

## THE STABILITY OF THE GOLD STANDARD

The long-run stability of prices under the gold standard is generally appreciated, and is illustrated in Chart 1.<sup>1</sup> Movements in the American price level between 1870 and 1997 fall into three distinct periods. The heyday of the international gold standard, 1870-1914, saw the price level nearly the same at the end as at the beginning. After falling 35 percent between 1870 and 1896, at an annual rate of 1.6 percent per annum, prices rose during the next 18 years at an average rate of 2 percent to within 6 percent of their 1870 level. The purchasing power of gold in 1914 approximated its average during the first half of the 19<sup>th</sup> century—as well as, turning to British data, its averages during the 17<sup>th</sup> and 18<sup>th</sup> centuries. References to *The Golden Constant* are well deserved.<sup>2</sup>

The period of greatest instability extended from World War I through the Great Depression of 1929-33 (the shaded area in the chart). The Allies financed their World War I military expenditures by the issue of paper currencies not redeemable in gold and spent their gold reserves on American goods. The influx of reserves permitted increases in money and prices in the United States without forcing suspension of the gold standard. The end of a complete and committed gold standard came in the first year of the New Deal, when the private ownership of monetary gold was banned and Congress empowered the president to devalue the dollar. That power was exercised in January 1934 when the price of gold was raised from \$20.67 to \$35 an ounce.

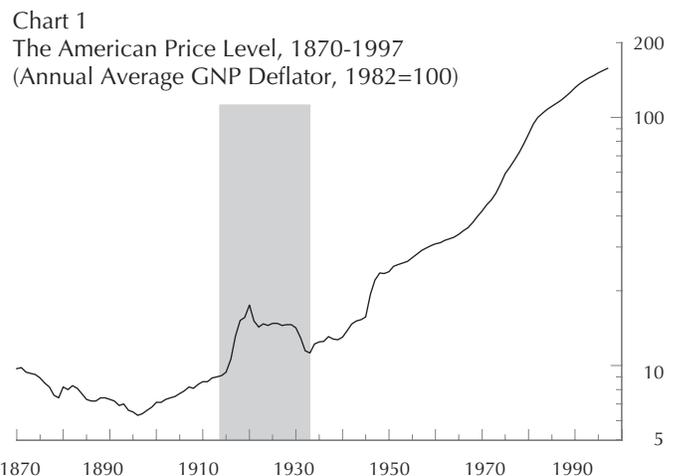
The outstanding feature of the third period has been almost continuous inflation. Prices rose between 1933 and 1997 in all but three years—1938-39 and 1949. The price level in 1997 (157) was more than fourteen times its level in 1933 (11). Even if we disregard World War II, the postwar inflation that came with the end of wage and price controls, and the Korean War, and begin with 1953 when the index was 26, prices rose 44 consecutive years, at an average annual rate of 4.2 percent, by a total of 500 percent. The post-1933

inflation has been due entirely to increases in Federal Reserve currency. Another inflow of gold during another world war enabled another inflation. But this time inflation persisted, and the American gold reserve, after rising from \$8 billion in 1934 to \$24 billion in 1949, had by the end of the 1950s fallen to \$20 billion. The gold outflow accelerated with foreigners' misgivings about the country's intention or ability to maintain convertibility. In 1968 Congress repealed the minimum 25-percent gold backing against Federal Reserve currency, and in 1971, with reserves under \$10 billion and in the face of a run on the dollar, President Nixon closed the gold window. The gold standard, which had not restrained government monetary and fiscal policies since 1933, was finally and formally abandoned.

It is not generally appreciated that pre-1914 price stability was not a coincidental result of accidental gold discoveries, but rather the necessary consequence of market forces inherent in the system. Nor is the short-run stability of prices and production under the gold standard well understood. These aspects of the gold standard—the natural tendency of the production of gold to preserve its value and the forces in the system tending toward short-run as well as long-run stability—are discussed below.

### *The Value of Money Equals Its Cost of Production*

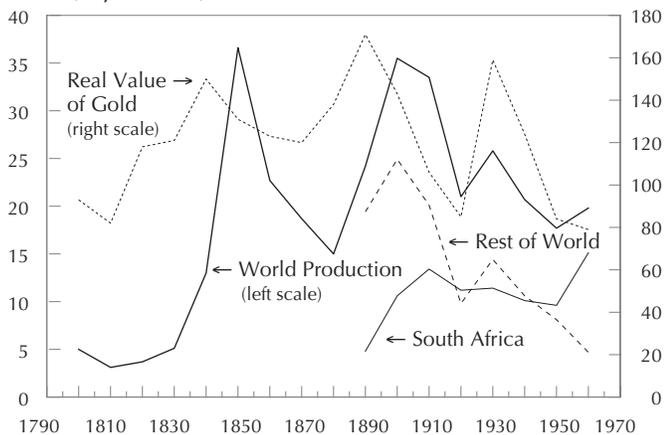
The value of gold relative to other commodities is determined by their relative costs of production. The nominal



<sup>1</sup> The GNP deflator—an index of prices of final goods and services produced in the United States—used here has been calculated by Christina Romer (“The Prewar Business Cycle Reconsidered: New Estimates of Gross National Product, 1869-1908,” *Journal of Political Economy*, Feb. 1989), to be comparable with post-1929 estimates.

