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ECONOMIC

# PERSPECTIVES

Gold in the international arena: how  
automatic is international adjustment?

The demise of the gold standard

## Perspectives On: Gold

Inflation has been a chronic affliction of most economies of the world since World War II and has become acute since the mid 1960s. Repeated declarations by governments of their determination to deal with the problem by adopting conservative monetary and fiscal policies have been belied by continued large budget deficits and excessively rapid and erratic money growth. In the United States, disillusionment with discretionary economic policies has led to a variety of suggestions for placing constraints on such policies. One of the most frequently heard suggestions is to limit money creation by requiring that money be convertible into, or otherwise linked to, gold. The two articles in this issue of **Economic Perspectives** discuss two issues of great importance in judging recent proposals to adopt a gold standard: the alleged automaticity of international adjustment under a gold standard and the difficulty—and questionable wisdom—of getting governments to subordinate domestic economic objectives to the successful operation of such a standard.

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*There are several varieties of gold standard, each with widely differing implications for the degree of automaticity of international adjustment.*

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*Historical experience offers little reason to believe that governments would be willing to make the sacrifices necessary to abide by the "rules of the gold standard game."*

## ECONOMIC PERSPECTIVES

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# Gold in the international arena: how automatic is international adjustment?

William L. Wilby

While to the layman the idea of a modern day “gold standard” conjures up images of gold coins and bullion hidden in the crypts of Fort Knox “backing” the value of the American currency, to students of international economics, the connotation of a gold standard is quite different. To the latter, the gold standard is merely one of several alternative systems of international monetary adjustment—a system for settling, and ultimately correcting, payments imbalances in a country’s international accounts. However, given the key role of the dollar in international trade (dollars are used in over 70 percent of all international transactions), it should be obvious to anyone, whether layman or international financier, that any unilateral move by the United States towards a gold standard would have dramatic implications for the international monetary system. This suggests that any judgment on the merits of such a move must take into consideration its international impact.

This article focuses on one small aspect of the gold standard: the supposed automaticity of the international gold standard in restoring equilibrium in a country’s balance of payments. Although there are numerous other issues pertinent to the evaluation of the gold standard as a system of international adjustment, many of these issues revolve around the responses of national economies to disturbances originating abroad. These responses depend upon the speeds of adjustment of a plethora of economic variables—questions that were considered beyond the scope of this article. Rather, we will focus here on the narrow question: To what extent does the international gold standard remove the discretionary ability of governments to

control their national monetary supplies, thereby forcing the adjustments necessary to restore equilibrium in the balance of payments?

To answer this question, we will first examine the intellectual roots of the idealized gold standard, the so-called price-specie flow mechanism, with a view towards understanding both the origins of the concept of international adjustment and the merits of the gold standard when it is left to operate freely. Second, we will examine the theoretical operation of the gold standard when we move from the realm of commodity money to the existence of fractionally backed or credit money. Finally, we will look briefly at the actual functioning of the gold standard during the period considered to be most representative of its operation in a pure form—the period 1879-1913.

It will be argued below that while the pure international gold standard should, in principle, function well as a system of international adjustment, its operation in practice leaves considerable room for government manipulation. Moreover, the historical record indicates that it was the threat of reserve flows (which could exist under any system of fixed exchange rates) and a specific government focus on the balance of payments that ensured a general worldwide coordination of monetary policy rather than gold flows *per se*.

## The price-specie flow mechanism

The earliest analyses of the role of gold (and other precious metals as well) in the system of international trade and payments gave rise to the doctrine of mercantilism, and the system of protective trade regulations that was inspired by it. Simply stated, the doc-

trine of mercantilism emphasized the importance of having an excess of exports over imports in order to accumulate “treasure” through a favorable balance of trade. Numerous protectionist measures (the British Corn Laws were one such example) were designed to achieve this end by promoting exports and taxing imports at prohibitive levels.

This doctrine came to be criticized on several grounds (much of Adam Smith’s *Wealth of Nations* is an attack on mercantilism), but some of the strongest criticisms of mercantilism came from British writers in the late 17th and early 18th centuries who argued that a policy of accumulating treasure, or “specie,”<sup>1</sup> was self-defeating because of the economic repercussions triggered by the buildup of specie itself. The clearest articulation of these ideas is found in the writings of David Hume, an 18th century Scottish philosopher. Hume argued that the national stock of money (or specie, since the two were synonymous in Hume’s time) would take care of itself, regardless of the degree of mercantilistic intervention designed to produce a favorable balance of trade.

Hume made his case by postulating that four-fifths of all the money in Great Britain had been destroyed overnight, and then proceeding to show the consequences. Prices of British commodities and wages would fall proportionally to the decline in money. British exports would thus become less expensive relative to foreign goods, and the resultant excess of exports over imports would cause Britain to experience an inflow of specie (a balance-of-payments surplus) until the incoming money payments restored the British money supply to its “natural level.”<sup>2</sup>

Conversely, if the British money supply were increased fivefold, prices and wages in England would rise so high that no country could purchase British commodities, while British subjects would desire to purchase only the cheaper foreign goods. The outflow of money to purchase foreign goods (a balance-of-payments deficit) would shrink the British money supply until the “level of money” in Great Britain were equal to that in neighboring countries.

The forces that caused money to seek its “natural level” were, according to Hume, self-equilibrating and symmetrical between countries, and would thus operate to maintain a fairly even balance of trade between nations. This mechanism of adjustment is known as the price-specie flow mechanism and is the classical prototype of what modern economists mean when they speak of an “international adjustment mechanism.” Moreover, the mechanism also defines in a very primitive way the idealized operation of the international gold standard.

As one can see from the preceding examples, the effective functioning of the price-specie flow mechanism requires adherence to certain “rules of the game”—rules that also govern the operation of the idealized international gold standard. First, each monetary authority must take steps to fix the value of its currency in terms of gold. Second, there must be no restrictions on the flow of gold between countries. Third, each monetary authority must ensure that the issuance of notes or the creation of checking deposits is in some fixed relationship to its gold holdings.

If gold is the only acceptable money

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<sup>1</sup>“Specie” generally refers to money in coin. In Hume’s time specie consisted of other precious metals besides gold. However, because of its physical attributes, gold eventually evolved as the preferred store of value.

<sup>2</sup>The concept of the “natural level” of money is a primitive concept of monetary equilibrium. Given the worldwide quantity of specie and the worldwide quantity of goods, there was presumably a “natural” price level based on the relative amounts of both. If the relationship between the quantity of goods and the quantity of money for one country were to deviate from the world

relationship, presumably flows of money and goods would result until these natural levels were reestablished. This proposition first appeared in print with the works of Isaac Gervaise over 250 years ago. See Gervaise, “The System or Theory of the Trade of the World, 1720,” in *Economic Tracts* (Baltimore: The Johns Hopkins Press, 1956). The theory has much in common with the modern monetary approach to the balance of payments. See Jacob A. Frenkel and Harry G. Johnson, eds., *The Monetary Approach to the Balance of Payments* (London: Allen & Unwin, 1975).

world-wide, these rules are *automatically* enforced. Together, they ensure that deficits and surpluses in a country's international transactions translate into gold flows, which in turn are translated into movements in a country's domestic money supply. However, the degree to which this mechanism is in fact self-equilibrating and self-correcting, as Hume argued, depends on the predictability and precision of the relationship between the "level of money" and prices—an issue hotly debated by economists. Moreover, as should become clear in the following section, when notes or paper currency are allowed to exist in addition to, and as a substitute for gold, the operation of the price-specie flow mechanism becomes open to government "tinkering."

### **The theoretical operation of a gold standard**

There is no such thing, even in theory, as "the" gold standard. One may define three different levels of operation of a gold standard depending on the degree to which the creation of credit money is wedded to its gold base: (1) a gold-specie standard, (2) a gold-bullion standard, and (3) a gold-exchange standard. Each of these three types of standards has differing implications for the operation of the international adjustment mechanism, and will be discussed in turn. To illustrate the operation of each of these standards, it is assumed that there are only two (fictitious) countries, America and Europa, each with a single bank which is also the monetary authority. All coin and currency are minted or exchanged by, and all deposits are held with, their respective central banks.

Under a *gold-specie standard*, gold is the only form of money, and the nation's currency is simply a unit of account for a specified weight of gold. For example, the country of America might define its currency, the dollar, as being one-half ounce of gold of a specified degree of purity. The American mint is always willing to coin one-half ounce of gold of the specified purity into a one dollar coin.

