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THE GOLD STANDARD: ITS HISTORY AND
RECORD AGAINST INFLATION

A STUDY

PREPARED FOR THE USE OF THE
SUBCOMMITTEE ON MONETARY AND FISCAL POLICY
OF THE
JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES



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LETTER OF TRANSMITTAL

SEPTEMBER 14, 1981.

HON. HENRY S. REUSS,
Chairman, Joint Economic Committee, Congress of the United States, Washington, D.C.

DEAR MR. CHAIRMAN: I am pleased to transmit herewith a study prepared for the Joint Economic Committee entitled "The Gold Standard: Its History and Record Against Inflation."

While the whole question of restoring the gold standard here has generated much debate and media attention, the record of the standard's performance is rarely examined.

This study shows that while the gold standard never created ideal economic conditions, it did result in very low rates of inflation by today's standards. In fact, the average annual rate of inflation during the standard's worst days between 1897 and 1914 was 2.6 percent. A far cry from today's rates.

The results of this study confirm my belief that this nation could benefit greatly from a return to some form of the gold standard.

Sincerely,

ROGER W. JEPSEN,
Chairman, Subcommittee on Monetary and Fiscal Policy.

FOREWORD

By Senator Roger W. Jepsen

In 1980, Congress passed legislation calling upon the Secretary of the Treasury to establish a commission to study the role of gold in the international economy. This commission has now been convened and is rapidly working to establish its position and issue a report.

The basic premise upon which the Gold Commission was established is that the United States presently has no position on gold, or rather that its stated position is contradictory. On the one hand, gold plays no official role in our monetary system and has not since President Nixon closed the gold window on August 15, 1971. Yet, on the other hand, the United States still owns over \$115 billion worth of gold at present market prices, while continuing to carry it on the Treasury's books at the "official" price of \$42.22 per ounce. It is the role of the Gold Commission to determine whether we should remonetize gold and give it some official standing in our monetary system or finish the task of demonetizing gold by selling off all but that which is necessary for strategic purposes.

As a member of the Gold Commission, I favor the remonetization of gold. I think it is healthy and desirable for gold to play a major role in the monetary system. The study by Professor Roy W. Jastram of the University of California at Berkeley, which follows next, presents some of the reasons why it is desirable to have some gold backing of the currency. Professor Jastram argues that under the gold standard—in all of its many forms—we had substantially greater price stability than we have had since abandoning gold, and that the "purer" the gold standard, the greater the degree of price stability. This is a strong argument in favor of a gold standard.

Some will argue that returning to a gold standard is a drastic step. Perhaps so, but the problem the gold standard deals with most effectively—inflation—is a drastic one. Inflation has now become so deeply imbedded in our economic system that it has virtually destroyed the long-term capital market and raised short-term interest rates to record levels. When businesses can no longer issue long-term bonds to finance expansion and individuals can no longer obtain fixed-rate mortgages, it must have profound long-term effects on our economy. Businesses and individuals must be able to make long-term plans. Their inability to do so creates enormous problems and inefficiencies for our economy. Inevitably, these problems are ultimately reflected in declining productivity, declining real economic growth, and a declining standard of living for most Americans.

The fear of future inflation is today the principal reason for the high interest rates that have made it virtually impossible for business and households to borrow long. We cannot change the public's expectations about inflation overnight. However, we can at least reduce the

interest the Treasury has to pay to borrow long overnight. It is for this reason that I have suggested to the Treasury Department that it consider issuing gold-backed bonds. I believe that such bonds could be sold at yields far below those currently prevailing in the market, since their purchasing power would be guaranteed. This would save billions of dollars in interest on the public debt as early as next year.

One objection to the gold standard which is always raised is the problem of transition: How do we get to it from here and how do we establish a gold standard at the right price? In an appendix, Dr. Robert E. Weintraub of the Joint Economic Committee staff presents a proposal for overcoming the transition problem. He suggests that we reestablish the gold cover for Federal Reserve notes currency using the current legal value of \$42.22 per ounce as the point of departure. Both the legal value and the percent of gold backing behind currency would be raised each year, both to allow for some growth of our currency, but from 1984 on no more than 3 percent yearly, and to raise the legal value of gold to the market value over a period of years. When the legal value of gold equals the market price, the Treasury could maintain that price through open-market purchases and sales of gold. We would then be on a de facto gold standard.

I think the Weintraub proposal is interesting and worth further study. I offer it and the Jastram study to the public, the Gold Commission, and my colleagues in Congress in the hope they will contribute to this important debate.

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THE GOLD STANDARD: ITS HISTORY AND RECORD AGAINST INFLATION

By Roy W. Jastram*

INTRODUCTION

This paper examines, over the past decades and worldwide, the use of gold in its various applications and the supply of gold from its various sources.

It also outlines the history of gold as a monetary standard in England for four centuries and in the United States between 1800 and 1934. In this connection the stabilizing power of a gold standard over commodity price levels is examined.

Finally, charts are presented showing the monthly behavior of the world price of gold since it became legal for American citizens to own it, starting with January 1975. Other charts and tables demonstrate the relationship of this behavior to selected key economic variables. All of these are concerned with recent history in the United States and abroad.

*Roy W. Jastram is a professor in the School of Business Administration, University of California, Berkeley.

I. GOLD AS A MONETARY STANDARD

At one time or another, most of the countries of the Western World were legally on a gold standard.

The use of gold in coins goes back at least as far as Lydia, in Asia Minor, circa 700 B.C. The Greeks were making silver coins in Aegina at about the same time. Baser metals were in use as well. One type of coin exchanged for another only by individual agreement and at a rate settled upon by the parties concerned. When we speak of a gold monetary system, we mean one established by law.

The classical gold standard has the following characteristics:

All forms of money, paper and otherwise, are held at a parity with a coined monetary unit defined by its gold content and are convertible into this gold coin on demand,

This monetary unit is coined freely, without an appreciable charge for the process,

Gold coins circulate freely and may be freely exported, imported, or melted down,

Gold is unlimited legal tender, and

Gold constitutes a large part of the nation's reserve.

Because of the first two conditions this is referred to as the gold coin standard. A close cousin is the gold bullion standard. This differs only in a special condition of convertibility imposed: a stipulated minimum of bullion must be purchased with paper money for the act of redemption to take place.

ENGLAND

England has had 350 years of experience with various forms of the gold standard. She first went on the gold coin standard, *de facto*, in 1717. This was done by Sir Isaac Newton, then Master of the Mint. It was done by pricing gold at the Mint more favorably, relative to silver, than in the marketplace. An Act of Parliament in 1816 gave formal recognition to this "new" monetary standard that had been operational for a century in promoting England to a world power.

Between 1797 and 1821 England temporarily suspended the gold standard because of the economic disruptions of the Napoleonic Wars. With no gold backing to the currency the supply of money had no discipline except that imposed by the Board of Governors of the Bank of England (analogous to our Federal Reserve Board of today). The result was that wholesale commodity prices shot up by nearly 50 per cent in 4 years—a momentous inflation.

