The Cause of the Great Depression

The Decision to Resume the Gold Standard on Prewar Terms

SANDEEP MAZUMDER AND JOHN H. WOOD

Economists disagree about the cause(s) of the Great Depression, but most studies attribute it to the unfortunate coincidence of a variety of shocks (e.g., Schumpeter 1939, 161–74; R. A. Gordon 1952, 405–7; Estey 1956, 113–20; R. J. Gordon and Wilcox 1981; Hall and Ferguson 1998; Meltzer 2003, 390). Paul Samuelson maintains that "the origins of the Depression lie in a series of historical accidents."[1] The Great Depression was also special. Robert Lucas observes that the "Great Depression dealt a serious blow to the idea of the business cycle as a repeated occurrence of the 'same' event, and . . . continues, in some respects, to defy explanation by existing economic analysis" (1980, 706). "Our attention," Lucas says, "is drawn to the evidence Friedman and Schwartz and others have assembled associating monetary contractions with depressions in real activity, not because this evidence documents an independent 'causal' role for money, but because these real movements appear to be too large to be induced" by the shocks observed and "propagation mechanisms" assumed (1987, 71). Furthermore, the initial demand–shock explanations of the Depression are weak. Consumption as a proportion of gross national

Sandeep Mazumder is professor of economics and department chair in the Department of Economics at Wake Forest University. **John H. Wood** is Reynolds Professor of Economics in the Department of Economics at Wake Forest University.

1. From a televised debate with Milton Friedman in May 1969 (Parker 2002, 25).

The Independent Review, v. 26, n. 1, Summer 2021, ISSN 1086–1653, Copyright © 2021, pp. 133–151.

product actually rose throughout the period, and the initial decline in investment was less than at the beginnings of other downturns (Friedman 1957, 117; Temin 1976, 4, 63). The changes in consumption and investment seem more effects than causes; that is, postwar weaknesses seem effects of the misalignments of governments' exchange-rate choices.

"Because of [the Great Depression's] exceptional character," Michel DeVroey and Luca Pensieroso write, "an explanation of the Great Depression was" considered "beyond the grasp of the equilibrium approach to the business cycle" (2006, 1) and is comparable, according to Ben Bernanke, to the search for the Holy Grail (2000, 11). "I do not have a theory," Thomas Sargent told an interviewer, "nor do I know anybody else's theory that constitutes a satisfactory explanation of the Great Depression" (in Klamer 1984, 69).

Resumption of the gold standard as the primary cause of the Great Depression was suggested by some European economists at the time (see Cassel 1922, 1932; Rist 1940), but this explanation soon took a back seat (amounting to virtually complete suppression, particularly in the textbooks[2]) to Keynesian (exogenous demand) and monetarist (exogenous money) explanations. This paper argues that the Great Depression was indeed special but that it is also susceptible to a straightforward explanation: the post–World War I decision to resume the gold standard on prewar terms.

The Swedish economist Gustav Cassel was on the mark when he wrote, "The present crisis must be treated as a new phenomenon and cannot be explained as a particular phase of a cyclical movement of business assumed to be inherent in the capitalist system. The War and the collapse of the whole monetary system of the world represent disturbances of the first order in the average uniformity of normal economic development" (1932, vii).

He was writing of the attempted restoration of the pre-1914 gold standard after its suspension during World War I (1914–18). This suggests that a complete explanation of the Great Depression must date at least from 1914 and include the resumptions and deflations of the 1920s.[3] "The Great Depression is typically thought to have started in August 1929, when industrial production in the United States began to fall, or in October, the month of the Wall Street crash," Barry Eichengreen writes. "But well before that summer, economic activity was already in decline over significant parts of the globe"—for example, Australia and the Netherlands East Indies at the end of 1927, Germany and Brazil in 1928, and Argentina, Canada, and Poland in the first half of 1929 (1992, 222). He could have added much of the rest of Europe and Latin America, in particular those countries that resumed conversion of their currencies to gold at their prewar levels in the mid-1920s. Prices in the United States had declined from mid-1925.