Thus, the price of one-half ounce of gold can never fall below one dollar or rise above one dollar, since the two are synonymous. Moreover, if a European mark is defined as one-quarter ounce of gold of similar purity, the exchange rate between the mark and the dollar is fixed at two marks/dollar.

Under this system, if America sold Europa 100 bushels of wheat and received 200 gold marks in payment, the American exporters could take the 200 marks (50 ounces of gold) to the American mint and receive 100 gold dollars in return. The American money supply increases by 100 dollars, and Hume's price-specie flow mechanism begins to generate forces raising American prices and making American wheat more expensive to the Europeans. Simultaneously, European exports become cheaper to citizens of America, since the European money supply declines by the amount of the gold outflow.

The important consideration under a gold-specie standard is that gold and money are synonymous. To the extent that several countries are on a gold-specie standard, the exchange rates between their domestic currencies are automatically fixed, and a self-equilibrating international monetary system comes as part of the package—but only if one accepts the existence of a fairly rigid link between the quantity of money and prices.

Under a *gold-bullion standard*, a national currency exists side by side with gold (which may or may not be coined), and the value of the currency is specified in terms of a fixed amount of gold. An individual may always sell gold at a price at least as high as that offered by the monetary authority, and a buyer may always purchase gold at least as cheaply as the government's price—which effectively fixes the price of gold and the value of national currency in terms of gold. If two countries are on a gold-bullion standard, the exchange rate between their currencies is fixed within the bounds set by the costs associated with gold shipment (see box).

The effects of gold flows and purchases and sales of gold by the monetary authority will have vastly different effects on the supply

of money depending on the extent to which the monetary authority is required to maintain gold “backing” for the national currency.

If 100 percent gold “backing” is required—that is, the monetary authority must hold one dollar’s worth of gold in its coffers for each

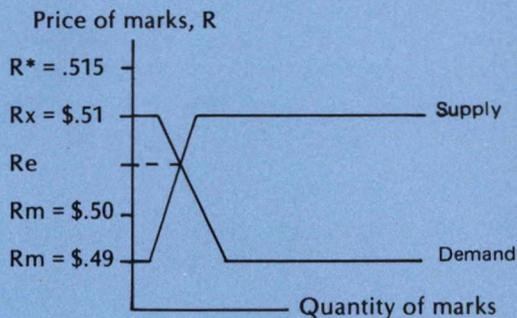
### Gold export and import points

Although the exchange rate between two currencies can be fixed by setting a fixed price for each of them in terms of gold, it is in fact the process of gold arbitrage\* that actually maintains the exchange rate within relatively fixed limits. Since gold arbitrage has certain costs associated with it, including the cost of shipping, insurance, and interest foregone during the period of transit, the currency exchange rate can actually fluctuate between boundaries established by these costs. These boundaries are called the *gold-export point* and the *gold-import point*.

Let us derive the gold export and import points for the example in the text. If the American dollar equals one-half ounce of gold (or equivalently, if the price of gold is \$2 per ounce), and if the European mark equals one-quarter ounce of gold, then the *mint exchange rate* equals two marks per dollar. If we further assume that it costs .04 dollars (= .08 marks) to ship one ounce of gold from America to Europa, the gold export point from America equals \$.51/mark and the gold import point equals \$.49/mark. (Remember that one mark equals only one-quarter ounce of gold so that the transport cost for one mark equals \$.01 or .02 marks.) The gold-export point from Europa equals 2.04 marks/dollar and the gold-import point equals 1.96 marks/dollar. Simply stated, at the gold export point, the local currency is so expensive in terms of foreign currency that it pays traders to obtain foreign currency by exchanging local currency for gold at the local mint price and then gold for foreign currency at the foreign mint price, rather than exchanging local currency for foreign currency directly.

In terms of economic analysis the foreign exchange demand and supply functions become “infinitely elastic” at the gold export and import points. That is, outside the boundaries of the gold points, market adjustments consist totally

of quantity changes (i.e., gold flows) rather than of both price and quantity changes. To understand this point, consider the diagram below which depicts the market for European marks.



The quantity of marks is on the horizontal axis, and the price of marks (in terms of dollars) is on the vertical axis. The mint exchange rate,  $R_m$ , is the price of marks established by the ratio of mint gold prices (= \$.50/mark). If transport costs were as given previously and if the price of marks were for some reason to equal \$.515/mark, it would pay someone who wanted to exchange dollars for marks to purchase gold at \$2 per ounce, ship it to Europa at \$.04 per ounce, and then sell the gold to the European mint for four marks. He thereby would have obtained an exchange rate of  $\$2.04/4.00 = \$.51$ , the same as the gold-export point. The savings of \$.005/mark would equal \$1,000 on a \$100,000 transaction. Thus, the market for direct exchange of dollars for marks would “dry up” outside the gold points. Within the gold points, however, the exchange rate adjusts in such a way as to establish equilibrium between the supply and demand for the currencies (as at  $R_e$  on the diagram). In fact, the mint rate ( $R_m$ ) essentially becomes meaningless, and the exchange rate fluctuates freely between the gold points.

\*Arbitrage is the process of simultaneously buying and selling in different markets to take advantage of price differentials.

paper dollar it issues—then it can issue new paper dollars only by acquiring additional gold, usually exchanging them one for one with the public. In this type of system, paper money takes the form simply of receipts for the gold deposited by the public with the central bank. However, outside the realm of 100 percent gold backing for a currency lies the fourth dimension of “credit” money.

Again using America and Europa for illustrative purposes, assume initially that America has gold dollars and paper dollars existing side by side with 100 percent gold backing of the paper currency. If an American citizen loses confidence in the paper dollar, he can always exchange it for a gold dollar and the actions of the monetary authority in doing so have no effect on the American money supply; only the relative composition of that money supply between gold and paper dollars changes.

On the other hand, if American law requires only that the monetary authority retain 50 percent gold backing behind each paper dollar, then—assuming that paper dollars had been expanded to the legal limit—an exchange of paper for gold dollars with the monetary authority forces it to contract the money supply. Suppose, for example, that an American citizen takes 50 paper dollars to the monetary authority to exchange for 50 gold dollars. Because gold holdings of the monetary authority are reduced by 50, the outstanding level of paper dollars must fall by an additional 50 (for a total of 100, including the 50 paper dollars exchanged for gold) if the monetary authority is to maintain the proper ratio to its gold “base.” Similarly, if the American citizen in the example is an importer who exchanges the paper dollars for gold in order to pay a European exporter, there is a net contraction of 100 in the American money supply and, if Europa also maintains 50 percent gold backing of the paper mark, an increase of 100 dollars (= 200 marks) in the European money supply. This occurs even though the balance-of-payments transaction was only 50 dollars (= 100 marks). Stated differently, the legal gold backing ratio requires the American

monetary authority to *reinforce* the monetary contraction wrought by the gold outflow and the European monetary authority to *reinforce* the monetary expansion wrought by the gold inflow by retracting or issuing paper money.<sup>3</sup>

Fractional backing to a nation’s currency in the form of gold or any other commodity puts an effective ceiling on the amount of new money that can be created by the mere issuance of IOUs. Thus, by “calling in” loans to the government or selling government securities to the public, America’s monetary authority can reduce its money supply by the additional 50 dollars needed to maintain its gold ratio. Similarly, by purchasing securities from the government or the public, the central bank of Europa can expand its money supply to maintain a 50 percent level of gold backing. These types of transactions are called open market operations.

To summarize, under a gold-bullion standard, the price of gold, the gold value of the currency, and the exchange rate (if the other country is on either a gold-specie or gold-bullion standard) are fixed. However, the operation of the Humean price-specie flow mechanism may be slightly different if only fractional gold backing of the national currency is required. Specifically, a fractional gold-bullion standard will result in a multiplied response of the national money supply to trade surpluses or deficits or to conversions of the domestic fiat currency into gold *if* the national monetary authority attempts to maintain a fixed fractional ratio of gold to its other monetary liabilities. The successful operation of the price-specie flow mechanism under a fractional gold-bullion standard thus requires that government decisions determine two specific rules and, in turn, that governments adhere to the rules they have established. These rules cover: the minimum level of frac-

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<sup>3</sup>The normal procedure is for the government to auction securities to the public (borrow money) to make up any gap between its expenditures and receipts. When the monetary authority increases the money supply it does so by purchasing these securities from their holders (many of whom are banks) through government security dealers and paying for them by a check written on itself.

tional gold backing of the currency and whether or not the central bank should allow gold flows to have a *multiplied* effect on national money supplies by engaging in reinforcing open market operations to keep the ratio fixed. (As a polar case of the latter, the government might pursue a policy of “sterilization,” offsetting the gold flows completely.)