The "Bullion Committee" was formed by Parliament to investigate. Their findings read in part as follows:

The suspension of cash payments has had the effect of committing into the hands of the Directors of the Bank of England, to be exercised by their sole discretion, the immediate charge of supplying the country with that quantity

of circulating medium which exactly proportioned to the wants and occasions of the Public. In the judgment of the Committee that is a trust which it is unreasonable to expect that the Directors of the Bank of England should ever be able to discharge. The most detailed knowledge of the actual trade of the Country, combined with the profound Science in all principles of Money and circulation, would not allow any man or set of men to adjust, and keep always adjusted, the right proportion of circulating medium in a country to the wants of trade.

Gold convertibility of the currency was resumed in 1821. It is a matter of record that wholesale prices came back down immediately to the level preceding the hiatus in the gold standard.

England was again off the gold standard between 1919 and 1925. When she resumed gold convertibility it was on a gold bullion standard where she remained until 1931, when she went off the gold standard altogether in the midst of the Great Depression.

UNITED STATES

The long period of the gold standard in the United States was not an economic nirvana. The most severe inflationary period reaching completion under the gold standard was from 1897 to 1920. But from trough to peak the average annual compound rate was 5.4 percent—mild by present experience. And most of this occurred from 1914 to 1920 when the European war and its aftermath bore so heavily on the domestic economy. If we look at the period between 1897 and 1914 the average annual rate of inflation was 2.6 percent—enviable from the perspective of today.

But in order to fully understand the emergence of the gold standard in this country, let's go back to its beginning.

The Bill of Rights for a monetary system in the United States was Alexander Hamilton's "Report on the Establishment of a Mint," dated May 5, 1791. In discussing gold versus silver as a single monetary standard, Hamilton came down for gold.

But when it came to a final framing of a recommendation Hamilton chose a double standard of gold and silver. His choice of bimetallism was a pragmatic decision, based on an overriding concern that the new nation not be caught short of adequate currency to conduct its trade. There was a scarcity of specie of any kind in the country and silver already was the metal in most common use. With bimetallism Hamilton could retain the silver already current and hope to add gold to the currency base as it became available.

With a bimetallic standard the legal ratio of gold price to the price of silver is all important. If it drifts away from the going commercial ratio for long one or the other of the precious metals will not be brought in to be minted, and the currency base will rest upon its alternative metal. Hamilton's opening price of 15-to-1 turned out to be just about even with the going rate of gold to silver in the larger commercial world in which the United States was such a small newcomer.

But the world commercial ratio soon began to move away from 15:1. The ratio of gold price to silver was rising. Finally in 1834 Congress passed the Coinage Act ostensibly to rectify the differential. But it overshot the mark and established a mint ratio of 16:1. It was

widely pointed out at the time that this would overvalue gold at the Mint and make it in practice the sole standard operative for the monetary system of the United States. Congress went ahead with its eyes open and from 1834 onward until almost 1934 this country was de facto on a gold standard. The matter was legalized along the way by the Gold Standard Act of 1900.

From 1862 until 1879 the United States experienced its own gap in the operation of the gold standard. It was the "greenback" period, with the specie redemption of currency suspended. In but 2 years wholesale prices increased by +86 percent because of a combination of Civil War dislocations and undisciplined money supply. When finally specie redemption of paper currency was resumed in 1879 the wholesale price index number was pulled back down to where it had been in 1861, an exact counterpart to the English experience.

The essential feature of convertibility of currency with gold was maintained in the United States all through World War I.

On March 10, 1933, President Roosevelt, relying on the Emergency Banking Act, prohibited by executive order the export of gold and gold certificates as well as payments in gold by banks. The United States was then, of course, off the gold standard.

Even before this final departure much of the world had moved from the classical gold standard to what came to be called the gold exchange standard. The history is this. The outbreak of World War I saw nation after nation suspending convertibility of their currencies into gold and placing bans on gold exports to protect their reserves. The classical gold standard ended with 1914. In international trade, one currency exchanged against another at floating exchange rates determined by conditions of supply and demand. The fixed exchange-rate structure of the gold standard was gone. Especially between 1919 and 1923, foreign exchange rates fluctuated wildly and international commerce was constantly disrupted. It was no wonder that the trading partners sought a means to return to the placid ways of the classical gold standard. But there was a precarious shortage of gold because of the rapid and uneven rates of inflation that all countries had suffered in the meantime.

To get the benefits of a gold standard in spite of this shortage the Financial Committee of the Genoa Conference in 1922 recommended the adoption of a gold exchange standard. Under this system the dollar and the pound were to be kept convertible into gold at fixed rates, and other currencies were to be convertible into dollars and pounds at their fixed rates. In this manner the world would economize on the use of gold as a basis for the international monetary system, yet still enjoy the predictability of fixed exchange rates and the gold discipline.

In 1925 Britain reestablished the convertibility of the pound into gold on a bullion standard basis at the same official price for gold that pertained in 1914, and removed all restrictions on the export of gold. The United States had never denied convertibility during the war. Other nations now quickly restored currency convertibility at prewar parities. The gold exchange standard was put in place. This existed until Britain went off the gold standard entirely in 1931.

II. THE DEMAND FOR GOLD

The complexity of the demand for gold arises out of its dual nature. It is both a precious metal and an industrial good.

It is customary to distinguish between three types of demand.

Fabrication demand.—For industrial use and for ornamentation.

Investment demand.—Purchase for long-term asset appreciation.

Speculative demand.—Purchase for short-term trading profit.

To this familiar list we should add a fourth type that arises from the experience of ages.

Cautionary demand.—Purchase for minimization of capital depreciation.

Why is there a cautionary demand for gold? A reason emerges when gold is considered as if it were another currency; but a currency without a country. Gold is completely liquid; it "barter" against all goods and services without limit; it exchanges for the national currencies of the world guided by the same motives that cause them to be exchanged among themselves.

Granted, gold has not been a national currency in any major economy for nearly half a century. It has no national home. Its supply is not managed by a central bank or treasury. It suffers no indigenous rate of inflation. It is traded like a commodity, yet revered as a treasure. It is universally valued.

The analytical benefit of viewing gold as a kind of currency is that we can then examine one of its important aspects within the elements of foreign exchange theory.

Because every asset is now priced in some country's currency, that asset's value becomes vulnerable to the domestic turbulence of that country's money. Therefore a motive exists to withdraw from the dangers associated with any one currency and to transfer assets to another country's currency promising greater stability.

But what happens when danger is sensed in every direction? There is one "currency" with no national difficulties—gold. The cautionary demand for gold is really a short position against all national monies.

Cautionary demand can itself drive prices up. It can place a floor under falling prices as well, because it is not based on anticipation of profit. In this way it is unlike the other motives that stimulate the demand for gold.

The behavior of gold prices is sometimes taken as a proxy for all the current rates of inflation in the world—an assessment by the market place of a weighted "average" rate of inflation worldwide. It is more than that. Under cautionary demand are subsumed also:

Perception of rates of change in current rates of inflation,

Anticipation of future rates of inflation, and

Fears of political turbulence and general economic disruption.