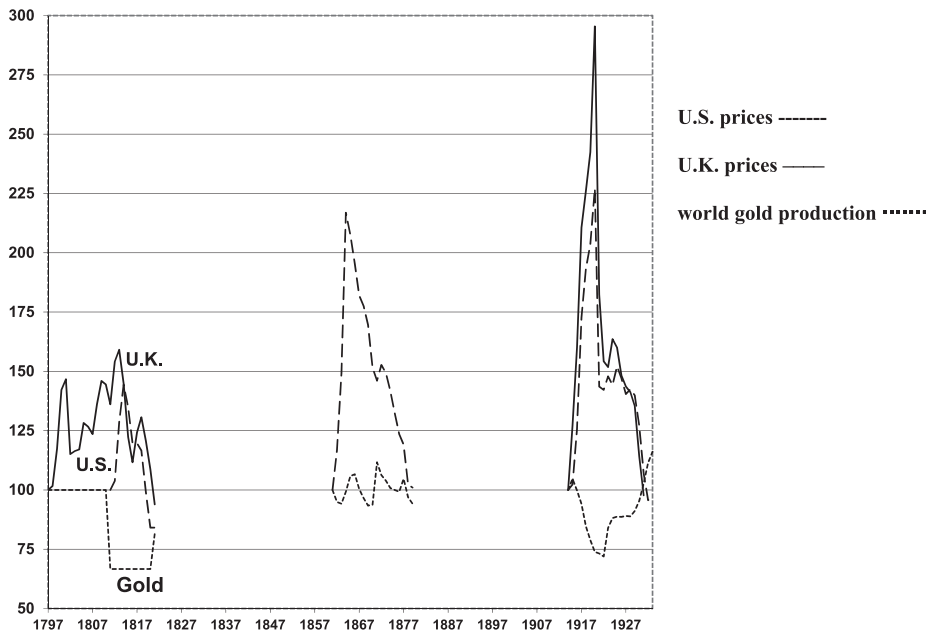
2. For example, Paul Samuelson: "All modern economists are agreed that the important factor in causing income and employment to fluctuate is investment," as demonstrated by "the mass unemployment of the prewar Great Depression" (1955, 224–25). Popular lists of the causes of the Great Depression seldom refer to the resumption of the gold standard.

3. For Cassel's position, see Douglas Irwin (2014), who suggests that it has become a consensus view of economists that the gold standard was an essential cause of the Great Depression (although this explanation is still largely ignored in textbooks and discussions). The present paper formalizes that connection.

Eichengreen's book *Golden Fetters* (1992) suggests that the gold standard exacerbated the Great Depression by its constraints on policies. Central banks hesitated to expand money in a world of deflation and overvalued exchange rates for fear of depleting their gold reserves. Peter Temin also argues "that unsuitable macroeconomic policies caused the Depression. In particular, adherence to the gold standard mandated deflation in circumstances where it was the worst of all policies" (1989, 89). (For supporting arguments, see also Mundell 1993; Johnson 1997; Irwin 2012; and Sumner 2015.)

The present paper extends this work by suggesting that the attempted resumptions of the gold standard *on prewar terms* after the massive wartime inflation brought deflation that lasted until prices resumed prewar levels or currencies were devalued or the gold standard was suspended. So the gold standard operated as should have been expected. Resumption of convertibility of currencies to gold at prewar values might be a *complete* explanation like the other war-and-peace, suspension-and-resumption experiences depicted in figure 1, which illustrates those episodes associated with (1) the French wars (for Great Britain) and the War of 1812 (for the United States), (2) the American Civil War, and (3) World War I for Great Britain and the United States

Figure 1
U.S. and U.K. Wholesale Prices and World Gold Production during Suspensions and Resumptions, 1797–1932



Note: Indexed to 100 at the beginning of each episode. *Source:* Jastrum 1977.

(although the United States did not suspend in this case). The lower dotted lines indicate gold production (Mazumder and Wood 2013).

Countercyclical policies were ineffective as long as the resumption of prewar exchange rates remained a goal. As Cassel wrote in the early 1920s,[4]

> If the War and all it brought in its train turned the world's monetary system upside down, that is no reason for trying to restore the monetary conditions prevailing before the War. They have nothing of an essential character in them. The essential factor was the high degree of stability attained at that time, and it is this stability we should now endeavor to restore. This is . . . the only practicable and wise object we can for the present set before us in our exchange policy, [specifically] as soon as possible and with the least possible friction, restore stability not only in internal values of the various currencies, but also in their international exchange rates. The level at which the value of money is then fixed is, relatively speaking, a matter of secondary importance.
>
> As was predicted, the process of deflation has proved extremely harmful . . . particularly [as] the burden of the public debts becomes heavier than the community can bear. (1922, 254–57)