Although similar in concept to both the gold-specie and gold-bullion standards, the *gold-exchange standard* allows even more scope for discretionary government decisions to interfere with the “automatic” nature of the price-specie flow mechanism. Under this system, gold coins are not put into circulation, nor does the monetary authority buy or sell its currency in exchange for gold. Rather, it buys and sells its own currency in exchange for the currency of another country that is itself on a gold-specie or gold-bullion standard. Continuing with our example, if the dollar is fixed in price in terms of gold such that America is on a gold-bullion standard, and if the monetary authority of Europa always stands ready to exchange one dollar for two marks or one mark for one-half dollar, then the mark is effectively valued in terms of gold even though it cannot be exchanged directly for gold. In this case, if the dollar is worth one-half ounce of gold, the mark is necessarily worth one-quarter ounce of gold.

This is similar to the system which was in effect from 1944 to 1971 under the terms of the Bretton Woods agreement. The U.S. dollar was fixed in terms of gold and was the only currency directly exchangeable for gold. The exchange rates of most other currencies were fixed in terms of dollars by the willingness of their national monetary authorities to buy or sell dollars at the fixed exchange rate.

However, the gold exchange standard has even more “slippages” than the bullion standard to prevent its operation as envisioned by Hume. Consider what happens if America is on a fractional gold-bullion standard, Europa is on a gold-exchange standard, and America experiences a 50 dollar deficit (as in the previous example). Because its currency is an international reserve, America

uses dollars to pay for its excess imports. The European exporters who receive payment are likely to exchange the 50 dollars with Europa’s monetary authority for 100 marks (again assuming an exchange rate fixed at two marks per dollar), increasing Europa’s money supply by that amount. Under these circumstances, the degree of monetary adjustment in both countries again depends entirely on the policies and actions of their central banks.

If Europa considers the dollar an official reserve that is as “good as gold” and if it also maintains a ratio of 50 percent between official reserves and its national money supply, it must reinforce the money supply expansion by an additional 100 marks (for a total of 200, as in the previous case) to maintain that fixed ratio. Of course, if the European monetary authority so chooses, it can accumulate the dollar reserves without any further actions, thereby limiting the increase in its domestic money supply to the 100 marks it previously exchanged for dollars. Still another option open to the European monetary authority is to “sterilize” the 100 mark increase by selling 100 marks worth of government securities, thus negating the entire monetary effect of its earlier foreign exchange transaction.

The portfolio decisions of the European monetary authority also determine the effect of these international transactions on America’s money supply. If the European monetary authority decides to hold the dollar balances it receives from the exporter in the form of demand deposits with the American central bank, the American money supply remains the same or falls by 50 dollars depending on whether it is defined to include other central bank balances. On the other hand, if Europa uses the 50 dollars to purchase government securities from the American central bank, the American money supply falls by that amount.<sup>4</sup> If Europa exchanges the dollars for

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<sup>4</sup>On the other hand, if Europa purchased the securities from the American public, the money supply would remain unchanged. In the U.S. today the Federal Reserve purchases securities from the public for its central bank customers so that there is no net effect on the U.S. money supply.

gold instead of securities, the gold drain causes a multiplied contraction in the American money supply—but only if America is willing to reinforce the gold drain by contracting its money supply sufficiently to maintain a fixed gold ratio. Otherwise, America can renounce (or relax) the gold standard and offset the gold drain by open market operations.

To summarize, even under an international banking system consisting only of central banks and no commercial banking system, with all deposit money held in the form of deposits or other liabilities of these central banks, a gold exchange standard allows considerable discretion to governments and central banks. Not only is there leeway in governmental decision-making for the “center” country whose currency is used as an international reserve (the same leeway as under the gold-bullion standard), but there are additional choices open to every “satellite” country. These choices are: first, whether or not to treat holdings of the center country’s currency as reserves on an equal footing with gold; second, how to divide the composition of its portfolio between gold and the currency of the center country; and third, whether to hold the currency of the center country in interest-bearing or noninterest-bearing form, or both, and in what proportion.

Although it should be easy enough to legislate rules with respect to these matters that would enable a fractionally based gold standard to operate in a manner similar to Hume’s price-specie flow mechanism, the actions required of the monetary authority in adhering to these rules often impose a heavy price in terms of adjustment on the real economies involved. If changes in the money supply affected only prices, the problem would not be so complicated. But, in the short run, changes in the money supply affect a whole host of variables such as employment and interest rates in addition to just the price level. It is changes in these real variables that governments generally resist most forcefully, particularly if the prevailing world trend in

these variables runs counter to the policy goals of the government. When the monetary system is complicated to include a commercial banking system, the pressures on a government to offset the effects of changes in gold on the reserves of the banking system become particularly acute.

### Theory versus practice

In actual practice, the operation of the international adjustment mechanism under a gold standard is even less straightforward than the preceding simplified examples would suggest. The structures of most financial systems leave considerably more room for slippage in the linkages of a gold-centered payments system.

First, contrary to the assumptions of the examples, most deposits of the non-bank public are *not* held with central banks, but instead are held with private banks, which in turn hold their deposits with the central bank. Thus, the gold base becomes two steps removed from deposit-money liabilities, and the multiplied effect on national money supplies of a change in gold depends on the size and fixity of the ratios maintained between gold and central bank liabilities and between the latter and money. For example, if the U.S. government required the Federal Reserve to hold gold equal to 10 percent of its reserve-deposit liabilities and, in turn, required commercial banks to maintain reserves at the Fed equal to 10 percent of their own deposit liabilities, a 10 million dollar gold outflow would force the Fed to engage in reinforcing open market sales culminating in a 100 million dollar change in Federal Reserve deposits. This would force the banking system to contract deposits by 1 *billion* dollars—a multiplier of one hundred!

The pressures on the Fed to resist such drastic changes in the nation’s money supply in response to international disequilibria would be great indeed. To the extent that banks hold reserves in excess of those required by the Fed, the multiplier is somewhat smaller, but an additional element of discretion on

the part of the commercial banking system is added to the supposed “automaticity” of the price-specie flow mechanism.<sup>5</sup>

Similarly, the existence of near-money deposits in money market funds and in U.S. nonbank financial intermediaries makes the relationship between changes in the U.S. monetary base and the various monetary aggregates even more unpredictable. Deposit interest rate ceilings in combination with volatile market interest rates induce shifts from one type of deposit money to another, such that the precise effect on any *single* measure of money is often difficult to predict.<sup>6</sup>

Finally, the possibility of short-term capital movements in response to expectations and interest rate differentials can seriously complicate the idealized working of the price-specie flow mechanism.<sup>7</sup>

But what about the empirical evidence? Did the gold standard during its historical heyday actually operate as envisioned by Hume? Or did governments intervene and “tinker” with its actual operation? To answer these questions, let us briefly examine the

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<sup>5</sup>In actual fact most banking systems have some form of “lagged” reserve accounting which reduces the usefulness of the concept of a multiplier. What we would likely see, in the absence of a change in this type of reserve accounting, would be drastic movements of the federal funds rate in response to gold flows. Alternatively, were the Federal Reserve to use interest rates as an operating target of monetary policy (as it did prior to October, 1979), the rules of the gold standard would *force* the Fed to “sterilize”, or offset, the reserve effects of gold flows by increasing or decreasing reserves to maintain the target interest rate. Thus, the question of a return to a gold standard cannot be considered without also considering the whole range of technical instruments of monetary control.

<sup>6</sup>Different types of deposit liabilities have different levels of reserve requirements and different interest rate ceilings. As interest rates change these various ceilings may become binding constraints on the returns to holding particular types of deposits. As people shift funds from one type of deposit to another to avoid the effect of these ceilings, the average ratio of reserves to deposits also changes, and with it the effects of a given change in reserves on the various monetary aggregates.

<sup>7</sup>Even under the gold bullion standard (see box), there is room for exchange rate movements between the gold points and short-term capital flows to take advantage of interest differentials between countries.

operation of the price-specie flow mechanism under the international gold-bullion standard just before and after the turn of the century.