<sup>2</sup> The title of a book by Roy Jastram, Wiley, 1977; especially see Table 3 and Chart 1.

Chart 2  
**Real Value of Gold, and Production as a Percentage of Stock, by Decade, 1800-1960**



price of a monetary unit—a dollar or pound sterling—is arbitrary.<sup>3</sup> A government or private financial institution might credit a deposit account or hand over a piece of paper engraved with \$20 and a picture of Andrew Jackson (who hated paper money) for an ounce of gold—with the understanding that it will reverse the transaction at the convenience of its creditor. So the price of an ounce of gold might be *defined* as \$20. In the 17<sup>th</sup> century the English government defined its currency as £4.11 per ounce of gold. Given free markets in currencies and gold, this meant a dollar/pound exchange rate of 4.866.<sup>4</sup>

Critics of the gold standard point to the fortuitous nature of the money stock and the resulting instability of prices when money is based on gold. They express concern over whether there would be enough gold to preserve the viability of exchange and the stability of prices. These concerns are belied by the history of prices under the gold standard, especially when it is realized that the record of stability was not accidental, but the natural outcome of market forces directing resources to their most productive uses. If, for example, the price of wheat falls from \$1.60 a bushel in the 1870s to \$1 in the 1880s while an ounce of gold remains at \$20, we are not surprised that Sam McGee deserts his Tennessee farm for the Yukon.

The gold standard does not guarantee perfect price stability because the costs of production of gold vary in response to discoveries of new deposits and technological advances in the extraction of known deposits. The costs of producing other goods, such as wheat, also vary. If the cost of producing gold had fallen while a permanent dust bowl had made a bushel of wheat as expensive to produce as an ounce of gold, the price of wheat would have been \$20. Anything less would have induced a shift of resources from wheat to gold.

<sup>3</sup> Although the English pound was originally a pound (*livre*) of silver consisting of 240 pennyweights. Ancient Greek and Roman coins were also usually identified by their weights. The Roman *as* was at first a pound of copper, but like the English pound suffered repeated devaluations.

<sup>4</sup> The gold value of the pound has been modified for this discussion to conform with the simplified value of the dollar, in fact \$20.67 per ounce instead of \$20.

In fact, the cost of producing gold relative to other goods has been remarkably steady. Technological advances in agriculture and manufacturing have been matched by those in gold production—including the drilling capabilities required of the deep deposits in South Africa. The silver strikes of the 19<sup>th</sup> century caused a great fall in silver’s value and led several countries on the silver standard to switch to gold in the interests of monetary stability. Chart 2 shows how, on the other hand, gold production adjusted to relative price changes so as to preserve its long-run value relative to goods in general. The great increase in the demand for gold, and therefore in its relative value, as most of the world shifted to the gold standard in the 1870s and 1880s brought increased production in the Yukon and South Africa—just as increases in the real value of gold during the 1830s and 1840s had been followed by the California and Australian gold rushes. Moving to the 20<sup>th</sup> century, gold production was discouraged by the inflations of the two world wars and encouraged by the deflation of the 1930s. The constant nominal value of gold also promotes the stability of aggregate production. Increases in gold production made the depressions/deflations of the 1890s and 1930s a little less severe.

The stabilization properties of the gold standard are not fortuitous. Although there are new discoveries and other unforeseen events in gold production as in other industries, most of the variation in output comes through the more or less intensive exploitation of known deposits as they become more or less profitable. The main exception to this influence was South Africa in the 1950s and 1960s, where high-cost mines were kept at work by government subsidies. The government wanted to maintain employment in the country’s major industry and also to keep marginal mines operational in the event of a turn-around in the relative price of gold.<sup>5</sup>

#### ***Who Killed the Gold Standard?***

The immediate reason for the suspension of an effective gold standard in 1933 was the government’s determination to reverse the catastrophic falls in prices and employment. The continuation of that suspension has rested on the belief that managed money is superior to the gold standard. Many of those who recognize the inflationary dangers inherent in politically determined paper money are even more afraid of the inflexibility of money tied to gold. But they have learned the wrong lessons. Those who don’t know history don’t get to repeat it.