In 1925, John Maynard Keynes warned of the consequences of the British government's decision to resume the pound's gold convertibility at the prewar rate of $4.86 after it had floated below $4 before the Bank of England began its tight-money policy in 1923, even though the United Kingdom had experienced greater wartime inflation than the United States (table 1). Keynes wrote,

> These arguments are not . . . against the gold standard as such. . . . They are arguments against having restored gold in conditions which required a substantial readjustment of all our money values. If Mr. Churchill [the chancellor of the Exchequer] had restored gold by fixing the parity lower than the pre-war figure, or if he had waited until our money values were adjusted to the pre-war parity, then these particular arguments would have no force. But in doing what he did..., he was just asking for trouble. For he was committing himself to force down money wages and all money values, without any idea how it was to be done. ([1925] 1932, 212)

4. Cassel was known for his advocacy of purchasing power parity (1922, 140–46), which was criticized by officials for inaccuracies and ignored as a guide to policy (Moggridge 1972, 89; Eichengreen 1992, 101 n.). Charles Rist described the inevitability of the deflations as follows: "The countries which returned to the gold standard immediately ceased issuing paper money. *The mere cessation of the issue of paper money, even without any reduction in its quantity, is enough to begin a price fall.* After the war the output of goods had resumed its normal [steadily increasing] dimensions; the effort to absorb these goods with nominal incomes that were henceforth stationary exerted pressure on all markets." "The fall in prices which followed was particularly steep and prolonged [for] two reasons": competition forced the inflated prices down as money and credit returned to their 1914 levels, and the "fall in prices normally goes on until the mining of new gold begins to act in the opposite direction" (1940, 273–75, emphasis added).

Table 1
Prices, Bank Deposits, Gold Reserves, 1913–1933 (End of Year), and Years of Resumption and Suspension or Devaluation

	Relative to 1913 (100)								Official Gold Reserves (bils.$)		Resumption and Suspension or Devaluation	
	Wholesale Price Index				Bank Deposits							
	1920	1925	1928	1933[a]	1920	1925	1928	1933	1913	1925		
Sweden	359	161	148	109	301	206	203	210	27	62	1922	1931
Netherlands	261	157	136	84	438	318	291	270	61	179	1924	1936
Switzerland	224	161	145	92	242	231	312	309	33	91	1924	1935
United Kindgdom	307	159	140	103	238	221	235	234	165	695	1925	1931
Denmark	263	210	153	130	438	318	292	270	20	56	1926	1931
Norway	377	218	150	118	526	337	278	192	12	40	1926	1931
Argentina	182	148	131	114	233	241	276	229	256	451	1927	1929
Canada	188	150	150	104	172	157	188	122	117	157	b	1931
United States	221	148	139	100	233	263	269	173	1290	3985	b	1933

[a] Lowest year of 1931–33 = 1933, except Sweden and United Kingdom (1931) and Canada (1932).
[b] Had not suspended during World War I.
Sources: League of Nations 1931, 1932; Federal Reserve 1943; Mitchell 2007a, 2007b.

An understanding of the Cassel–Keynes criticisms and the course of events require an appreciation of the workings of the classical gold standard as set forth in the next section, which is followed by a section discussing how that standard, shocked by the wartime inflations/suspensions and postwar resumptions, imposed significant deflations and falls in output. Our method is a union of previous research, including their correspondences between resumptions, deflations, regime changes, expectations, and falls in output.

The Gold Standard

Our method is a straightforward application of the prewar gold standard, whose specifications begin with units of account defined in terms of quantities of gold. For example, the Gold Standard Act of 1900 declared that the U.S. "dollar consisting of 0.048375 ounces of gold . . . shall be the standard unit of value, and all forms of money issued or coined by the United States shall be maintained at a parity of value with this standard, and it shall be the duty of the Secretary of the Treasury to maintain such parity" (preamble). The Coinage Act of 1870 defined the British pound as 0.23542 ounces of gold, so in markets with free exchange between gold and currencies, £1 equaled 0.23542/0.048375, or $4.866.[5]