## The historical record

The halcyon days of the gold standard were between 1879 and 1914. This period was unusual in that it was characterized by rapid real economic growth, a relative absence of restrictions on trade and movements of capital and labor, and, in general, an absence of wars or revolutions. In terms of the conduct of monetary policy, however, there are other characteristics of this period that stand out.<sup>8</sup>

First and most importantly, the central banks of most trading nations did not generally engineer multiplied expansions or contractions of their money supplies in response to balance-of-payments flows. Instead, they allowed considerable flexibility in the gold “cover” ratios behind the issuance of their national currencies. A study by Arthur I. Bloomfield in 1959 compared year-to-year changes in central bank holdings of securities with changes in central bank holdings of gold over the 1880-1913 period. He found that movements in these two classes of assets were in the opposite direction 60 percent of the time, rather than in the same direction as would be predicted if monetary authorities were indeed engaging in reinforcing open market operations to maintain their money supplies in some fixed relationship to gold.<sup>9</sup> Bloomfield’s study also found that some central banks deliberately introduced flexibility in the gold ratio by varying reserve requirements during the period, either by changing the reserve ratios or by changing the definitions of what constituted reserves.<sup>10</sup>

A second observation on the conduct of

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<sup>8</sup>See Robert M. Stern, *The Balance of Payments* (New York: Aldine, 1973), p. 112.

<sup>9</sup>Arthur I. Bloomfield, *Monetary Policy Under the International Gold Standard*, Federal Reserve Bank of New York, 1959, pp. 47-51.

<sup>10</sup>*Ibid.* p. 18.

monetary policies during this period concerns the key role of the discount rate as an instrument of monetary policy. Discount rate movements to induce or reverse short-term capital flows were the primary tool used by central banks to maintain stability in their exchange rates and equilibrium in their payments balances; open market operations were rarely employed.<sup>11</sup> In many cases discount rate changes were used to counteract the threat of gold losses or short-term capital flight, and in almost all cases they worked in a direction opposite that of central bank gold reserve changes, as would be expected.

Finally, Bloomfield's study notes that price and discount rate movements in the countries he studied were generally parallel, indicating fairly synchronous movements in individual business cycles, and in the application of monetary policy. The study further indicates that the similarity of movements in national discount rates reflected not only the broadly synchronous pattern of cyclical business activity but, in the case of many of the central banks, competitive or defensive discount rate changes. In other words, when one bank increased its discount rate, there was a tendency for others to follow suit to guard against the possibility of outflows of short-term capital or gold. Thus, there was evidence of coordination in the implementation of monetary policy, albeit not always as the result of voluntary cooperation.

What conclusions can be drawn from the findings of Bloomfield's study? Bloomfield himself concludes that the operation of the pre-1914 gold standard was less than automatic:

Far from responding invariably in a mechanical way, and in accord with some simple or unique rule, to movements of gold and other external reserves, central banks were constantly called upon to exercise, and did exercise, discretion and judgement in a

wide variety of ways. Clearly, the pre-1914 gold standard was a managed and not a quasi-automatic one from the viewpoint of the leading individual countries. Nor did that system always work as "smoothly" as is believed. Critical situations arose from time to time in various countries necessitating "emergency" measures by central banks and governments to safeguard the continuing convertibility of the currency. In all respects, then, the differences between central bank policies under the pre-1914 gold standard and after World War I were essentially differences of degree rather than of kind.<sup>12</sup>

Bloomfield further concludes that the ostensible "harmony" of monetary policy during the pre-1914 period, as manifested by the synchronous discount rate movements, was brought about not so much by the operation of the gold standard as by a lack of conflict between domestic policy goals and balance-of-payments equilibrium.

With a bit more hindsight, these conclusions may be extended considerably. Although price stability, generally thought of in terms of "defending the currency", was certainly a concern of central bankers during the pre-1914 period, the ability of monetary policy to influence real variables such as the rate of output or employment was not generally appreciated. Moreover, the combined use of monetary and fiscal policy to pursue such domestic objectives as full employment and price stability was also largely unknown. John Maynard Keynes' well-known treatise, *The General Theory of Employment, Interest, and Money*, which won wide acceptance for such policies, was not published until 1936. Also, reliable information on price-level movements was not immediately available for use as a monetary indicator. On the other hand, data on reserve flows were an immediate, tangible indicator of the state of economic activity and, as a consequence, helped to reinforce the single-minded focus on the bal-

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<sup>11</sup>Bloomfield cites only two documented instances of open market operations during the entire period. *Ibid.* pp. 45-46.

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<sup>12</sup>*Ibid.* p. 60.

ance of payments as the target of monetary policy.

This preoccupation with external balance exacted a high price in terms of the performance of the domestic economies. National prices and output fluctuated considerably more during the gold standard period than they have in recent years, although the gold standard period was free of the pronounced inflationary bias that has characterized many non-gold standard periods. In the United States, for example, the coefficient of variation (that is, the ratio of the standard deviation to the mean) of annual percentage changes in the price level was 17.0 for the gold standard period and 1.3 for the period 1946-1979. Likewise, the coefficient of variation of changes in real per capita income was 3.5 under the gold standard and 1.6 in the post-war period.<sup>13</sup> Similar results hold for the United Kingdom. Although this variation reflected downward as well as upward price movements, so that prices were stable over the long run, it remains highly doubtful whether countries today would be willing to allow such drastic fluctuations in economic activity.

As for the widespread reliance on the discount rate as the primary tool of monetary policy during the era of the gold standard, it must be remembered that the use of open market operations as a day-to-day instrument of monetary control was unknown. Moreover, government security markets in most countries were not sufficiently well-developed and integrated to enable open market operations to have the speedy, precise, and widespread impact that they have in the United States today.

It thus seems reasonable to conclude that the harmony in the implementation of monetary policy during the years of the gold standard was due, at least in part, to the primitive

state of the art. The absence of any effective alternative to the discount mechanism as the primary instrument of monetary policy and the single-minded focus on balance-of-payments equilibrium as the target of that policy go a long way towards explaining the empirical evidence on the behavior of central banks under the pre-1914 gold standard.

## Conclusion

The so-called automatic adjustment mechanism often attributed to the international gold standard leaves considerable room for slippage and, under a fractionally backed gold-bullion standard, even *requires* the assistance of governmental policy to reinforce its effects. In practice, the successful operation of the international gold standard was due not so much to the automatic equilibrating effects of gold flows as to a (historically unique) general harmony in the practice of monetary policy and the policy priority given to balance-of-payments considerations. Although the priority given to balance-of-payments considerations was certainly a result of the threat of gold reserve losses, it was also due in no small part to the fact that domestic stabilization policies were largely unknown.

From the perspective of the current international monetary system, the one lesson to be drawn from experience under the classical gold standard seems to be that the threat of reserve losses can provide pressure to harmonize monetary policies if governments are willing to abide by the rules necessary to the operation of such a standard. Recent experience also seems to indicate that the threat of exchange rate depreciation can provide similar pressure. But the willingness of nations to abide by the international gold standard presupposes a willingness to place balance-of-payments and foreign exchange considerations above domestic policy goals. Whether it is realistic to expect such a drastic reordering of priorities on the part of the world's sovereign governments is doubtful at best.

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<sup>13</sup>Michael David Bordo, "The Classical Gold Standard: Some Lessons for Today," *Review*, Federal Reserve Bank of St. Louis, vol. 63 (May 1981), p. 14.

# The demise of the gold standard

John H. Wood

It is ironic that most of the recent agitation for a return to some form of gold standard has come from the United States, whose official policies played a leading role in the destruction of that standard. After describing the conduct of governments necessary for the successful operation of a gold standard, this article tells the story of the failure of the post-World War I attempt by the British to restore the pre-1914 monetary system—an attempt doomed to failure by the refusal of the United States and France to play by the rules of the gold standard game.

## Governments and the gold standard

We begin with a system in which the medium of exchange—i.e., money—consists only of some useful commodity and paper claims on specified amounts of that commodity. Many commodities have served the dual function of money and the monetary base and the theory portions of our story are applicable to any of them. However, gold will be the only commodity considered because of its almost universal acceptance as money, to the exclusion of other commodities, by western societies in the 19th and 20th centuries.

Governments are not necessary to the gold standard. If there are free markets in gold and wheat, their relative prices—i.e., the rate of exchange of gold for wheat—will depend upon private supplies and demands for the two commodities. Suppose one ounce of gold (of a particular degree of fineness) is worth seven bushels of wheat in the market place. Also suppose that business is transacted partly with gold coins that weigh 1/35 of an ounce and are called “dollars.” The dollar is the unit of account and other coins and goods are valued in terms of the dollar. For example, one bushel of wheat, which is worth 1/7 of an ounce of gold, is quoted at a price of \$5. Gold coins weighing 10/35 of an ounce

carry the stamp “Ten Dollars” on one side and the likeness of Alexander Hamilton on the other side.

