Mark as an International Investment Currency," *Monthly Report of the Deutsche Bundesbank* 31 (November 1979):26-34. At present, shares of other currencies may be smaller than indicated above, since small residual amounts of U.K. pounds, French francs, Dutch guilders, and other currencies remain.

may take place. But the greater size of dollar capital markets, combined with some probable continued resistance of alternative reserve centers to shouldering major reserve currency burdens, will likely ensure a more important role for the dollar for some time to come.

Implications for an evolving world monetary system

This kind of exercise may have only limited use in forecasting accurately and confidently the long-run future role of any given reserve asset. The above results might be applicable to some hypothetical central bank that is able to diversify and for which the computed measures of reserve asset risk and return truly are descriptive of expectations. This involves calculation of portfolio parameters from past data and extrapolation into the future, however, and perceptions toward the assets involved can change. Outcomes can be affected by the choice of assets that are considered candidates for optimal portfolios, as well as the portfolio return at which an optimal asset mix is evaluated. The unit against which reserve asset portfolio risk and return are measured may vary among individual monetary agencies, and this also can make a difference, as can institutional constraints on reserve asset composition. Moreover, some may view global diversification as being less realistic than the formation of regional currency blocs. Finally, with respect to the substitution account, the SDR's definition may be changed substantially from the present 16-currency composite.

Without claiming too much for outcomes subject to the foregoing caveats, several points nevertheless are evident.

1. Greater international asset diversification is a rational economic response for official as well as private entities in a system in which the risk on assets held is relatively high. This is true, moreover, even if expected return on the primary foreign exchange asset—heretofore the U.S. dollar—is positive.

2. Unless the yield on an SDR-denominated asset is improved, its greater inherent stability may not be sufficient to ensure it a major role in official international reserves. This may be the case even if the SDR yield is set equal to 100 percent of some weighted-average market interest rate.

3. Even if the SDR-denominated substitution account claims do compete favorably with existing reserve currencies, simply adding another potential reserve asset to a system in which several already exist will do little to end diversification among all of them. Still more currencies may come into the picture in fact. The underlying goal of substitution account proponents to make the SDR the world's primary international asset might there-

fore continue to be frustrated.

Those who seek reform of the international monetary structure may consequently be left to contemplate the possibility of a multiple reserve asset system even if substitution account plans, or similar proposals, go more smoothly than is

> **Even if the SDR-denominated substitution account claims do compete favorably with existing reserve currencies, simply adding another potential reserve asset to a system in which several already exist will do little to end diversification among all of them.**

likely. If a multiple reserve system is inevitable, the question of whether it is desirable may be moot, but there is still likely to be some disagreement on just how disruptive such a system will be. To an extent, some surface opposition may come from a confusion of stocks and flows. Official portfolio shifts in the transition to some desired currency mix may be unsettling, but once that mix

is achieved approximately, official agencies able to diversify may not react as quickly to possibly transient changes in exchange rate expectations as private entities do. The use of off-market diversification facilities during the transition has been suggested to ease the strain. Those less upset by the prospect of a multiple currency system also may contend that any change now is actually one of degree rather than of kind. Other reserve currencies have coexisted with the U.S. dollar to a minor extent since the beginning of managed floating.

With respect to substitution account plans, the empirical illustration in this article demonstrates how subscription to the account could vary, depending on a number of factors. While some countries may avail themselves of the account, others may not. One may argue for establishment of the account for the benefit of the former countries, leaving aside other problems with its institution, but in any case the latter countries will likely assure the evolution of a multiple reserve system on a global basis. Results presented in this article illustrate how the SDR's proportional share in official reserves can be influenced greatly by its inherent characteristics. The more desirable this composite unit is made in terms of yield, stability, and its relationship to other existing reserve assets, the greater is its potential for an important role in the future.