When all these forces combine we would expect that the increases in the price of gold would often exceed the current rate of inflation. But when one of the above factors moves against the others a net decline in demand can occur. The price of gold will then move counter to the current inflationary rate. There is no simplistic arithmetic relationship between the price of gold and the current rate of inflation.

The demand for gold cannot be fully understood without taking into account the cautionary motive. It is a desire for shelter against economic decline and political catastrophe. Sheltering assets in gold is not a sure-fire method of protection; but, when gold falls in prices it falls at different rates in different currencies. This is a lesson learned from floating exchange rates. If the golden asset must be disposed of on a depreciated basis it can be sold where gold has depreciated least. It is comforting to see that the cautionary purchase of gold really comes down to a familiar economic principle: the diversification of risk.

Of the four categories of demand for gold it is possible to give statistics for fabrication only. The other three must be evaluated subjectively. We may know something about the amounts of bullion held in the private sector, but we cannot judge how much is for investment, how much for speculation or how much for protection against diminution of assets. For that matter, motives may be combined in the mind of a single holder.

Table I is drawn from the authoritative volume "Gold 1980" issued by Consolidated Gold Fields, Ltd., of London.

TABLE I.—THE USE OF GOLD BY THE NON-COMMUNIST PRIVATE SECTOR

	(In metric tons)											
	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	
Fabrication in developed countries	756	763	836	1,008	739	708	728	844	990	1,107	1,060	
Fabrication in developing countries	444	613	552	336	121	27	255	540	520	489	255	
Total, fabrication (A)	1,200	1,376	1,388	1,344	860	735	983	1,384	1,420	1,596	1,315	
Of which:												
Carat jewellery	907	1,066	1,064	999	518	225	523	935	1,003	1,007	737	
Electronics	100	89	86	105	127	92	67	76	77	86	94	
Dentistry	60	59	63	66	68	57	62	77	82	89	87	
Other industrial/decorative uses	63	62	69	70	72	67	59	64	65	76	74	
Medals, medallions and fake coins	44	54	52	41	21	7	21	47	47	50	33	
Official coins	26	46	54	63	54	287	251	185	146	288	290	
Net private bullion purchases (sales) (B) ¹	(53)	(341)	(2)	(98)	542	512	129	55	222	156	450	
Net private purchases (A+B)	1,147	1,035	1,386	1,246	1,402	1,247	1,112	1,439	1,642	1,752	1,765	

¹ This category excludes coins but includes hoarding of small bars and all other forms of bullion investment.

When summarizing gold holdings worldwide the official sector cannot be ignored. Relevant statistics are given in Table II.

	<i>Tons</i>
United States	8, 227
Canada	657
Austria	657
Belgium	1, 063
France	2, 546
German Federal Republic	2, 961
Italy	2, 074
Japan	754
Netherlands	1, 367
Portugal	689
Republic of South Africa	374
Switzerland	2, 590
United Kingdom	584
OPEC	1, 207
Other Asia	607
Other Europe	1, 209
Other Middle East	461
Other Western Hemisphere	654
Rest of world	320
Unspecified	113
	<hr/>
Total, all countries	29, 110
	<hr/>
IMF	3, 217
	<hr/>
EMCF	2, 664

Source: Samuel Montagu & Co., Annual Bullion Review 1980.

NOTE: Gold holdings of central banks (excluding China, U.S.S.R., and associated countries) are based on figures published by the International Monetary Fund.

Speaking through its Annual Bullion Review 1980, Samuel Montagu & Co. of London declares:

Perhaps the most significant feature was, however the enormous growth in purchases by official institutions, both in number and quantity. This trend is even more in evidence in the first months of 1981.

Another knowledgeable opinion from that world bullion center maintains that in excess of 400 tons of gold was purchased by official institutions in 1980, regardless of how the reported statistics read. There is a prevalent opinion in the world of gold that the International Monetary Fund statistics on official gold holdings can be read only as minimum figures.

III. THE SUPPLY OF GOLD

How much gold is there in the world today? The answer is simple: we don't know. The most recent estimate with any ring of authority is more than 3 billion ounces. Any such estimate must be crude for the following reasons.

Gold has two interesting properties: it has always been cherished and it is indestructible. It never diminishes except by outright loss. It can be melted but it never changes its weight or chemistry in the process. The ring worn today may contain particles mined in the days of Darius.

The first gold was alluvial, found in shallow rivers and in seashore sands where rivers emptied into seas. Once such readily accessible gold had been recovered, men developed open pit or shallow shaft mining. As mining technology advanced, even in the middle ages, they began to adventure deeper into the earth's crust. The great discoveries of the 19th century in the Western United States, in Alaska, and in Australia, took place in isolated and primitive surroundings. Many of those who profited were of no mind to keep careful accounts to report to authorities.

Beginning in the early 1890's, South African organization may have been more orderly but it is difficult to believe that all gold that was found was duly recorded for posterity. Yet almost all of what was recovered over the centuries, exists somewhere, in some form, today.

NEW PRODUCTION

Although we do not know how much gold there is in the world, we do have reliable estimates of what is currently produced. For the last decade these figures are given in Table III.

TABLE III.—GOLD PRODUCTION IN THE NON-COMMUNIST WORLD

[In metric tons]

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
South Africa.....	1,000.4	976.3	909.6	855.2	758.6	713.4	713.4	699.9	706.4	703.3	675.0
Canada.....	74.9	68.7	64.7	60.0	52.2	51.4	52.4	54.0	54.0	51.1	49.3
United States.....	54.2	46.4	45.1	36.2	35.1	32.4	32.2	32.0	30.2	30.2	27.6
Other Africa:											
Zimbabwe.....	15.0	15.0	15.6	15.6	18.6	18.6	17.1	20.0	17.0	12.0	11.4
Ghana.....	21.9	21.7	22.5	25.0	19.1	16.3	16.6	16.9	14.2	11.5	12.8
Zaire.....	5.5	5.4	2.5	2.5	4.4	3.6	4.0	3.0	1.0	2.3	3.0
Other.....	2.0	2.5	1.7	1.7	1.5	1.5	1.5	1.5	2.0	2.5	2.5
Total, other Africa.....	44.4	44.6	42.3	44.8	43.6	40.0	39.2	41.4	34.2	28.3	29.7

TABLE III.—GOLD PRODUCTION IN THE NON-COMMUNIST WORLD—Continued

[In metric tons]