Nassau Senior explained that the

> value of money . . . does not depend *permanently* on the quantity of it possessed by a given community, or on the rapidity of its circulation, or on the prevalence of exchanges, or on the use of barter or credit, or, in short, on any cause whatever, excepting *the cost of its production*. . . . As long as precisely 17 grains of gold can be obtained by a day's labour, every thing else produced by equal labour will, in the absence of any natural or artificial monopoly, sell for 17 grains of gold; whether all the money of the country change hands every day, or once in four days, . . . whether such exchanges are effected by barter or credit, or by the actual intervention of money; whether there be 1,700,000 or 170,000 grains in the country. (1829, 30, emphasis in original)

Similarly, Adam Smith wrote that "the proportion between the value of gold and silver and that of goods of any other kind . . . depends upon the proportion between the quantity of labour which is necessary in order to bring a certain quantity of gold and silver to market, and that which is necessary in order to bring thither a certain quantity of any other sort of goods" ([1776] 1937, 312–13). Modern arithmetic and geometric statements consistent with Senior's and Smith's include work from Jürg Niehans (1978, 140–53), Robert Barro (1979), and Lawrence White (1999, 26–37).

5. These are Troy weights (12 ounces per pound), derived from Roman practice and the medieval fairs at Troyes, France. Stated U.S. and U.K. weights (9/10 and 11/12 fine) are converted to the same "pure" basis (Feavearyear 1931, 353; Krooss 1977, 2016).

The principal alternative theory of money and prices was the quantity theory. For example, Knut Wicksell accepted the logic of Senior's cost-of-production theory but believed the theory was quantitatively unimportant because production of the precious metals, "especially in earlier times, was extremely small in proportion to the total stocks of money and precious metal" (1936, 44, 88, 165–67). In fact, the world stock of gold rose on average 3.1 percent per annum during the long nineteenth century, meaning that it nearly doubled every twenty years (table 2). Differences in gold's rates of growth (and costs of production arising from discoveries and technological developments) between the lengthy deflation from the 1870s to the 1890s and the inflation of the next two decades were recognized. "No one, I think, who has attended to the discussions occasioned by the recent gold discoveries," J. E. Cairnes wrote, "can have failed to observe . . . a strange unwillingness to recognize amongst the inevitable consequences of those events, a fall in the value of money. I say, a strange unwillingness, because we do not find similar doubts to exist in any corresponding case," where "it is not denied that whatever facilitates production promotes cheapness—that less will be given for objects when they can be attained with less trouble and sacrifice" ([1858] 1873, 53). But the high speeds of price responses to gold increases were often noted (e.g., Ricardo 1821, 238; Whale 1937; Mill [1848/1909] 1987, 501).

W. S. Jevons was "much struck" by the "enormous, and almost general rise of prices" that rapidly followed the California and Australia gold discoveries ([1863/1884] 1964, 16). Writing of the rapid responses of domestic prices to world gold production under the classical gold standard, Donald McCloskey and Richard Zecher suggest that substantial flows were unnecessary. "The mere threat of arbitrage may be sufficient." England therefore had to conform to rather than conduct an integrated world economy.[6] "Individual actions, such as playing by the "rules of the game," had little effect on prevailing prices, interest rates, and incomes, which may "explain why they were ignored by most central bankers in the period of the gold standard, in deed if not in words, with no dire effects on the stability of the system" (1976, 189, 186).

The endogeneity of gold was recognized by those on the ground. "[T]he discovery of mining fields, even in the era of romantic bonanzas, was sensitive to economic conditions and open to rational explanation" (Blainey 1970, 298; see also Cairnes [1858] 1873; Rothwell 1892, 204; Meade 1897; Katzen 1964, 9). Walter Crane estimated that 105 gold mines started in the United States between 1821 and 1905 resulted from prospecting, compared with seven that were discovered accidentally (1908, 652–59; see also Rockoff 1984). "Not only do mining engineers report untold workable deposits in outlying regions (for instance a full billion of [*sic*] dollars in one region of Columbia alone)," Irving Fisher wrote, "but any long look ahead must reckon with possible and probable cheapening of gold extraction" (1911, 249).

6. Keynes had written that: "During the latter half of the nineteenth century the influence of London on credit conditions throughout the world was so predominant that the Bank of England could almost have claimed to be the conductor of the international orchestra" (1930, 2:306–7).

Figure 2 shows that gold production in the mid-1930s had returned to its rate in the 1890s. The figure shows that under the gold standard, changes in the rate of increases in gold, g, anticipate changes in the same direction in the price level P (which indicates the cost of g), which are followed by opposite changes in g. The dip in production at the turn of the century corresponded with the Boer War in South Africa, the world's leading gold producer. Figures for other gold standard countries tell the same story. Notice also that money as a proportion of income (M/GNP) rose steadily in the monetizing United States, whereas it was nearly constant in the financially mature United Kingdom.