Everyone, it seems, whatever their economic or political persuasion, puts at least some of the blame for the monetary contraction of the Great Depression on the Federal Reserve and its aggressive defense of its gold reserves. So the rejection of the gold standard is in reality a rejection of the gold standard *as managed by the Federal Reserve*. The pre-1914 gold standard was more flexible. We saw above that market forces tend to produce stabilizing changes in money in the long run. But institutions were developed during the 19<sup>th</sup> century that also promoted stability in the short run. Financial instability stemmed principally from government restric-

<sup>5</sup> See Fred Hirsch, “Influences on Gold Production,” *International Monetary Fund Staff Papers*, Nov. 1968.

tions on branch banking. Thousands of small independent banks dependent for their solvency on local economies and for their liquidity on New York were susceptible to failure, runs, and panic whenever crops failed or the balance of payments turned to deficit. But the effects of gold losses were moderated by bank clearinghouses, the independent Treasury, investment bankers, and congressional interventions. Beginning in the 1850s, the major New York banks, operating through their clearinghouse, forbore to exercise gold claims on each other during periods of stringency, and issued certificates that circulated as money. On more than one occasion, J.P. Morgan or his colleagues arranged loans from Europe to ensure the convertibility of the dollar—as the Banks of France and England had accommodated each other on similar occasions—and the Treasury sold bonds in Europe for the same purpose. Of course such loans could be gotten at affordable interest rates only if repayment was assured, that is, only if the country’s commitment to the gold standard was credible. The Treasury had been legally required since Andrew Jackson’s time to keep most of its gold in its own vaults instead of in banks. But most secretaries shifted reserves to banks when the money market was short of funds. Finally, Congress played an active part in monetary policy. The House of Representatives, in particular, with the power of the purse, had much the same relationship with the Secretary of the Treasury that the British House of Commons had with the Chancellor of the Exchequer. In 1866, for example, when Secretary Hugh McCulloch was retiring greenbacks too rapidly for an electorate that did not want deflation, Congress placed him under a strict regimen.

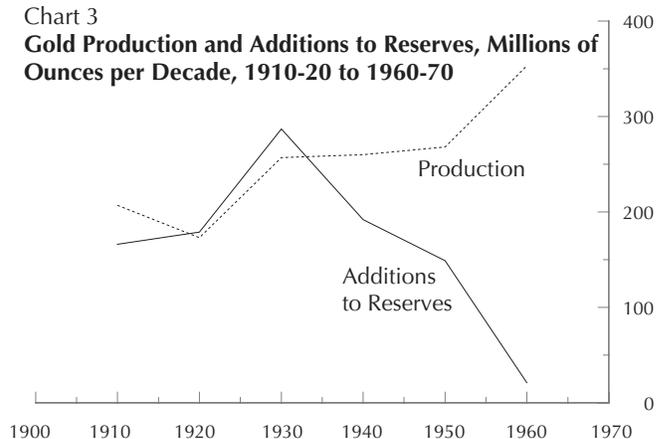
These stabilizing features of the pre-1914 monetary system were terminated by the creation of a central bank that was formally placed in charge of the monetary system. The sharpness of the reversal from inflation to deflation after World War I—from an increase in prices of one-third between 1918 and 1920 to a one-fifth fall between 1920 and 1922—exceeded anything seen up to that time. Then and during the Great Depression, when money and prices fell by one-third and the Federal Reserve failed to act even though its gold reserve was never seriously threatened, bankers, the Treasury, and Congress left the control of money to an official and supposedly expert body with little stake in the outcome. The lessons taken by politicians from these experiences were that the gold standard should in effect be abandoned and that the Federal Reserve should be strengthened and its control centralized in Washington.

### *Lack of Commitment and the End of Gold*

The world looked for a system after 1945 that would combine the advantages of the gold standard—specifically its fixed exchange rates and long-term price stability—with, having learned the wrong lessons, exchange rates sufficiently flexible that governments would not be constrained in dealing with short-run economic problems. Specifically, when a country’s exchange rate was in “fundamental disequilibrium”—not clearly defined in the Bretton Woods agreements but in practice meaning that its currency had been depreciated by monetary expansion—it might be devalued.

Unfortunately this system of simultaneously fixed and

Chart 3  
Gold Production and Additions to Reserves, Millions of Ounces per Decade, 1910-20 to 1960-70



flexible exchange rates was as internally inconsistent in practice as it appeared on paper. In its short life Bretton Woods operated as a gold exchange standard in which the United States held most of the world’s monetary gold while others kept their reserves in dollars. It was operational for only five years. Most industrial countries had ended most of their exchange controls by 1958, allowing almost unrestricted transactions at uniform official rates, but in 1963 the United States imposed a tax on foreign investments and informally gave notice to other governments that an attempt to convert dollars on a large scale would provoke suspension.