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Latin America:											
Brazil.....	9.0	9.0	9.5	11.0	13.8	12.5	13.6	15.9	22.0	25.0	35.0
Dominican Republic.....						3.0	12.7	10.7	10.8	11.0	11.5
Colombia.....	6.8	5.9	6.3	6.7	8.2	10.8	10.3	9.2	9.0	10.0	16.6
Mexico.....	6.2	4.7	4.6	4.2	3.9	4.7	5.4	6.7	6.2	5.5	5.9
Peru.....	3.2	3.0	2.6	2.6	2.7	2.9	3.0	3.4	3.9	4.7	5.0
Nicaragua.....	3.6	3.3	2.8	2.8	2.4	1.9	2.0	2.0	2.3	1.9	1.5
Other.....	6.6	8.2	9.0	7.9	5.9	6.0	8.0	8.0	8.5	8.5	10.0
Total, Latin America.....	35.4	34.1	34.8	35.2	36.9	41.8	55.0	55.9	62.7	66.6	85.5
Asia:											
Philippines.....	18.7	19.7	18.9	18.1	17.3	16.1	16.3	19.4	20.2	19.1	22.0
Japan.....	8.2	8.2	7.8	6.2	4.5	4.7	4.5	4.8	4.7	4.2	3.4
India.....	3.2	3.7	3.3	3.3	3.2	3.0	3.3	2.9	2.8	2.7	3.0
Other.....	2.8	2.1	2.7	2.7	2.7	2.7	3.0	3.0	3.0	3.0	3.0
Total, Asia.....	32.9	33.7	32.7	30.3	27.7	26.5	27.1	30.1	30.7	29.0	31.4
Europe.....	7.4	7.6	13.2	14.3	11.6	11.0	11.4	13.2	12.5	10.0	9.2
Oceania:											
Papua/New Guinea.....	.7	.7	12.7	20.3	20.5	17.9	20.5	22.3	23.4	19.7	14.0
Australia.....	19.5	20.9	23.5	17.2	16.2	16.3	15.4	19.2	20.1	18.6	17.3
Other.....	3.6	3.1	3.2	3.2	3.2	3.2	3.0	4.0	4.7	4.5	4.0
Total, Oceania.....	23.8	24.7	39.4	40.7	39.9	37.4	38.9	45.5	48.2	42.8	35.3
Total.....	1,273.4	1,236.1	1,181.8	1,116.7	1,005.6	953.9	969.6	972.0	978.9	961.3	943.0

Source: Consolidated Gold Fields, Ltd., "Gold 1981."

Over this period approximately 58 percent of non-Communist world production has come from South Africa. In 1980 the figure was up to 72 percent.

Because South Africa represents such a large contribution to new supply annually, her mining policies are of utmost importance. The salient feature is that she produces less gold the higher the price because she can afford then to use her less rich ore. The economist refers to this as a "backward-rising" supply curve. This is illustrated below where annual gold prices per troy ounce are matched with the annual metric tonnage of gold produced.

TABLE IV.—SOUTH AFRICAN GOLD AND PRICES

	Price	Production (tons)
1970.....	\$36	1,000
1971.....	41	976
1972.....	58	910
1973.....	97	855
1974.....	159	759
1975.....	161	713
1976.....	127	713
1977.....	148	700
1978.....	194	706
1979.....	308	703
1980.....	614	675

As the tabulation shows, the price went up by more than +1,600 percent between 1970 and 1980, yet South Africa reduced gold output by almost one-third.

The same policy holds true for much of gold mining in private hands. The President of Homestake Mining Co. in the United States once said:

Well, we always try to work as close as we can to our hoist and mill capacity—about 6,000 tons of ore per day. With higher prices it's become profitable for us to mine lower grade ore. So while the amount of ore we process remains about the same, actual gold output is lower. . . . Over the years I expect gold production to drop—the faster the price of gold rises, the faster the drop.

The overall statistics of Table III bear out the same result, a backward-rising supply curve for world gold production. From 1979 to 1980 only Brazil, Colombia, and the Philippines ran to the contrary. The latter two represent expansion of alluvial recoveries that follow somewhat different economics than shaft mining. Brazil made a quantum jump in production as higher prices attracted hosts of garimpeiros to work the remote sands of the Amazon Basin.

Also, somewhat obscuring a direct price-quantity relationship for gold bullion is the fact that roughly 10 percent of free-world gold production comes as a byproduct of base metal mining. This percentage is far more dependent on those markets, lead, copper, and so on, than on the price of gold itself.

To return to South Africa as the largest single producer of gold, in 1980 she mined and processed 90 million metric tons of gold-bearing ore. From this, 675 metric tons of actual gold was secured. This means that on the average the yield was 0.24 ounces of gold per ton of ore. (There are 32,200 troy ounces in a metric ton.) With less than a quarter of an ounce forthcoming from every ton of ore mined it is obvious that even the richest producer in the world cannot readily flood the market.

Another way to gain a useful perspective on the South African gold supply is to consider table III in conjunction with table II. If we accept the figures in the latter, identified official holdings of gold in 1980 would represent 52 years of South African production. The equivalent of half a century of South Africa's gold production is already in the hands of free governments throughout the world.

Table III still leaves the Communist nations to be taken into account. Due to official secrecy, plus a penchant to dissemble whenever complete secrecy is impossible, the amount of gold forthcoming can only be approximated. The most authoritative estimates come from Consolidated Gold Fields, Ltd.

For 1980 their figure is 90 tons. This number is unusually low. For the 3 years 1976–78, the tonnage was steady at about 400 tons; but even taking this maximum tonnage, it represents only 1.14 percent of the gold the non-Communist governments held in their vaults in 1980.

Astute analysts of Russian gold activity believe that net gold outflows from that region only occur to obtain essential foreign exchange. Corroboration of this view can be found in the low amounts of gold sold in the last 2 years when the Soviets have been able to meet the bulk of their foreign exchange requirements by other exports, particularly oil and gas.

The following table gives net trade with the Communist sector by the free world for as far back as Consolidated Gold Fields can give data:

Year	Metric tons	Year	Metric tons
1953.....	67	1967.....	-5
1954.....	67	1968.....	-29
1955.....	67	1969.....	-15
1956.....	133	1970.....	-3
1957.....	231	1971.....	54
1958.....	196	1972.....	213
1959.....	266	1973.....	275
1960.....	177	1974.....	220
1961.....	266	1975.....	149
1962.....	178	1976.....	412
1963.....	489	1977.....	401
1964.....	400	1978.....	410
1965.....	355	1979.....	199
1966.....	-67	1980.....	90

These data on the net outflow of gold from the Communist block should be viewed against the estimate in "Gold 1980" that the total annual production of the Russian gold mining industry is in the range of 280 to 350 tons. Russia could produce at this upper figure for a century and just build up to the quantity of gold the central banks of the free world already hold.

IV. THE GOLD STANDARD AND COMMODITY PRICE LEVELS

The "gold discipline" is an expression often heard in connection with a gold standard. The constraint referred to is over the money supply which cannot be expanded beyond a legal limit related to the gold reserve held in the treasury. A corollary is that inflation will be self-limiting because a self-correcting mechanism is thereby established that will convert a persistent rise in the price level into a compensatory decline. In this way rises and falls in the nation's commodity price level will tend to average out to zero over time.

The clearest way to illustrate how this occurs is to examine the wholesale price histories of England and the United States during the many years they were on a gold standard. The existence of a gold discipline can be demonstrated statistically by the following table.