Suspension and Resumption

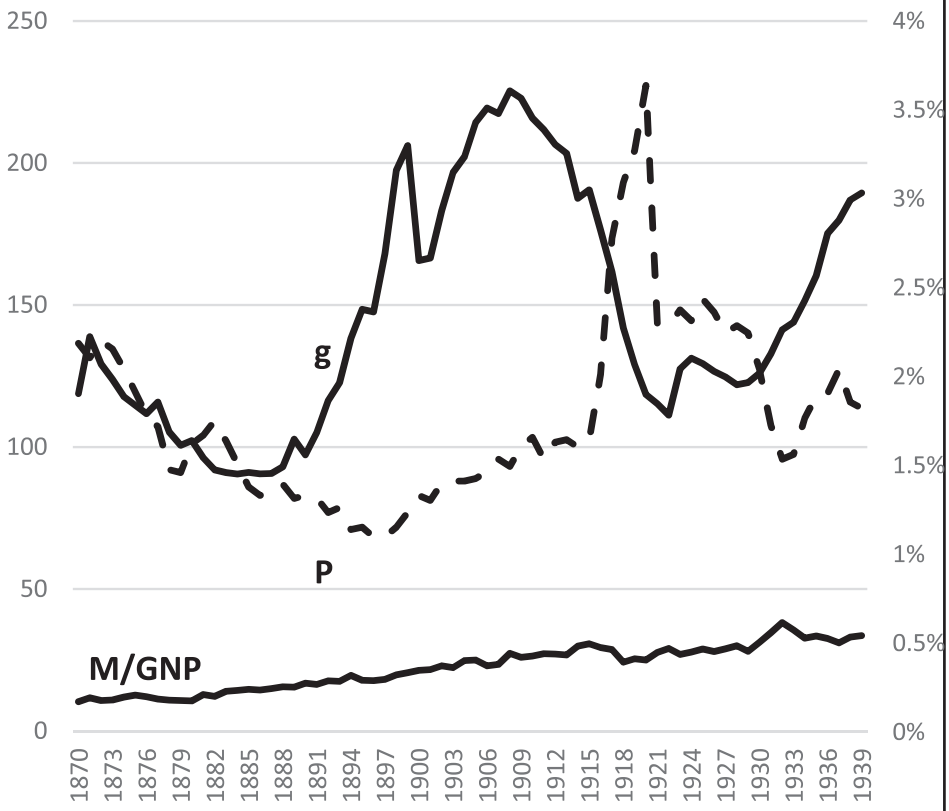
During World War I, most countries, even neutrals, suspended the free conversions of their currencies into gold, credit and currencies swelled, and price levels more than doubled (see table 1 and figure 3). Many countries decided at the end of the war to restore their pre-1914 monetary arrangements, including exchange rates. In the United Kingdom, for example, a report by the Cunliffe Committee on Currency and Foreign Exchanges after the War, chaired by the governor of the Bank of England and issued in September 1918, stated:

> In our opinion it is imperative that after the war the conditions necessary to the maintenance of an effective gold standard should be restored without delay. Unless the machinery which long experience has shown to be the only effective remedy for an adverse balance of trade and an undue growth of credit is once more brought into play, there will be grave danger of a progressive credit expansion which will result in a foreign drain of gold menacing the convertibility of our note issue and so jeopardizing the international trade position of the country. (qtd. in Moggridge 1972, 21)

"[P]rerequisites for the restoration of an effective gold standard" included the "cessation of government borrowing [and its implications for increases in money and prices] as soon as possible after the war," and "the recognized machinery, namely the raising and making effective . . . [of] the Bank of England discount rate, which before the war operated to check a foreign drain of gold and the speculative expansion of credit in this country, must be kept in working order." "Restoration of the prewar dollar/pound rate of 4.86 was a 'given.' Anything short of this was tantamount to 'default,' or bilking the 'foreigner.' [A] contract is, and always has been, sacred" (Moggridge 1972, 229).