However, people find it convenient to transact most of their business not with gold coins but with pieces of paper—bank notes and checks—that are convertible into gold. When you deposit 100 ounces of gold in a bank, the bank either credits your checking account with \$3500 or presents you with bank notes of various denominations totaling \$3500. Banks hold reserves of gold in order to carry out their promise, under threat of bankruptcy, to convert their paper liabilities into gold upon demand. Given the public’s money-holding preferences for gold relative to bank liabilities and the proportions of gold held by banks as reserves against those liabilities, the quantity of money (i.e., bank liabilities plus gold coins held by the nonbank public) in an economy is determined by the monetary gold stock. The monetary gold stock is in turn determined by the domestic production of gold, the acquisition or loss of gold through international transactions, and fluctuations in the demand for gold for non-monetary uses.

All of these factors were from time to time sources of fluctuation in the money supply under the gold standard. But an upper limit was placed on the rate of increase of the money supply by the rate at which an economy’s monetary gold stock could be augmented and by the minimum reserve ratio which banks could hold without provoking fears for their failure on the part of creditors. There is no such upper limit under our present “paper standard” in which the greater part of the monetary base is not the monetary gold stock but central bank liabilities that are limited by neither legal nor prudential considerations.

Government *may* play a part in the operation of the “pure” gold standard described

above, for example, by verifying the weights of coins and by imposing reserve requirements on banks. These activities may (or may not) contribute to the smooth operation of the system, but they play no *essential* part. The only essential pattern of behavior that the system requires of government is that it allow itself to be limited by the same constraints to which private actors are subject. Specifically, when the government issues paper currency of its own, that currency, like bank liabilities, must be convertible into gold. This limits its paper issues in the same way that prudential reserve considerations limit the deposits of banks.

Although governments *need* not play an active part in the operation of the gold standard, they have in fact done so. The remainder of this paper is largely a story of the supportive and destructive interventions of governments in the functioning of the gold standard preceding and immediately following World War I.

### **Automatic adjustment under the gold standard**

The theory (and, to a large extent, the practice) of the gold standard provided for an automatic mechanism that corrected balance-of-payments disequilibria and prevented unlimited inflations or deflations. First, consider a domestic monetary disturbance in the form of an expansion of bank credit and the money supply. Suppose banks respond to increases in credit demands and interest rates by reducing their reserve ratios. The consequences are inflation and a balance-of-payments deficit as domestic goods rise in price relative to foreign goods. Americans are buying more from foreigners than they are selling to foreigners. If the international means of payment is gold, as it was in the 19th century, instead of dollars, as has been the case since about 1940, the dollar claims accumulated by foreigners will be converted into gold. The loss of reserves by American banks, even given their new and lower desired reserve ratios, forces a contraction of money and

credit. American prices stop rising and perhaps even decline, and the balance-of-payments deficit is corrected as the American inflation is exported—for foreign banks expand their lending as they acquire gold from the United States.

In addition to the *external drain* of gold discussed above, there will also probably be an *internal drain* as more money of all kinds, including gold coin, is needed to carry out transactions at the higher prices. R. G. Hawtrey argued that the internal drain was normally a larger and swifter force than the external drain in 19th-century gold standard adjustment.<sup>1</sup>

Now consider a second, non-monetary disturbance: a balance-of-payments deficit due to a bad harvest. The mechanism of adjustment is identical to that in the first case: a loss of bank reserves, monetary contraction, deflation, and restoration of the balance of payments. Harvest fluctuations were probably the most important source of monetary and price instability in the United States between its return to the gold standard in 1879 and the formation of the Federal Reserve System in 1913.<sup>2</sup>

As a third and final example, consider the effects of a “Keynesian” depression in Western Europe, characterized by a drastic fall in income but without a significant fall in prices, on money and prices in the United States. Unemployed Europeans reduce their purchases of American goods, causing an outflow of gold from the United States and resultant declines in money and credit.

In summary, automatic adjustment under the gold standard is neither more nor less than the international transmission of economic disturbances. Under the gold standard, inflations, deflations, high incomes, and unemployment are exported to and imported from other countries. Our own inflations and

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<sup>1</sup>R. G. Hawtrey, *A Century of Bank Rate* (London: Longman, Green, and Co., 1938), ch.3.

<sup>2</sup>Milton Friedman and Anna J. Schwartz, *A Monetary History of the United States, 1867-1960* (Princeton: Princeton University Press, 1963), ch. 3.

deflations are limited in extent by the gold standard—at the price of accepting the inflations and deflations of others. Discretionary monetary policy is severely limited. American money and prices are controlled to an important extent by foreigners; and foreign money and prices are subject to fluctuations in the United States.

The operation of this automatic adjustment mechanism requires at least passive acceptance by governments, including non-interference with the free flow of gold and other goods. Domestic inflations may be prolonged by restrictions on the export of gold, subsidies for exports, and tariffs and quotas on imports. Free trade is necessary to the full realization of the corrective effects of the gold standard mentioned at the beginning of this section.

### **Central banks and the rules of the gold standard game**

But governments can do more than refrain from interference with the gold standard. The adjustments described above are probably indeed “automatic” in the sense of being inevitable, under the conditions assumed, given enough time to work. However, those adjustments may be too slow for those concerned with the solvency of banks and the preservation of a country’s gold reserves. When this is the case, governments can play an active role in speeding up the adjustment process, sometimes called the “rules of the gold standard game.”<sup>3</sup> The players designated by governments to play this game are central banks. In order to understand how the game should be played, it is necessary to examine the conduct of the Bank of England, which was the only major central bank willing to play by the rules.

The Bank of England (Bank) was until 1945 a private firm. But from its inception in 1694 the Bank had important, well-defined public responsibilities. No harm is done by

thinking of the Bank as an official, or at least a quasi-official, agency. It enjoyed special monopoly privileges regarding note issue in London, operated under a series of short-term charters renewable by parliament, and served as the Treasury’s main depository and an important source of credit to the government. However, the Bank was not at first a “central bank” in the sense in which that term came to be used in the 19th and 20th centuries; i.e., it was not conceived as a regulator of the monetary base or a lender of last resort to the financial system. Nevertheless, by a combination of its monopoly privileges, its special roles as government depository and creditor, and, most important, its conservative lending behavior, the Bank had by the end of the 18th century acquired the substance of the central banking powers and responsibilities later conferred by law on the Bank, the Federal Reserve System, and other official central banks.

Because of the Bank’s well-deserved reputation for soundness, its note and deposit liabilities were considered “as good as gold.” As a consequence, the reserves of other banks were held predominantly in the form of the note and deposit liabilities of the Bank of England. Claims on banks by the nonbank public and by other banks were routinely settled by the exchange of claims on the Bank of England because people were satisfied that the latter were always, with certainty, convertible into gold. The Bank had become the holder of “the ultimate cash reserve of the country.”<sup>4</sup>

The effect of this arrangement was that the Bank’s liabilities, with the gold held outside the Bank as currency or as reserves in banks, constituted the monetary base. When gold came into the Bank, due either to a favorable balance of payments or to a reduction in the domestic demand for currency, the Bank was in a position to expand its lending. This meant an increase in the reserves of other banks and therefore a multiple expansion of total bank credit and the money

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<sup>3</sup>John Maynard Keynes, *A Treatise on Money*, vol. II (London: Macmillan, 1930), p. 306.

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<sup>4</sup>Walter Bagehot, *Lombard Street* (New York: Scribner, Armstrong, and Co., 1873), p. 315.

supply—precisely in the manner of a Federal Reserve open market purchase in the 1980s.

By behaving in this manner, by doing what comes naturally to any profit-seeking bank, the Bank of England—long before the development of the term or even the theory—was by the end of the 18th century playing according to the rules of the gold standard game. Consider, for example, a flow of gold to Britain resulting from inflation on the Continent. Much of this gold found its way to the Bank of England. Under these conditions, the Bank often expanded its lending by a multiple of the increase in its gold reserve. Other banks, which tended to hold the additional note and deposit liabilities of the Bank as their own reserves, also expanded their own credit. British financial institutions had developed in such a way that the central bank, the Bank of England, accentuated the effects of gold flows. A gain or loss of gold had a twice multiple effect on money and prices—first on the monetary base through central bank lending, and then on the lending of other banks due to changes in the monetary base.