CHANGE IN THE WHOLESALE PRICE INDEX (POINTS)
[In percent]

Years	Inflation	Deflation
United States (net sum over time equals -3 percent):		
1808-14.....	+53.1	-----
1814-30.....	-----	-72.2
1843-61*.....	+11.2	-----
*1879-97.....	-----	-17.5
1897-1914**.....	+24.9	-----
1914-20.....	+100.0	-----
1920-33.....	-----	-102.5
England (net sum over time equals +0.6 percent):		
1752-76.....	+22.1	-----
1792-97*.....	+19.5	-----
*1820-43.....	-----	-38.5
1843-57.....	+22.1	-----
1857-96.....	-----	-45.3
1896-1920.....	+195.9	-----
1920-31.....	-----	-175.2

*Years between which gold convertibility was suspended.

**This inflationary period is separated at 1914 because that is the year the Federal Reserve System came into operation.

The years represent the periods of major inflation and deflation in the two countries. The extent of inflation and deflation is measured by the change in percentage points of the wholesale price index numbers. For example, a decline in the wholesale price index from 150.0 to 95.0 would be registered as a change of -55 percentage points. Years when the gold standard was suspended in each country are omitted from the table as indicated by asterisks.

We see that over a combined record of about 300 years these gold standard countries had inflations and deflations that averaged out sensibly to zero. More strikingly, the index of wholesale prices in England was at the same figure in 1930—the last full year of the gold standard—as it was in 1717 when the gold standard began. (If price

index numbers seem too much a statistical abstraction, let us take the price of bread. Four pounds of "wheaten" bread costs a shade more in London in 1767 than it cost in 1930.) The wholesale price index in the United States was the same in 1800 as in 1930. By way of startling contrast, the latter price index number ascended by +760 percent from the year of leaving the gold standard until May 1981.

Major swings in the commodity price level certainly did take place under the gold standard, but then turned out to be compensatory in nature and magnitude.

In both England and the United States they averaged out to zero, and the wholesale commodity price index wound up in 1930 just where it began in 1717 and 1800, respectively, in the two countries. The record since leaving the gold standard is exactly the contrary. To take this country specifically, the index of wholesale prices on the base 1930 = 100.0 stood at 653.7 in May of 1981.

Another way of bringing home the stabilizing effect of the gold standard is to look at the steadiness of gold itself in its exchange rate for other commodities under such a régime. On the base of 1930 = 100.0 we have the following index numbers of the purchasing power of gold over other commodities at wholesale in selected years. The picture is that again and again the purchasing power of gold returned to the level it was to have in 1930.

Year:	<i>Purchasing power of gold</i>
1802	101.1
1820	111.5
1836	110.6
1855	114.7
1865	107.3
1874	111.2
1882	116.7
1916	101.1
1927	90.5

The statistics in section IV demonstrate in various ways the stabilizing effect on price levels of the classical gold standard.¹

An explanation of the self-correcting mechanism of the gold discipline is most easily seen in international trade. If generalized inflation occurs in a country, imports rise, exports fall and gold will flow out. The stock of money tied by convertibility to gold will diminish and the domestic price level be pulled down. If there is domestic deflation, the balance of oversea trade will go the other way: gold will flow in to settle the difference. The stock of money can then expand and the domestic price level will rise.

Such is the theory of the gold discipline. The thrust of this section was to show how it worked out in practice.

Our present inflation has lasted almost 50 years at one rate or another. It may astonish some people that a monetary system existed such that if prices turned up for a while they were expected to turn down.

¹ All statistics in this section are taken from Roy W. Jastram, "The Golden Constant," John Wiley & Sons, 1977.

V. THE PRICE OF GOLD

The market for gold is one of the most efficient in the world, in the sense of collecting, digesting, and reflecting information. It operates around the clock, opening in Hong Kong each trading day, progressing to Singapore, Europe, London, and on to New York.

The most influential market is in London and centers around the daily gold "fixings" that take place at 10:30 a.m. and 3 p.m. each working day at the headquarters of N. M. Rothschild & Sons, Ltd. There, representatives of the five great bullion houses of London convene privately to buy and sell for their worldwide clientele, the identities of which are kept confidential. These are venerable institutions; one bullion house dates back to 1671.

Twice each day, the Rothschild chairman suggests an opening price and the members of the group announce whether they would be net buyers or sellers at that price. If more gold would be taken than is offered, the chairman will suggest a higher price. Conversely, if supply exceeds demand, he will nominate a lower price. When a price emerges through this process that nearly equates demand with supply, that price is "fixed" and announced throughout the world in a matter of minutes.

Two points should be especially noted about the fixings. First, the five participants represent not only their own houses but many international bullion dealers who place orders through the members present. Hence there is great liquidity represented as orders of buyers and sellers aggregate to large volumes.

Second, because of this physical volume and the effective worldwide participation in it, the fixing prices are authoritative and international. That is why many central banks revalue gold in their vaults on the basis of some formula related to the London fixings. Similarly, many gold producers around the world sell directly to industrial purchasers at prices based on it.

For these reasons the free market gold prices used in the remainder of this chapter are based upon the London afternoon fixing. When figures are given on a monthly basis they are the average for the month of the midweek afternoon prices.

Let us now go back and trace in brief the official prices of gold in England and the United States in earlier times and up to the present.

In England the description is simple. From the time of the return to the gold standard after the Napoleonic Wars until the final departure from the gold standard in 1931, the official price per troy ounce was 3 pounds, 17 shillings, 10.5 pence. This was made official by Robert Peel's Act of 1819, but really represented a return to the de facto level on which the British gold standard operated between 1717 and the suspension of specie redemption in 1797.

For the United States, the official price between 1792 and 1934 seldom changed; a stability that is a corollary to the successful operation of a gold standard. It was fixed by Congress at \$17.92 in 1792, changed to \$20.67 in 1834, and held there until 1933 when the country went off the gold standard. On January 1, 1934, President Roosevelt established by proclamation the well-known price of \$35 per troy ounce.

After World War II, with all of its monetary restrictions, the first free market for gold reopened in Paris in 1948, followed by London in 1954. In November 1961, eight of the most powerful central banks entered into a consortium known as the London Gold Pool. The aim of this agreement was to stabilize the "free" market at \$35.0875, the gold export point at New York City. The modus operandi was to buy when the price fell and sell when it rose. For the next 4 years the central banks succeeded in maintaining the price at the target level. But in March 1968 the London Gold Pool was dissolved under demand pressures that the consortium felt it could not meet and still maintain the price at \$35.

A "two-tier" market emerged. One tier would be used for official settlements within a closed system of central banks at the \$35 price maintained by the United States. The other tier was for private buyers who could purchase freely on open markets at prices set by supply and demand.

The following are the annual average prices in London that obtained following the dissolution of the London Gold Pool:

1968	-----	\$38.60
1969	-----	41.11
1970	-----	35.92
1971	-----	40.81
1972	-----	58.10
1973	-----	97.22
1974	-----	159.09

January 1, 1975, is a demarcation date for modern gold prices. On that day, citizens of the United States were free after 40 years to buy, hold, and sell gold. By passage of Public Law 93-373, earlier, Congress had given 4 months advance notice of the new freedom. Speculative anticipation mounted in the bullion markets of the world. This reached its peak at a price of \$197.50 in December 1974.