❝*Fed Quotes*❞

"Should the recession we are entering prove deeper and persist longer than presently expected, we may face the familiar question of the proper mix of monetary and fiscal policies. It is my hope that this downturn will be shallow and short enough to allow us to get through it without moving away from both restrictive fiscal and monetary policies. But, if it is determined that some sort of stimulus to the economy is necessary to combat a recession accompanied by continued inflation, should it come on the fiscal or monetary side? Some analysts have urged that a tight fiscal policy be maintained while following a 'flexible' monetary policy— meaning a relaxation of the current policy of restraint on growth of money and credit. Because inflationary pressures have often been attributed to government deficit spending financed by the Federal Reserve, such a prescription might have considerable political appeal. From my point of view, we would be better served at the appropriate juncture to take the opposite approach: continued monetary restraint by adhering to established targets for the aggregates while allowing some limited relaxation of fiscal policy.

"Experience has shown that providing the stimulus from the monetary side during a recession too frequently results in the creation of excess liquidity. This process tends to complicate the task of controlling inflation during the ensuing expansionary phase of the cycle, as it may take too long a time for excess liquidity to work its way out of the economic system.

"The effort to reduce and eventually wring inflation out of the economy may take several years during which money growth is steadily reduced to the point where it bears the proper relationship to real economic growth. To run the risk of creating excess liquidity during the next economic cycle might needlessly impede and delay the orderly process of laying the basis for non-inflationary economic growth."

> Emmett J. Rice, Member, Board of Governors of the Federal Reserve System (Before the Downtown Economists Luncheon Group, New York, New York, May 7, 1980)

"It may indeed be hard for the market to accept that interest rates are not the proximate objective of Federal Reserve policy. To the market, the money supply is a statistical abstraction. Interest rates are the reality which governs quotations, contracts, profits and losses. Moreover, it is, of course, true that the economy is steered by interest rates and not by the money supply as such. The money supply is merely a means of establishing interest rates conducive to avoiding inflation when inflation itself has made the level of rates that would accomplish this goal very hard to diagnose. There is no direct effect running from the money supply to the economy. The effect runs via interest rates. We do not have some kind of black box where money supply goes in and GNP or inflation comes out."

> Henry C. Wallich, Member, Board of Governors of the Federal Reserve System (At a Seminar with the Central Monetary Authorities of the Gulf States, Manama, Bahrain, May 10, 1980)

"Over a period of years, the major factor determining the level of exchange rates is differences in inflation rates among countries. The currencies of high inflation countries must depreciate in order that the export prices of those countries may remain competitive with those of low inflation countries. Since March 1973, the consumer price level of the United States has risen by 39 percent more than that of Switzerland, and 32 percent more than that of Germany, the two countries against whose currencies the dollar has shown the greatest depreciation over this period. Similarly, the U.S. CPI has risen by 37 percent less than the Italian CPI, against which currency the dollar has shown the largest appreciation."

Frederick H. Schultz, Vice Chairman, Board of Governors of the Federal Reserve System (At the 41st Assembly for Bank Directors, Southampton Princess, Bermuda, May 23, 1980)

"But, with all the qualifications, the point remains; money and credit growth have slowed appreciably. Indeed, there is now considerable room for growth, consistent with the targets we set for ourselves for all of this year—targets that have been widely accepted as appropriate and consistent with reduced inflationary pressures over time. My point is that interest rates have not in any sense been 'forced' lower— nor will they be at the expense of excessive growth in money and credit, at the risk of a resurgence in inflation and inflationary expectations.

"These are circumstances in which we can legitimately begin to look forward to dismantling the more direct measures taken in mid-March, some of which had their genesis in October of last year, to curb excessive growth in bank lending and consumer credit. The special reserve requirements and the call to confine growth of loans of individual banks within a simple guideline were and are clearly extraordinary measures, in important ways disruptive of normal market processes. We have not wanted to move prematurely—we will not—at the risk of false signals about our intentions to maintain control of monetary and credit growth. We want banks and other institutions during this critical period of transition to respect in their lending behavior the priorities reflected in the special program. But, equally, we are not interested in fostering any impression that credit allocation, formal or informal, can be any part of the basic continuing armory of monetary policy; the special measures are, to put it most simply, no substitute for general instruments of policy, and the side effects, if prolonged, can be counterproductive.