### **The operation of the pre-1914 gold standard**

In order to understand the Bank's behavior between 1844 and 1914, we must begin with the Restriction Period of 1797-1821, when Britain was not on the gold standard. Official policy between that time and 1931 was dominated by a reaction to what was generally thought to be the Bank's misconduct while free of gold standard constraints.<sup>5</sup>

Maintenance of convertibility between the nation's money and gold at a fixed rate of exchange was only the Bank of England's second most important objective. First was support of the state. During the 1790s, the Bank purchased substantial quantities of

government securities issued to finance the war with Napoleon. The consequences were expansions of the monetary base and the money supply, inflation, and a loss of gold. The Bank was very close to being unable to make good on its promise to convert its liabilities into gold at the historic rate of exchange. The choices faced by the Bank and the government were either a restriction of credit, thereby forcing the government to finance the war without resorting to the Bank (i.e., to rely upon taxes and private lending), or a legal suspension of the Bank's obligation to redeem its liabilities in gold. The latter course was chosen in 1797 and again during World War I, as was the case for American banks during and for several years after the Civil War.

Present-day Americans will not be surprised to learn that the Bank of England's behavior under these conditions—i.e., its response to (1) a release from the necessity of keeping a prudent gold reserve and (2) pressure from a government running large deficits—was expansionary. The Bank only did what has come to be expected of central banks during wartime. But it was severely criticized and held responsible by politicians and economists for the rapid increase in prices, averaging nearly 4 percent per year, between 1797 and 1813.

Then, when it was assigned the task of reversing the wartime inflation so that the currency might increase in value sufficiently to restore the gold standard at the prewar rate, the Bank came under even more widespread attack—this time joined by unemployed workers, failed bankers, and bankrupt businessmen—for causing a 50 percent fall in prices (nearly 7.5 percent per year) between 1813 and 1822. Even after the resumption of convertibility in 1821, the Bank's behavior was highly erratic and continuously a source of controversy in and out of parliament. Unrestrained central banks have considerable discretion even under the gold standard, at least in the short run, until their policies force the suspension of the system. This had occurred in 1797 and fears of a repetition of that expe-

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<sup>5</sup>For an extensive discussion of the events and the controversies arising from those events between 1797 and 1865, see Jacob Viner, *Studies in the Theory of International Trade* (London: George Allen and Unwin, 1937), ch. 3-5.

rience were widespread.

The country had had enough of discretionary monetary policy and attempted to rectify matters in the Bank Charter Act of 1844 by tying the Bank to a rule. The Bank was divided into two departments. Gold was held in the Issue Department, which had no function except to exchange bank notes for gold. This was the monetary rule: changes in the Bank's note liabilities were tied, pound for pound, to its gains and losses of gold. The Banking Department, on the other hand, was designed to be free to behave "like any other bank."<sup>6</sup> The Banking Department was expected to pursue profits, with no thought of any larger public responsibility, by extending credit on the basis of its reserve, which took the form of its holdings of the Issue Department's notes.<sup>7</sup>

But the Act of 1844 was badly designed. It took no account of the Bank's deposit liabilities. Then, as now, most business purchases were paid for by check, and the money supply consisted principally of demand deposits. Consequently, a rule for the Bank's notes left the main portion of the monetary base untouched. For the Bank's deposit liabilities were now the special preserve of the Banking Department, which had in effect been told to pretend that its lending policies did not dominate the reserves of other banks or the country's money supply.<sup>8</sup>

A consequence of the Act of 1844 was that the Bank began to play by the rules of the game with, if possible, even more zeal than before. It immediately embarked on an expansion that, in combination with other circumstances, including a poor harvest in 1846,

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<sup>6</sup>Bagehot, p. 41.

<sup>7</sup>See John H. Wood, "Two Notes on the Uniqueness of Commercial Banks," *Journal of Finance*, vol. 25 (March 1970), pp. 99-108 for a formal description of the Bank's structure and its role in the monetary system under the Act of 1844.

<sup>8</sup>All of this was recognized at the time by Tooke and other critics of the Act of 1844. See Thomas Tooke, *An Inquiry Into The Currency Principle; the Connection of the Currency with Prices and the Expediency of a Separation of Issue from Banking* (London: Longman, Brown, Green, and Longmans, 1844), pp. 101-24.

led to an adverse balance of payments and a loss of gold. The Bank accordingly sharply reversed its liberal policy, causing the panic of 1847. Undaunted, the Bank persisted in its destabilizing policies, precipitating further financial crises in 1857 and 1866.

The Bank changed its behavior after 1866 as it apparently became more conscious of its role as the country's central bank—i.e., as the regulator of the monetary base and the lender of last resort. Some people attributed this change to Walter Bagehot's articles in *The Economist* and his book *Lombard Street* (1873), which remains unsurpassed as a description of the responsibilities of a central bank under the gold standard. Whatever the reason, the Bank now began to play the gold standard game with a little less enthusiasm. It adopted a middle way between the rules of the game and concern for domestic stability.

The years between 1880 and 1914 have been called the heyday of the gold standard. The gold standard had been adopted by most major western countries by 1880 but never fully recovered from the changes arising out of World War I. One of the most interesting and informative studies of the conduct of the Bank of England, as well as other central banks, during this period was published by Arthur Bloomfield in 1959.<sup>9</sup> Bloomfield presented two sets of data bearing on the degrees to which 11 central banks played by the rules of the gold standard game. First, Bloomfield found that for most countries, including the United Kingdom, central bank discount rates and reserve ratios tended to be inversely correlated. For example, central banks usually lowered their lending rates when they acquired gold and usually raised their rates when they lost gold.<sup>10</sup> This is consistent with the rules of the game, although the correlations were not sufficiently high to persuade

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<sup>9</sup>Arthur I. Bloomfield, *Monetary Policy Under The International Gold Standard: 1880-1914* (New York: Federal Reserve Bank of New York, 1959).

<sup>10</sup>See *ibid.* pp. 30-35. The countries were the United Kingdom, Germany, France, Belgium, the Netherlands, Denmark, Finland, Norway, Switzerland, Russia, and Austria-Hungary.

Bloomfield that the game had been played with as much enthusiasm as he had expected to find.

But changes in discount rates are important only to the extent that they induce changes in central bank credit. The evidence presented by Bloomfield on the response of central bank credit to changes in gold holdings strongly suggests that the rules of the game were violated more often than obeyed. In nine of the eleven countries, annual changes in central bank credit tended to offset the effects of gold on the monetary base far more than half the time. Only the Bank of England and the Bank of Finland accentuated the effects of gold inflows almost as often as they neutralized those flows.<sup>11</sup>

### The choice

By adopting the gold standard and playing by the rules, Britain purchased long-run price stability at the cost of short-run instability.<sup>12</sup> Other countries joined the game, but only half-heartedly, and Britain's own enthusiasm waned with time. The choice that had been made and the price that had been paid were well understood by economists, the general public, and central bank officials. The Bank of England, the Act of 1844, and the gold standard were subjected to almost continuous attack from most sectors of society, especially businessmen. Chambers of Commerce passed resolutions condemning the gold standard

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<sup>11</sup>*Ibid.*, pp. 47-51.

<sup>12</sup>See Benjamin Klein, "The Impact of Inflation on the Term Structure of Corporate Financial Instruments: 1900-1972," in William L. Silber, ed., *Financial Innovation* (Lexington, Mass.: D.C. Heath, 1975), pp. 125-49 and Michael D. Bordo, "The Classical Gold Standard: Some Lessons for Today," *Review*, Federal Reserve Bank of St. Louis, vol. 63 (May 1981), pp. 2-17 for evidence that year-to-year fluctuations in prices and output were greater under the gold standard than since 1945 but that longer-run changes in prices have been greater in the latter period.

<sup>13</sup>See "The Petition of the Merchants, Bankers, and Traders of London Against the Bank Charter Act; July 1847" in T. E. Gregory, ed., *Select Statutes, Documents and Reports Relating to British Banking, 1832-1928*, vol. II (London: Oxford University Press, 1929), pp. 3-7.

and petitioned parliament to compel the Bank to alter its behavior.<sup>13</sup> Following the crises of 1847 and 1857, parliament formed committees to inquire into the workings of the financial system.

Horsley Palmer, a director and former Governor of the Bank, testified in 1848 that an increase in Bank Rate "presses upon all branches of commerce in a way that is most prejudicial to them; the raising of the rate of interest, I am given to understand, stopped very largely the mercantile transactions of the country—exports as well as imports."<sup>14</sup> The fall in prices resulting from a restriction of the Bank's credit "destroys the labor of the country; at the present moment in the neighborhood of London and in the manufacturing districts you can hardly move in any direction without hearing universal complaints of the want of employment of the labourers of the country." James Spooner, Birmingham banker and member of parliament, continued the questioning: "That you ascribe to the measures which it was necessary to adopt in order to preserve the convertibility of the note?" Palmer replied: "I think that the present depressed state of labour is entirely owing to that circumstance." The then Governor and Deputy Governor of the Bank agreed with Palmer. A colleague of Spooner's, Edward Cayley, suggested to the Governor in a hostile leading question that "the price of the convertibility of the note under that state of things is the disemployment of labour and the ruin of the merchants of the country." After squirming a bit, the Governor admitted that an increase in Bank Rate would "Probably for a time . . . lead to a disemployment of labour."