What developed was a resounding anticlimax. In January prices went into an immediate decline and finally bottomed out in August 1976 at an average of \$109.64.

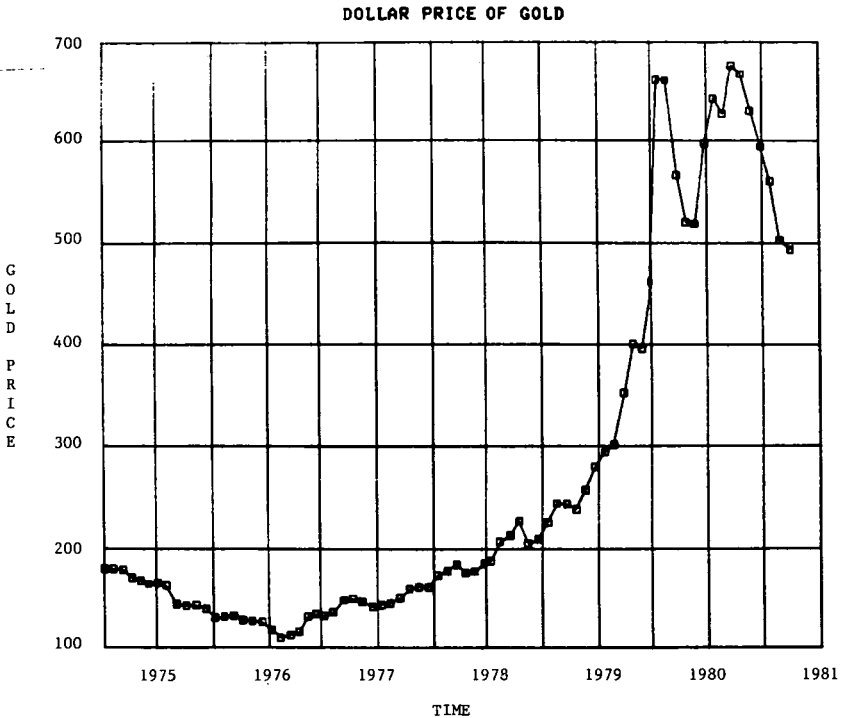
The charts that follow start with January 1975 because that was the date of a whole new marketing world for gold at the potentially huge American segment was added on.

Chart I portrays the history of gold prices since the right to buy was restored to U.S. citizens in January 1975. The data are monthly averages of midweek afternoon fixings in London. The figures, given in dollars as is customary for these London quotations, can be read directly from the chart. The reader might be interested to know the lowest figure of all occurred on August 15, 1976; and was \$105.50.

The highest figure of record is \$850.00 on January 21, 1980. The highest monthly average, however, occurred in September 1980. The war between Iraq and Iran broke into the open on September 22.

The price of gold is influenced by all the economic circumstances that might affect any financial asset; but it is also sensitive to geopolitical disturbances. The latter is one of the aspects of cautionary demand.

CHART I



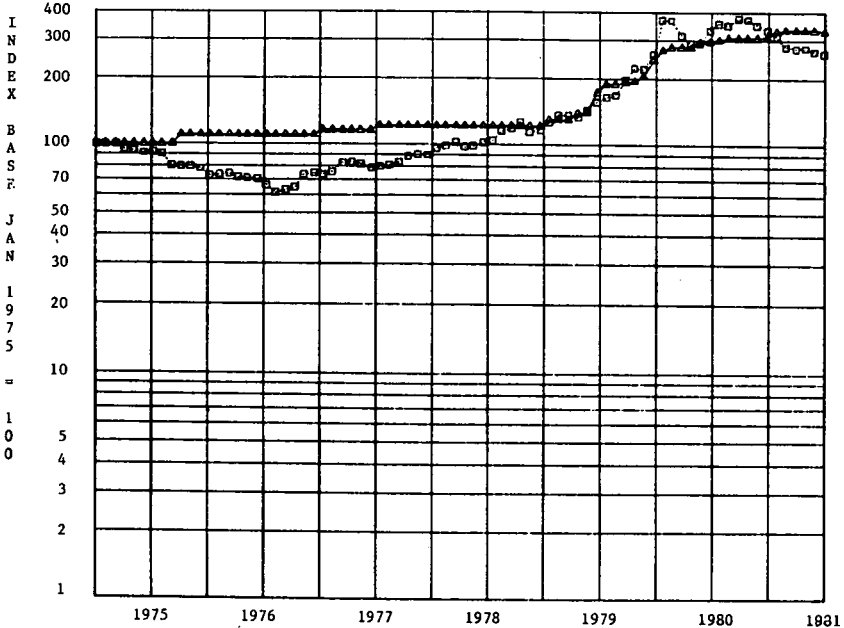
Because gold is multifaceted in its reflection of what goes on in the world, it is interesting to see prices charted against some of the other variables that attract public attention. The following charts, II, III, and IV, do this.

In each case the price of gold is pictured on an index number base, with January 1975=100.0. For direct comparability, the other variables on the charts are indexed to the same base, unless otherwise specified. The vertical axis is on a ratio scale (i.e., logarithmic) in each instance. The consequence of this is that comparative slopes represent comparative rates of percentage change in the variables examined. Thus if two lines are parallel for a period it means that the corresponding variables are changing by the same percentage amount, and so on. In an analogous way, an equal vertical rise on the chart represents an equal percentage change.

Chart II plots the price of gold against the price of OPEC oil. The latter is a weighted average of the prices posted by the 13 member countries with each price weighted in proportion to that country's export volume (Energy Administration Weekly Petroleum Report).

CHART II

OIL & GOLD PRICE INDEXES



Legend: triangle = oil, square = gold

TIME

Chart III presents the behavior of gold prices with respect to the Consumer Price Index (CPI) in the United States. It can be noted that the CPI has increased steadily over the entire period, and at a roughly uniform rate. The price of gold has risen also since August 1976, but with a more erratic behavior, and occasional reversals of direction. This serves to emphasize that gold prices tend to move with inflation but are affected by other forces; some of a transient and some of a more lasting character. This is also a good place to remind the reader that gold is affected by worldwide events and not by what happens in the United States alone. This may seem obvious, once stated, but it is surprising how often this obvious fact is neglected in popularized analyses of current moves in gold prices.