"At the moment, it is evident that it is lower interest rates much more than any exhortations or controls that are beginning to play a constructive role in unlocking flows of funds to the construction industry and elsewhere."

"The last producer price index, rising at an annual rate of only 6 percent, just as surely overstates progress so far, for it reflected in part an exceptional decline in food prices. In my judgment, a more balanced view suggests there is indeed a reasonable prospect for a decline in the inflation rate to or below 10 percent before the year is out. But that can only be a first step—and in some ways the easiest step—on the road to price stability."

"The plain lesson is that one contribution the Federal Government can and should make to capital formation is to avoid preempting so large a share of the available credit, year in and year out, as has been the case in the past decade.

"At the same time, we know taxes are too high for the sake of economic growth and investment. Carefully constructed tax reform and reduction can be an ally— indeed, it may be an indispensable ally—in the effort to restore productivity and to sustain growth. I yield to no one in my conviction that intelligently constructed tax

reform and tax reduction—addressing the problems of investment, productivity, and costs—is sorely needed.

"But we can't simply wave away the budgetary constraint or questions of timing. And that timing seems to me, like it or not, dependent on progress in reducing the rate of expenditure growth, reductions not just in Administration planning or in initial budget resolutions, but reductions that are signed, sealed, and delivered!

"Only a few weeks ago, under the pressure of credit market strains and inflationary fears, a broad consensus developed in the Congress and without about the importance of cutting proposed spending and balancing the budget. I believe that is still the prevailing mood. But there is an obvious danger that the consensus could fracture in the face of apparently discouraging business news and the reduced level of interest rates."

> Paul A. Volcker, Chairman, Board of Governors of the Federal Reserve System (Before the 60th Annual Conference of the National Association of Mutual Savings Banks, Lake Buena Vista, Florida, May 14, 1980)

Regulatory Briefs and Announcements

Proposed Regulation D Calls for Changes in Reserve Requirement Structure and Computation

The Federal Reserve Board has issued for public comment a revised Regulation D that proposes changes in the structure and computation of reserve requirements. The proposed changes are to implement the Monetary Control Act of 1980. Under the act, reserve requirements are to be extended to all depository institutions that have transaction accounts (demand deposits, NOW accounts, ATS accounts, share draft accounts) or nonpersonal time deposits.

Under the proposed regulation, member banks will continue to maintain reserves in the form of vault cash and balances held directly with their Federal Reserve Bank. Nonmember commercial banks, savings banks, savings and loan associations, and credit unions that have transaction accounts or nonpersonal time deposits and whose required reserves exceed their holdings of vault cash may hold such reserves directly with the Federal Reserve or "pass them through" another depository institution that maintains required reserve balances with the Federal Reserve, through a Federal home loan bank, or through the National Credit Union Administration's Central Liquidity Facility.

In pass-through arrangements the financial institution (respondent) may select only one correspondent. This relationship can be initiated, terminated, or changed—if the respondent institution wishes—by providing the Federal Reserve with the necessary documentation specified in the proposals.

The proposal also states that the correspondent institution must pass through the reserve balances dollar for dollar and must ensure that the correct level of reserve balances is held for the respondent institution. The Federal Reserve Bank or Branch in the territory of the respondent's main office would hold the reserve balance.

The Monetary Control Act calls for a 3-percent reserve requirement on the first $25 million of an institution's transaction accounts, with a 12-percent requirement on remaining transaction accounts. The initial reserve requirement on nonpersonal time deposits will be 3 percent. The new requirements will be phased in gradually, with the phase-in period depending in part on the present reserve status of the institution.