A half century later leading economists were still deploring the "evils of our present monetary system."<sup>15</sup> Knut Wicksell predicted that "the danger of basing the whole of our economic system on something so capricious

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<sup>14</sup>The quotations in this paragraph are from Hawtrey, pp. 27-29.

<sup>15</sup>Alfred Marshall, "Remedies for Fluctuations of General Prices," *Contemporary Review* (March 1887), reprinted in A. Pigou, ed., *Memorial of Alfred Marshall* (London: MacMillan, 1925), p. 188.

as the occurrence of a certain precious metal must sooner or later come to light.”<sup>16</sup> Wick- sell,<sup>17</sup> Alfred Marshall,<sup>18</sup> and John Stuart Mill<sup>19</sup> in England and Irving Fisher<sup>20</sup> in the United States gave lengthy accounts of gold’s sins and how they were aggravated by central banks. But economists were confronted by a dilemma that still has not been solved. The choice of monetary systems lay between “the cross of gold”<sup>21</sup> and a discretionary monetary authority under the thumb of a profligate government. Except for the overseas section of the City of London, which believed that London’s financial supremacy depended on the maintenance of a fixed rate of exchange between the pound and gold, no one seemed fond of the prevailing system. However, based on their bitter experience of unrestrained paper standards, especially the 1791-1821 Re- striction Period in Britain and the colonial paper issues and Civil War greenbacks in America, they liked the alternative even less. A third possibility—a discretionary system managed in an intelligent, non-political, non- inflationary way—appeared so outlandish that it was rejected out of hand.<sup>22</sup>

The necessities of war finance forced the

<sup>16</sup>Knut Wicksell, *Lectures on Political Economy*, vol. II, translated by E. Classen (London: Routledge and Kegan Paul, 1935), pp. 125-26.

<sup>17</sup>Wicksell, *Interest and Prices*, translated by R. F. Kahn (London: Macmillan, 1936) pp. 165-96.

<sup>18</sup>Marshall, pp. 188-211.

<sup>19</sup>John Stuart Mill, *Principles of Political Economy* (London: Longmans, Green and Co., 1848), pp. 651-77.

<sup>20</sup>Irving Fisher, *The Purchasing Power of Money* (New York: Macmillan, 1911), pp. 234-348.

<sup>21</sup>William Jennings Bryan, Speech closing the plat- form debate at the Democratic Convention, July 8, 1896. Published in Bryan’s *Speeches*, vol. I (New York: Funk and Wagnalls, 1913), pp. 238-49.

<sup>22</sup>Published proposals for solving this dilemma would fill a good-sized library. Several of the better known schemes may be found in Mill, Bk. III; Marshall, pp. 192-211; Knut Wicksell, *Interest and Prices*, ch. 12, and Fisher, ch. 13. Most were designed to alleviate the rigidity of the gold standard without accepting the flexibility of a discretionary monetary authority. For a discussion of our continued failure to find a satisfactory solution, see John R. Hicks, “Monetary Theory and History—An Attempt at Perspective,” in *Critical Essays in Monetary Theory* (Ox- ford: Clarendon Press, 1967).

effective suspension of convertibility during World War I, as the government again bor- rowed heavily from the Bank. Inflation during and immediately after the war was much more severe in the United Kingdom than in the United States. Wholesale prices increased approximately 175 percent between mid- 1914 and the end of 1920 in Britain, compared with 100 percent in the United States. The adverse influence of these price changes on the dollar value of the pound was exacer- bated by Britain’s loss of important export markets during the war. The value of the pound was maintained by exchange controls and other expedients while the war lasted. But the lifting of controls allowed the pound to fall from its prewar value of \$4.86 to a low of \$3.44 in November 1920.<sup>23</sup>

## The return to gold

These events did not alter the govern- ment’s determination, expressed in 1918, “that after the war the conditions necessary to the maintenance of an effective gold standard should be restored without delay.”<sup>24</sup> This meant a restoration of the prewar parity with gold, and therefore with the dollar. The Bank of England sought to achieve this objective by means of a severely contractionary monetary policy. Its credit was reduced 20 percent dur- ing the next two years and wholesale prices fell 34 percent. The United States was sub-

<sup>23</sup>Converting shillings and pence to decimals, the pound had been defined early in the 18th century such that one fine ounce of gold was worth approximately £4.2479 (although the rate of £3.89375 per standard ounce was quoted more frequently.) The dollar had been defined by law in 1792 such that one ounce of fine gold was worth \$20.67. The dollar/pound exchange rate was therefore

$$1 = \frac{20.67}{4.2479} = \$4.866.$$

Our use of \$4.86 is slightly inaccurate but follows custom.

<sup>24</sup>First Interim Report of the Committee on Currency and Foreign Exchanges After the War, 1918, Summary and Conclusions,” reported in Gregory, vol. II, p. 361. This Committee was called the Cunliffe Commission after its Chairman, Lord Cunliffe, who was Governor of the Bank of England from 1913 to 1918.

jected to similar, but less extreme shocks and American wholesale prices fell 16 percent. By the end of 1922, the pound had risen to \$4.61 and “the Authorities were in a position to begin serious consideration of the tactics for a return to par.”<sup>25</sup>

What tactics? Central bankers knew neither more nor less in the 1920s than in the 1980s about how to reduce inflation or, in the case at hand, how to cause deflation. What other course is there but a restriction of credit? Furthermore, they had learned nothing since 1848, as we have learned nothing since 1922, about how to do this without severe economic disruption. Unemployment was 14 percent of the labor force when the Bank perceived itself to be closing in on the goal of \$4.86. Economists and businessmen, while not quite rejecting the gold standard completely, recoiled from the government’s program.<sup>26</sup> But the permanent staffs of the Bank and the Treasury were determined to return to gold as soon as possible regardless of the “discomforts”<sup>27</sup> involved and persuaded politicians to go along.<sup>28</sup> With some exceptions due to domestic pressures, restrictive monetary and fiscal policies were continued until, after a fall to

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<sup>25</sup>D. E. Moggridge, *The Return to Gold 1925: The Formulation of Economic Policy and its Critics*, (Cambridge: Cambridge University Press, 1969), p. 16.

<sup>26</sup>Nearly all economists who wrote or testified on the subject opposed a return to gold at the prewar parity at the real costs that they argued were implied by the government’s policies. For examples, see John Maynard Keynes, *A Tract on Monetary Reform* (London: Macmillan, 1923) and A. C. Pigou, “Memorandum on Credit, Currency, and Exchange Fluctuations,” submitted to the Brussels Conference, 1920. Partially reproduced in W. A. Brown, *The International Gold Standard Reinterpreted, 1914-34*, vol. I (New York: National Bureau of Economic Research, 1940), pp. 222-23. For a discussion of the opposition of other groups, see W. A. Brown, *England and the New Gold Standard, 1919-1926* (New Haven: Yale University Press, 1929), ch. 10.

<sup>27</sup>This was the euphemism applied by Montagu Norman, Governor of the Bank of England from 1920 to 1944, to the costs of the gold standard.

<sup>28</sup>For a detailed account of official thinking during this period see D. E. Moggridge, *British Monetary Policy, 1924-1931: The Norman Conquest of \$4.86* (Cambridge: Cambridge University Press, 1972).

\$4.26 in January 1924, the pound was gotten up to \$4.86 in June 1925 and the Gold Standard Act officially restored the country to the summer of 1914.<sup>29</sup>

### **The United States, France, and the collapse of the gold standard**

The question of whether the pound was overvalued at \$4.86 during and after 1925 is still controversial. In any case, external considerations continued to dominate British monetary and fiscal policy. Deflation and unemployment continued through 1929, and after that matters got worse. Although the authorities were prepared to bear the costs (and in the event did bear the costs) of deflation sufficient to return to and then to maintain the gold standard at the prewar parity, they had hoped that deflation would not be necessary. To a large extent, British policies were based on the expectation that the large accumulations of gold in the United States during and after the war would eventually be allowed to affect American money and prices.