CHART III

GOLD PRICE INDEX & US CPI

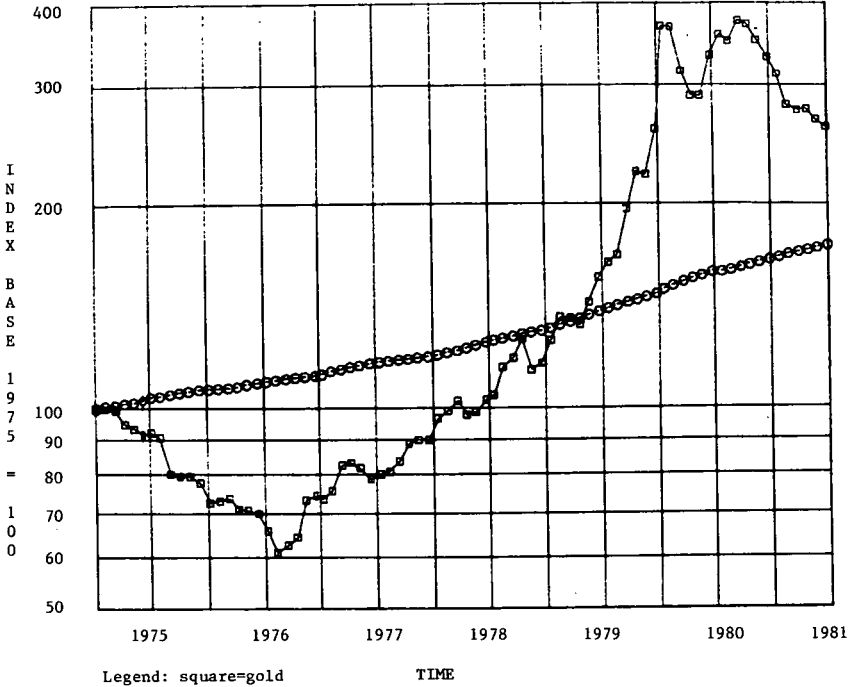


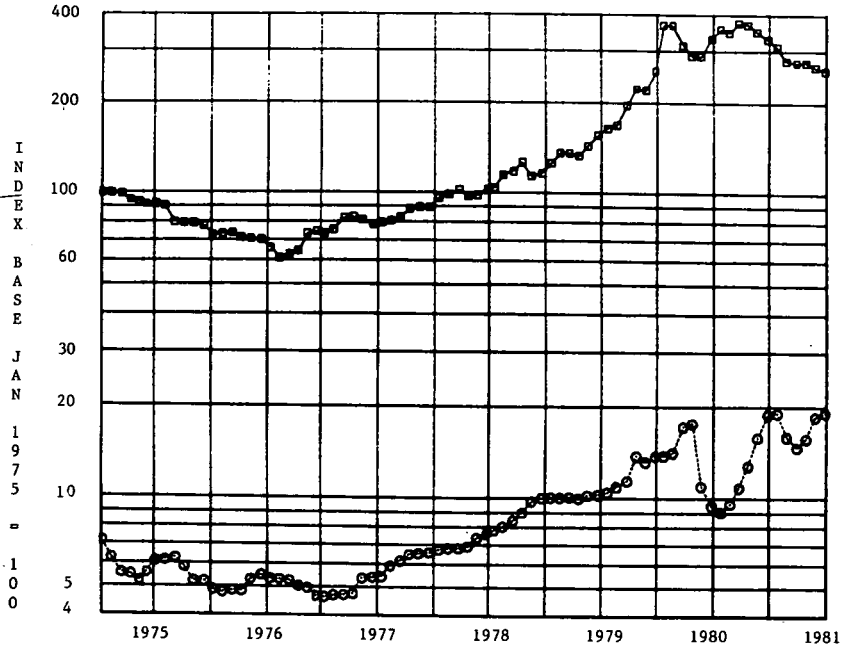
Chart IV displays the interrelationship between the price of gold and interest rates in the United States. As a proxy for the latter, the Federal Funds rate is used. This is the rate of interest at which Federal reserve banks lend to each other on a short term basis. It is considered to be the best single indicator of movements in the structure of interest rates generally in the country. On this chart the Federal Fund rate is plotted; there is no indexing. It reads against the same vertical percentage scale as does the price of gold index number.

The picture is that in the long run and especially at moderate rates, interest and the price of gold move together. But in the short run and especially when rates are unusually high, interest and the price of gold move inversely. That is what is happening at the extreme right of the chart, even though the reader has difficulty seeing it on the scale drawn.

The conventional wisdom that interest rates and the price of gold always move against each other is simply wrong. Another reminder that nothing is simple where gold prices are concerned.

CHART IV

GOLD PRICE INDEX & FEDERAL FUNDS RATE



Legend: square=gold; circle=fed funds

TIME

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APPENDIX

RESTORING THE GOLD CERTIFICATE RESERVE

By Robert E. Weintraub*

THE NEED FOR A GOLD CERTIFICATE RESERVE

Until 1968, the Federal Reserve banks were required to keep 25 cents in par or legal value (\$35) gold certificates behind each \$1 of their note liabilities. Until 1965, they also had been required to keep 25 cents behind each \$1 of member bank and other deposits on their books. Since removing the gold certificate reserve requirement, money growth has soared and inflation has soared with it.

Restoring the gold certificate reserve will put a lid on money growth and help stop inflation. It also can provide a short and safe bridge from today's discretionary management of the money supply to reinstatement of gold standard rules for managing money in the event that we want to reinstate these rules. Restoring the gold certificate reserve will reduce inflationary pressures and, as discussed below, allow us to gradually increase the legal or par value of gold to its market value. Bridging these problems would assure that there would be no sharp disruptions or eruptions in the real economy or its financial sector from reinstating the gold standard.

Reinstatement of the gold standard will not follow automatically from restoring the gold certificate reserve. Indeed, the latter may be all that is necessary to assure permanent price level stability. If events under a restored gold certificate reserve regime lead to the development of that expectation, the gold standard probably will not be reinstated. But even if the current inflationary surge is checked by restoring the certificate reserve, the public may believe that a stronger anchor is needed to assure permanent price level stability. In this case, the gold standard probably will be reinstated. Regardless, there is now a compelling need to put a lid on future money growth and thereby help stop inflation. Restoring the gold certificate reserve will do exactly that.

THE PROTOTYPE (ORIGINAL OR MODEL AFTER WHICH ANYTHING IS FORMED) PROPOSAL

There are a number of ways of restoring the gold cover. In this section, I outline a way which is clear and concise, and which can serve as the primitive model for finer legislation. The prototype proposal would require that the Federal Reserve banks hold at least 9 cents in gold certificates at their legal value behind each dollar of their note liabilities in perpetuity.

*Senior economist, Joint Economic Committee.

Presently and since 1973, the legal value is \$42.22 per ounce. Nine percent is the percent of Federal Reserve note liabilities that the Federal Reserve banks held in legal value (\$42.22) gold certificates at the end of 1980. At that time, the Federal Reserve banks held in legal value (\$42.22) gold certificates the amount of \$11.161 billion, or 8.98 percent of the \$124.241 billion of their note liabilities.

Legislation to keep the percent of legal value gold certificates behind Federal Reserve notes what it was at the end of 1980 in perpetuity would prevent any future currency growth. And, unless the public wanted to hold an increasing part of its total transactions balances (currency plus checking deposits in depository institutions) in the form of checking deposits, preventing currency growth would prevent any future growth in the transactions or exchange media measure of money. However, most would agree that some growth in our exchange media is desirable. Perhaps as much as 3 percent yearly to accommodate our economy's long-term growth potential.