All depository institutions with reservable deposits will be required to submit directly to the Federal Reserve Bank weekly reports showing daily deposit information. Reporting forms and instructions, as well as the information needed for calculating reserve requirements, will be provided by the Federal Reserve Bank.

Public comment was also requested by the Board on two possible procedures for maintaining reserve balance accounts.

1. The first procedure proposes that the correspondent maintain a reserve account commingling correspondent and respondent reserves in the Federal Reserve territory where the correspondent has its main office. In each other territory where respondents have head offices, respondent reserves would be commingled in an account.

2. The possible alternative procedure is that the correspondent maintain its own account and a separate commingled account for respondents in the Federal Reserve territory where the correspondent's main office is located. For respondents located in other territories, a separate commingled respondent account would be maintained in each Federal Reserve territory where respondents have head offices.

Federal Reserve Opens Discount Window to Nonmembers

The Board of Governors of the Federal Reserve System has proposed revisions in the rules that govern extensions of credit through the discount window. The revisions are proposed in response to the Monetary Control Act of 1980. The act permits any depository institution holding transaction accounts or nonpersonal time deposits that are subject to reserve requirements to have access to the Federal Reserve discount window.

Under the proposed regulation, nonmember institutions eligible for credit may qualify for "regular adjustment credit" and "extended credit" on the same basis as member banks. "Seasonal credit" and "special credit for institutions facing particular problems" would be provided under the extended credit facility.

Like member banks, nonmember institutions now eligible for credit under the Monetary Control Act would be expected to rely on other available sources of funds before turning to the Federal Reserve. Thus, institutions that have access to credit programs provided by the Federal home loan banks, credit union centrals, or the Central Liquidity Facility of the National Credit Union Administration will be expected to utilize those sources first.

Board Announces Regulation Z Amendments

The Federal Reserve Board has announced three actions affecting Regulation Z, which is being revised in light of the Truth in Lending Simplification and Reform Act.

These actions were effective May 21, 1980:

1. An amendment exempting extensions of credit for agricultural purposes from the disclosure requirements of Truth in Lending.

2. An amendment eliminating disclosure requirements currently imposed upon periodic statements that lenders provide in connection with closed-end credit transactions, such as mortgage and personal loans.

3. Extension of the life of the Board's rule regarding the right of rescission.

Now Available

Recently issued Federal Reserve circulars, speeches, statements to Congress, publications, etc., may be obtained by contacting the Bank and Public Information Department, Federal Reserve Bank of Dallas, Station K, Dallas, Texas 75222, unless indicated otherwise.

Circulars

Title 12—Chapter XII—Interest on Deposits: Major Changes in 2¹/₂ Year Time Deposits, Six-Month Money Market Certificates, and Early Withdrawal Rules; Extension of Comment Period on Premiums. 17 pp. Circular No. 80-110 (June 5, 1980).

Proposed Regulation D—Reserves of Depository Institutions (Including U.S. Branches and Agencies of Foreign Banks and Edge Act and Agreement Corporations That Have Transaction Accounts or Nonpersonal Time Deposits). 52 pp.

Circular No. 80-111 (June 11, 1980); sent to banks, bank holding companies, and other financial institutions in the Eleventh District.

Circular 80-112 (June 11, 1980); sent to Edge Act and Agreement corporations in the Eleventh District.

Small Saver Certificates and Money Market Certificates [Ceiling rates]. 1 p. Circular No. 80-113 (June 9, 1980).

Changes in Food Coupon Deposit Requirements. 1 p. Circular No. 80-114 (June 10, 1980).

Regulation Q—Interest on Deposits: Announcement of Rate for Two and One-Half Year Money Market Certificate of Deposit. 1 p. Circular No. 80-115 (June 10, 1980).

Proposed Regulation D—Reserves of All Depository Institutions (Including U.S. Branches and Agencies of Foreign Banks and Edge Act and Agreement Corporations That Have Transaction Accounts or Nonpersonal Time Deposits). 52 pp. Circular No. 80-116 (June 11, 1980); sent to data processing service centers in the Eleventh District.