The British waited in vain for the United States to begin to play the gold standard game as the Bank of England had played it before 1914. But they cannot complain that they were deceived. Benjamin Strong, President of the Federal Reserve Bank of New York and the most influential official in the Federal Reserve System until his death in 1928, made clear that his goal was price stability and that the rules of the game were something devoutly to be avoided rather than followed. In 1923, Strong wrote to Montagu Norman, Governor of the Bank of England, that with America’s “excessive gold stock we must entirely ignore any statutory or traditional percentage of reserve and give greater weight to what is taking place in prices, business activity, employment, and credit volume and

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<sup>29</sup>Except that domestic gold circulation was abolished and the complete, pure gold standard was succeeded by an international gold standard in which gold would be paid only to foreigners.

turnover.<sup>30</sup> Then, perhaps thinking that his message was a bit harsh in view of what the British were trying to accomplish, Strong added: “Of course we must not close our eyes to the bearing this may have upon Europe. . . .” As we shall see below, American officials in fact took little account of the effects of their policies on others.

Strong opposed legislation that would have required the Federal Reserve to stabilize the price level because, among other reasons, he felt that factors outside the System’s control also affect prices. Nevertheless, he accepted price stability as the Fed’s primary goal, which he proposed to achieve by a monetary base rule: “If I were Czar of the Federal Reserve System I’d see that the total of our earning assets did not go much above or below their last year’s average, after deducting an amount equalling from time to time our total new gold imports.” Such a gold neutralization policy is, of course, the exact antithesis of the gold standard game.

In 1944 Ragnar Nurkse presented evidence on the willingness of central banks to play by the rules of the game during the interwar period.<sup>31</sup> With one small and one large exception, his results were similar to Bloomfield’s for the prewar period. The central banks whose behavior was reported by both Bloomfield and Nurkse at least partially neutralized gold flows 64 percent of the time between 1880 and 1914, compared with 67 percent of the time between 1922 and 1931.<sup>32</sup> The small exception was that the Bank of England conformed to the rules 60 percent of the time during the 1922-31 period compared with 48 percent of the time between 1880 and 1914—a difference that may not be statisti-

<sup>30</sup>This and other statements by Strong are quoted from Lester V. Chandler, *Benjamin Strong, Central Banker* (Washington, D.C.: The Brookings Institution, 1958), ch. 6, which is appropriately titled “New Goals, New Methods.”

<sup>31</sup>Ragnar Nurkse, *International Currency Experience: Lessons of the Inter-War Period* (Princeton, N.J., Princeton University Press, 1944), pp. 237-39.

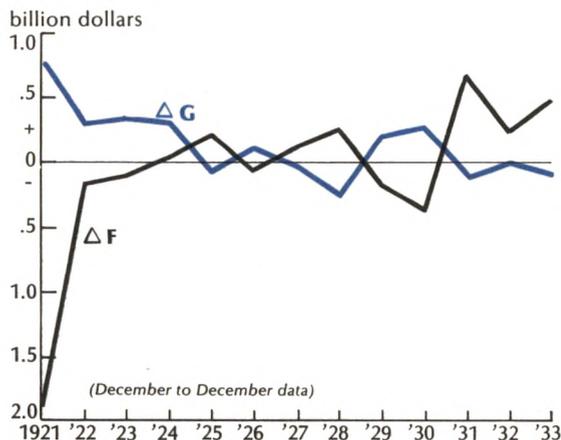
<sup>32</sup>Nurkse presented no data for Belgium or the Soviet Union and reported both Austria and Hungary.

cally significant in view of the small number of observations in the later period.

The major difference between the monetary systems observed by Bloomfield and Nurkse was the emergence of a new and dominant actor in the form of an American central bank that had discretionary powers and was determined to prevent the gold standard from undermining domestic stability. Nurkse reported that the Federal Reserve at least partially neutralized gold flows during nine of the ten years 1922-31. His results are shown in the chart, which covers a somewhat longer period, 1921-33. During 12 of these 13 years, changes in Federal Reserve credit ( $\Delta F$ ) were the opposite of changes in the government’s gold holdings ( $\Delta G$ ), which until World II made up the largest part of the monetary base.<sup>33</sup> The American government’s stock of gold grew from \$1,290 million in December 1913 to \$2,451 million in 1920, \$3,985 million in 1925, and \$4,225 million in

<sup>33</sup>The exception to this neutralization policy in Nurkse’s data, which were March-to-March changes, was 1931. The exception in the end-of-year changes shown in the chart is 1924.

### Changes in Federal Reserve credit ( $\Delta F$ ) and U.S. official gold holdings\* ( $\Delta G$ )



\*G is the monetary gold stock less gold coin in circulation.

SOURCE: *Banking and Monetary Statistics, 1914-1941* (Washington, D.C.: Board of Governors of the Federal Reserve System, 1943), pp. 369-71.

1930—from 27 percent of the world’s gold reserves in 1913 to 38 percent in 1930. This accumulation of gold was due not only to the Federal Reserve’s conservative monetary policy (American money and prices in 1929 were virtually unchanged from their 1925 levels) but to successively higher protective tariffs culminating in the Smoot-Hawley Act of 1930.

American policies were reinforced beginning in December 1926 by France, which returned to the gold standard at a rate of exchange considerably below that prevailing during most of the preceding several years and which is widely thought to have undervalued the franc. It now became a race between the United States and France to see who could accumulate the most gold. French gold reserves rose from \$711 million in December 1926 to \$2,699 million in 1931. At the end of 1931, the United States and France owned 60 percent of the world’s gold reserves, compared with 39 percent in 1913 and 43 percent in 1920.

Money, prices, and income fell rapidly in Britain between the fall of 1929 and the fall of 1931, but not as rapidly as in the United States and France. The British balance of payments worsened, gold drains became more severe, and, finally, in September 1931, the Bank of England was no longer able to maintain the convertibility of the currency. The pound was allowed to float and by the end of the year had fallen to \$3.37.

### Postscript

The British must accept a large part of the blame for the timing of the collapse of the gold standard. In retrospect, it appears that they returned to gold too soon or at the wrong rate or both—although their argument that a return to gold at a different rate would have been inconsistent with the essential idea of a gold standard is unanswerable. A

<sup>34</sup>For evidence that official French policy was to return to gold at a rate that would give its export industries an advantage in world markets, see R. S. Sayers, “The Return to Gold, 1925,” in L. S. Pressnell, ed., *Studies in the Industrial Revolution* (London: Athlone, 1960).

<sup>35</sup>Moggridge, *British Monetary Policy*, p. 7.

gold standard under which rates are adjusted whenever currencies come under pressure is not worth its name. Certainly, it performs none of its intended functions—in particular, the elimination of monetary discretion. However, the stated objectives and behavior of France<sup>34</sup> and especially the United States suggest that the gold standard would not have had much of a future regardless of the conditions under which it was restarted. It is inconceivable that a gold standard can work when the dominant trading country treats domestic objectives as paramount.

Britain has been called variously the umpire and the conductor of the pre-1914 gold standard. But these terms understate Britain’s importance, for she was also the major player. She played as well as called the tune. An understanding of the role of London in the operation of the system requires a grasp of “the immensely strong underlying position of Britain in the international economy. In the century before 1913, in every year but two, Britain had been in surplus on current account.”<sup>35</sup> London was also, as the world’s banker, the depository for large amounts of foreign funds. These factors meant that London exerted a large and continuing pull on the world’s gold—which was allowed to flow out again because Britain was also the world’s largest overseas investor. She lost this position after the war to a country that showed a strong inclination to accumulate gold.

The Bank of England treated gold as an instrument, something to be used to expand credit when it flowed in and something to be paid out, without regret, upon demand. In common with others, the British loved easy money and good times, which the Bank supplied whenever it was able. The Bank’s apparent eagerness to see how close it could trim its reserves without quite falling off the gold standard was a source of amazement and concern.<sup>36</sup> This pattern of behavior, probably

<sup>36</sup>The admonition to keep a larger reserve was probably the most urgent advice of both Tooke, *An Inquiry Into the Currency Principle*, and Bagehot, *Lombard Street*.

essential to a successful gold standard, was diametrically opposed to that of France and the United States not only during the 1920s but also in the 1960s, when the former country again evinced a strong desire to accumulate gold and the latter worried that gold was actually being called upon to perform its function as a reserve. The decision of the United States in August 1971 to renege on its promise to foreign central banks to redeem dollars in gold—i.e., to apply its gold reserve to the use for which it was presumably in-

tended<sup>37</sup>—raises serious doubts about this country's ability to succeed Britain as manager of an international gold standard. Perhaps more importantly, the high domestic costs of adhering to the rules of the gold standard game raise serious doubts about any country's ability and willingness to take on such a responsibility.

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<sup>37</sup>What possible function can America's gold reserve now perform except as a continuing reminder to foreigners of our unreliability as an international banker?

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