In recent years, total transactions balances have been growing, on average, about 7½ percent and the currency component about 9½ percent per year. To allow for, first, disinflationary and, then, noninflationary growth in Federal Reserve note liabilities, the prototype plan calls for the legal value of gold to be raised each month in this and subsequent years as follows:

- In 1981 by one-twelfth of 7.5 percent to \$45.39 at year end,
- In 1982 by one-twelfth of 6.0 percent to \$48.11 at year end,
- In 1983 by one-twelfth of 4.5 percent to \$50.27 at year end,
- In 1984 by one-twelfth of 3.0 percent to \$51.78 at year end, and
- In 1985 and all subsequent years by one-twelfth of 3.0 percent.

Assuming both that the number of ounces certified by the certificate reserves does not change and that the Federal Reserve banks fully use their authority to issue notes, the value of their note liabilities would grow from the \$124.241 billion level of December 1980 as follows:

- Between December 1980 and December 1981 to \$133.559 billion,
- Between December 1981 and December 1982 to \$141.573 billion,
- Between December 1982 and December 1983 to \$147.943 billion,

and

By 3 percent per year thereafter.

SOME ANTICIPATED QUESTIONS ANSWERED

In this section, I respond to some anticipated questions.

First, what if the public's preferences for currency changes? On the one hand, what if the public decides to convert currency into checking deposits? The reflow of currency to banks would provide banks with additional reserves. In a fractional reserve system, this will generate multiple rises in checking deposits and the sum of checking deposits plus currency. A gold certificate reserve would not prevent this. Nor would a gold standard, at least until after the damage had been done. Unfortunately, no monetary system is fully automatic. The only way to deal with a currency reflow is for the Federal Reserve to counteract it with open market sales. That is what should happen whether money is managed under present law, a gold certificate reserve regime, or the gold standard.

On the other hand, what if the public decides to convert checking deposits into currency? In the early 1930's, while operating under

both a gold certificate reserve regime and the gold standard, just such an event caused a great contraction in the total of our exchange media and greatly magnified the recession that began in 1929. Banks were subjected to a reserve drain which caused multiple contractions in both checking deposits and the sum of checking deposits plus currency. The Federal Reserve authorities could have prevented these contractions by supplying reserves (and currency) by open market purchases or by increasing Federal Reserve loans (discounts) to banks. They failed to do so in part because they feared it would lead to a gold drain abroad.

Requiring a gold certificate reserve will not facilitate dealing with this possible problem. However, there is a way of dealing with it, if it should arise, in a gold certificate reserve regime. That way is for the Federal Reserve to pay interest on deposits in Federal Reserve banks which would allow depository institutions to, in effect, buy currency on the open market. By paying interest on checking and other deposits, banks and other depositories could choke off all currency drains. Existing laws and regulations which prevent the payment of interest on any deposits, or place ceilings on it, should be repealed, and the Federal Reserve should be given clear authority to pay interest on all deposits in Federal Reserve banks. These changes should be made whether or not the gold certificate reserve is restored.

Another question concerns possible Treasury purchases and sales of gold. In this regard, if the Treasury purchased gold, greater growth of currency would be allowed than the prototype plan contemplates, unless the requirement ratio is adjusted commensurately. However, as long as the legal value of gold is below the market value, such purchases are unlikely, at least on a scale large enough to be concerned about. This is because Treasury's immediate spending power would be decreased by such purchases by an amount equal to the difference between the market and legal values of gold times the number of ounces purchased.

Gold sales by the Treasury also are possible. However, if there were sales, they would reduce the allowable growth in currency in the current and all future years. That prospect should act as a very strong deterrent to future gold sales. Thus, it would appear reasonable to assume that the number of ounces of gold now certified by the certificate reserves will remain virtually the same in future years.

A final question concerns the possibility that the Federal Reserve banks will not use the full authority they will be given to increase currency under my plan. Frankly, I hope that this will be the case year after year. The 3 percent per year limit should be viewed as an upper limit. Regardless, the legislation will provide that, if in a particular year the Federal Reserve banks do not use their authority to issue notes to the maximum allowed, unused authority will not be carried over to the following year. For example, if in 1982, total note issues rise by only 4 percent to \$138.901 billion, the par value of gold would be adjusted downward accordingly (to \$47.21) at yearend and the 4.5 percent increase scheduled for 1983 would proceed from that base.

EXTENSIONS AND REFINEMENTS

The legislation could be drawn to make sure that the Treasury will not benefit from increasing the legal value of gold, if that is desired.

This can be done by requiring that the difference between the legal value of gold in the current year and the legal value in the previous year must be used to retire Treasury debt that is held by Federal Reserve banks. Since, at the margin, Treasury already receives the interest on that debt, it would gain nothing from the rise in the legal value of gold.

Second, the legislation can be drawn so that both the legal value of gold and the percent backing required rise more rapidly, but without affecting the maximum allowable currency growth. In this way, the legislation could be used as a stepping stone to a full-fledged gold standard. For example, the certificate reserve requirement could be raised as follows:

- To 12 cents in 1982,
- To 16 cents in 1983,
- To 21 cents in 1984,
- To 28 cents in 1985,
- To 37 cents in 1986,
- To 49 cents in 1987, and
- To 66 cents in 1988.

Under this certificate reserve schedule, and, as initially, limiting currency growth to 7.5 percent in 1981 and 6 percent in 1982, the legal price of gold would be increased to \$64.15 in 1982. The increase would reflect the 7.5 percent rise in 1981 and the 6 percent rise in 1982 to allow for disinflationary currency growth in those years, plus a 33 percent rise to accommodate the increase from 9 cents to 12 cents in the gold certificate reserve requirement in 1982 ($\$64.15 = \$42.22 \times 1.075 \times 1.06 \times 12/9$). After 1982, to limit currency growth to 4.5 percent in 1983 and 3 percent yearly thereafter, the legal price of gold would rise as follows:

- To \$89.38 in 1983,
- To \$122.74 in 1984,
- To \$168.57 in 1985,
- To \$231.51 in 1986,
- To \$317.93 in 1987, and
- To \$463.63 in 1988.

Assuming the market value of gold does not rise very much in the future, and it should not, given that currency growth will be constrained, the legal value of gold will equal the market value around 1988. When that occurs, if we choose, we can authorize the Treasury to buy and sell gold at hopefully an "equilibrium" market price.

Finally, the legislation could be drawn to cover the deposits of member banks and other entities in Federal Reserve banks, as well as Federal Reserve notes, if that is desired, and monetarists would surely find that helpful.

SUMMARY

That is the basic idea. The numbers I have used in outlining it can, of course, be modified. The plan should prove attractive to both monetarists and gold standard advocates. What is important is that if it is enacted, it would insure that money growth, including check deposit money, would be moderated gradually until it reached a noninflationary level where it would be kept.