The inevitable breakdown of Bretton Woods is usually explained as follows. The growing world economy and the general commitment to inflation (which lay behind the option to devalue that was at the heart of Bretton Woods) required continuous additions to international reserves. Given a stationary volume of monetary gold, the new reserves had to be dollars. These required American deficits, which were obligingly forthcoming. But as foreigners’ dollar holdings rose while American gold did not, they increasingly worried about the value of their claims. The result was a run on the dollar and suspension in 1971.

But there was another, more fundamental, contradiction in the system—one that explains why gold reserves did not increase. Under a committed gold standard, a shortage of gold is corrected by a rise in its relative value that encourages an increase in supply. But under Bretton Woods, the fixed \$35 price of gold was accompanied by rising costs of production. Production was accordingly weak, and it failed to fall only because of South Africa’s speculation on a rise in price. Little of this production went into monetary reserves, however, as we see in Chart 3. The proportion of new gold that went to the monetary system fell dramatically after the 1920s. Gold producers who expected higher prices—which came in 1934 and 1971—were unwilling to sell it for the \$20.67 or \$35 in paper offered by central banks.

### *Stability in the Short-Run*

One of the most recurrent empirical generalizations about the U.S. economy is that the prewar economy was substantially more volatile than the postwar economy. It is widely accepted that the business cycle before World War II (or before World

Table 1  
Average Monthly Durations of Cyclical Contractions and Expansions, 1854-1929 and 1946-1990\*

Series	Before 1930		After 1945	
	Contraction	Expansion	Contraction	Expansion
NBER	21	25	11	50
Industrial Prod. (Frickey-Romer)	19	49	18	22
GNP (Romer-NIPA)	15	68	14	56

\* The Industrial Production series begins 1866 and ends 1982; GNP begins 1869 and ends 1990.  
Source: Mark Watson, "Business Cycle Durations and Postwar Stabilization of the U.S. Economy," *American Economic Review*, March 1994.

War I for that matter) was decidedly more severe than the cycle after 1947. The source of this belief is simply every conventional indicator of macroeconomic performance; industrial production, unemployment, and Gross National Product all show larger cyclical fluctuations in the late 1800s and early 1900s than after World War II.<sup>6</sup>

The supposedly unprecedented stability of the post-World War II economy has been the main evidence offered by advocates of the superiority of Keynesian demand management over the gold standard. That argument has lost much of its lustre since 1971, but the standard measures of economic performance have continued to show less volatility after 1945 than before 1929 or 1914.

These comparisons are flawed, however, because they measure different things. The typical price comparison is between a Wholesale Price Index, which was all that was available for the earlier period, with a more recent Consumer Price Index or GNP deflator. It is not surprising that an index of a few prices determined in competitive wholesale markets is more volatile than broad indexes of an entire economy. In

<sup>6</sup> Christina Romer, "Is the Stabilization of the Postwar Economy a Figment of the Data?" *American Economic Review*, June 1986.

<sup>7</sup> "The Estimation of Prewar Gross National Product: Methodology and New Evidence," *Journal of Political Economy*, Feb. 1982.

the 1980s researchers began to produce estimates of aggregate production and price series for earlier periods by methods previously confined to the years since 1929. Nathan Balke and Robert Gordon found that the GNP deflator produced in this way had about the same variance between 1869 and 1914 as after World War II.<sup>7</sup>

Historical comparisons of the volatility of industrial production typically use Edwin Frickey's index for 1866-1914 and the Federal Reserve Board's index for the period since 1919. The later series is much less volatile, but the two are not comparable. Frickey's index is based on a much smaller sample of commodities, all raw materials, whereas the FRB index also contains finished goods. Christina Romer adjusted for these differences and found that comparable indexes had similar variances before 1914 and after 1945.

The most dramatic exhibits used to support the superiority of the post-1945 over the pre-1929 economy have been the cyclical contractions and expansions reported by the National Bureau of Economic Research. According to the NBER, contractions were twice as long and expansions half as long under the gold standard as achieved by the managed economy. These are listed in Table 1. But the table also shows that when comparable production series are used, contractions were only slightly longer and expansions were substantially longer under the gold standard than later. The bias in the NBER series stemmed from the paucity of prewar data and the consequent reliance on a few volatile series such as pig iron production and bank clearings. This defect was corrected in the postwar period, and the apparent postwar stabilization is actually due to the changing composition of series used to date the cycle. As Romer observed, "the relative stabilization of the postwar economy is a figment of the data."

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