Governments were slow to act, however, and prices continued to rise for two years after the war before inflation was halted and steps were taken toward the prewar exchange rates. Figure 3 shows that wholesale prices eventually returned to their approximate prewar levels for those countries whose exchange rates were resumed at their prewar pars in the 1920s. Others resumed at devalued exchange rates. For example,

Figure 2
World Rate of Gold Production, U.S. Wholesale Price Index, and Money Relative to Nominal Output



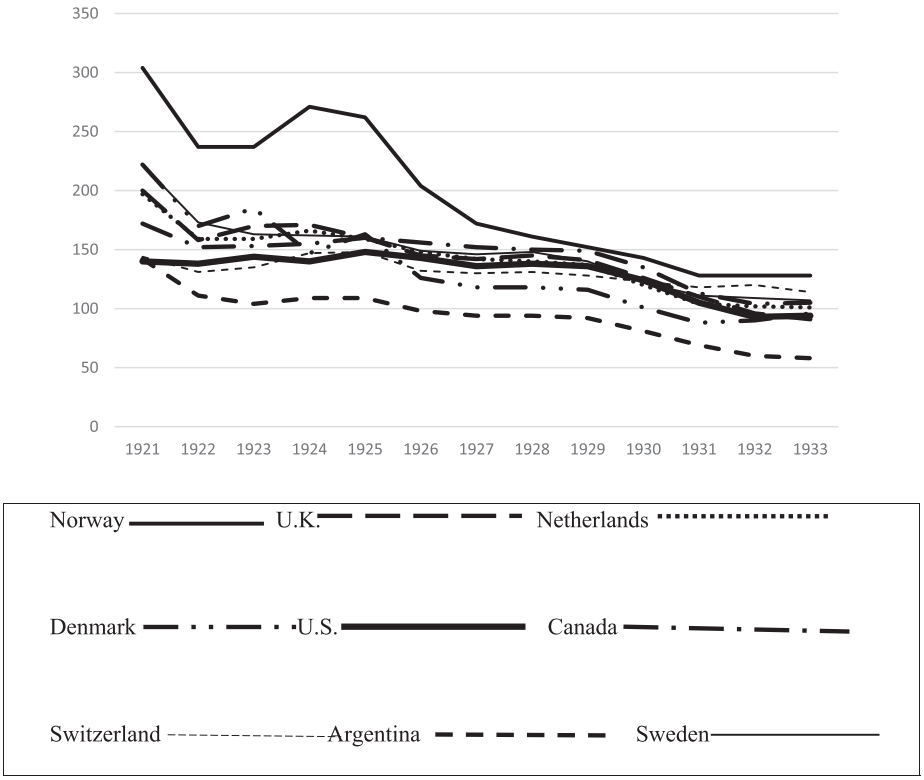
Note: g = annual rate of increase of monetary gold; P = US Wholesale Price Index, 1914 = 100; and M/GNP = money/gross national product. *Sources:* Friedman and Schwartz 1963; U.S. Bureau of the Census 1975; Jastram 1977; Gordon and Balke 1986.

France, whose prices were five times higher in 1925 than in 1913, resumed at an exchange rate one-fifth of its prewar value. We focus on those rates that resumed in full.[7]

Officials expected several years of deflation before they would be able to resume prewar exchange rates. They feared a shortage of gold, as well they might given the greater increases in general price levels (that is, costs of production) than in the price of gold subsequent to the wartime suspensions. Notice the fall in gold production during the wartime inflation and the rise when the price of gold rose with devaluation in the 1930s (figure 2). Total central-bank reserves had kept pace with their liabilities (table

7. Table 1 does not include non-U.K. members of the sterling area, whose experiences were similar to the United Kingdom's.

Figure 3
Wholesale Price Indexes in Countries Resuming at Prewar Pars, 1921–1933 (1913 = 100)



Note: From top 1921: Norway, Sweden, Denmark, Switzerland, United Kingdom, Canada, Argentina, Netherlands, United States. *Sources:* Mitchell 2007a, 2007b.

1), but at the expense of privately held gold coin, which had been an important source of reserves before the war (Hawtrey 1962, 40–122).[8] Officials hoped to overcome the shortage of gold through cooperative arrangements by which central banks would refrain from competing for gold, especially by means of high interest rates, and would be willing to hold foreign currencies in place of gold (Clarke 1967, 40–44; Kindleberger 1973, 296–300; Eichengreen 1992, 207–9, 154–62). Genuine cooperation, however, could hardly have been expected under the prevailing conditions of overvalued and therefore speculative exchange rates. Central-bank demands for gold in fact increased, as table 1 shows. The international uncertainties and fluctuations referred to by Charles

8. Although the world's official gold reserves rose 5.3 percent annually between 1913 and 1925, gold money (counting coin) rose 2 percent annually as coin was appropriated by officials (Mazumder and Wood 2013).