Technical Amendment to Rule Regarding Early Withdrawal of Funds from Time Accounts. 3 pp. Circular No. 80-117 (June 12, 1980).

Proposed Regulation A—Extensions of Credit by Federal Reserve Banks. 8 pp. Circular No. 80-118 (June 16, 1980).

Rates for Discounts and Advances. 1 p. Circular No. 80-121 (June 12, 1980).

Amendments to the Credit Restraint Program. 2 pp. Circular No. 80-122 (June 18, 1980).

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Amendments to Rules Regarding Delegation of Authority. 1 p. Circular No. 80-126 (June 23, 1980).

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Statement by **Paul A. Volcker** before the **Committee on Banking, Housing, and Urban Affairs,** U.S. Senate, 8 pp. May 29, 1980.

Statement by **Nancy H. Teeters** before the **Subcommittee on Domestic Monetary Policy** of the Committee on Banking, Finance and Urban Affairs, U.S. House of Representatives. 10 pp. May 29, 1980.

Statement by **John E. Ryan** before the **Committee on Banking, Housing, and Urban Affairs,** U.S. Senate. 21 pp., including attachments. June 6, 1980.

Remarks by **Henry C. Wallich** ("Monetary Policy During High Inflation") to the **Swiss-American Society Basel,** Basel, Switzerland. 13 pp. June 10, 1980.

Statement by **Lyle Gramley** before the **Budget Committee's Special Subcommittee on Control of Federal Credit,** U.S. Senate. 11 pp. June 19, 1980.

Remarks by **Anthony M. Solomon** ("The Global Outlook: A U.S. Perspective") before the **Fourth Annual International Conference of the National Association of Business Economists.** 10 pp. June 24, 1980.

Statement by **Henry C. Wallich** before the **Commerce, Consumer, and Monetary Affairs Subcommittee** of the Committee on Government Operations, U.S. House of Representatives 12 pp. June 25, 1980.

Remarks by **Henry C. Wallich** ("Housing and Monetary Policy") to the **Pacific Coast Builders Conference,** San Francisco. 7 pp. June 28, 1980.

Pamphlets, Brochures, and Reports

Alice in Debitland. Produced by the Board of Governors of the Federal Reserve System. (A pamphlet explaining consumer protections under the Electronic Fund Transfer Act) 16 pp. June 1980.

Manual de Terminos de Credito al Consumidor. Translated and produced by the Federal Reserve Bank of New York. (A handbook designed to assist consumers with credit terminology and in credit dealings) 24 pp. 1980.

Federal Reserve Operations. Issued by the Federal Reserve Bank of Atlanta. (A booklet reviewing Federal Reserve services to depository institutions, supervision of banks, services to the U.S. Treasury, and monetary policy) 8 pp. November 1979.

Country Exposure Lending Survey. Joint News Release by the Comptroller of the Currency, Federal Deposit Insurance Corporation, and Federal Reserve Board. 13 pp., including tables. June 12, 1980.

New member bank

West El Paso National Bank, El Paso, Texas, a newly organized institution located in the territory served by the El Paso Branch of the Federal Reserve Bank of Dallas, opened for business June 2, 1980, as a member of the Federal Reserve System. The new member bank opened with capital of $750,000 and surplus of $750,000. The officers are: Daniel S. Brewer, Chairman of the Board, President, and Chief Executive Officer; Howard L. Martin, Vice President and Cashier; and Ruth H. Tidwell, Assistant Cashier.

New nonmember banks

Liberty Bank & Trust Company, Greenwood, Louisiana, a newly organized nonmember bank located in the territory served by the Head Office of the Federal Reserve Bank of Dallas, opened for business June 2, 1980.

Southwest State Bank, Corpus Christi, Texas, a newly organized nonmember bank located in the territory served by the San Antonio Branch of the Federal Reserve Bank of Dallas, opened for business June 23, 1980.