Table 2
World Gold Supply and British Wholesale Prices, 1807–1913

Supply of Monetary Gold	Wholesale Prices
Average annual rate of increase as an excess or deficiency on the average rate of 3.1%	Average annual rate of rise or fall
I. First half of the nineteenth century	
1807–48: "Deficiency," 2.4% per annum	**1810–50:** Fell 2% per annum
II. The "Golden Age of Victorian Prosperity"	
1848–62:" Excess," 2.8% per annum	**1850–73:** Rose 1.5% per annum
III. The "Great Depression"	
1862–94: "Deficiency," 1.4% per annum	**1873–96:** Fell 2.4% per annum
IV. The Prewar Years	
1894–1911: "Excess," 0.6% per annum	**1896–1913:** Rose 1.9% per annum

Source: Kitchin 1933.

Kindleberger (1973) and others were more the consequences of attempted resumptions than causes of their failures.

The official resumptions were premature. Even the deflations implied by the overvaluations of their exchange rates relative to the U.S. dollar were underestimates because the United States itself required significant deflation to restore its prewar price level. The nearly 50 percent deflations after 1920 necessary for most countries to return to their prewar positions were suppressed in officials' thinking. U.K. and U.S. officials had understood the pound and dollar prices of gold and their implications during the post-1815 and post-1865 resumptions, but the post-1918 task was underestimated by those (meaning nearly everyone) targeting the dollar. The American position was special. It had had as much inflation as most but still had abundant gold because of its foreign sales of goods and assets. The U.S. dollar value of gold ($20.67 per ounce) was unchanged, but American prices would still have to return to their prewar level.

As indicated by the usual gold standard models, for unchanged relative costs of producing gold and other goods, an increase in fiat currency that raises prices reduces the rate of gold production until the price level is restored to its initial value. This story is at least roughly consistent with figure 2, which shows falling gold production as prices rose during World War I and then a rise as prices fell during the Depression, reinforced by devaluations (official increases in the price of gold). So the shortage of gold and downward pressure on prices became more severe the longer the high prices and overvaluations of exchange rates persisted. Postwar currency problems were blamed on many things, such as lack of cooperation, reparations and other intercountry indebtedness, and the lack of enlightened leadership because of the shift of financial hegemony

from Great Britain to the United States.[9] In fact, the overvaluations of exchange rates were sufficient.

The speeds of price adjustments depended on many things, including government policies and the expectations we discuss later. After the substantial but insufficient price falls of 1920–24, several countries felt able to return to gold convertibility. Immediate reactions are instructive. Reliable expectations were made particularly difficult during the 1920s by the uncertainties of monetary policies. Views of the future changed with monetary regimes. Denmark's currency-stabilization law of December 1924, for example, provided for an increase in the dollar value of the krone in steps from $0.1764 to $0.2682 in 1927, aided by an American loan of 40 million krone to guarantee convertibility. "As a matter of fact krone exchange rose too rapidly," reaching $0.25 in 1925, and prices fell substantially (Mood 1930, 60). Other countries taking similar steps—Norway, Sweden, the Netherlands, Switzerland, and the United Kingdom—had similar experiences, along with economic downturns. In the United Kingdom, the Conservative election victory of October 1924, which raised expectations of a speedy resumption of prewar exchange rates, was soon followed by a turn from rising to falling prices and a rise in the exchange rate from $4.49 to $4.78 in January, before the official announcement of resumption at $4.86 in April. The General Strike of 1926 was an attempt to prevent cuts in coal miners' and other workers' wages. The run on the pound in September 1931 followed British sailors' mutiny in protest of a pay cut that was part of the government's retrenchment.

The restoration of prewar prices, although well on its way in the 1920s (figure 3 and table 1), was delayed by American credits until reversed by U.S. tight-money policy beginning in 1928. William A. Brown observed that U.S. lending had made the "period of deflation more orderly and somewhat less disastrous than it might otherwise have been" (1929, 100). The value of the pound, for example, survived on foreign loans until the government allowed it to float in 1931 rather than to continue the tight monetary and fiscal policies upon which the loans had depended (Skidelsky 1967, chaps. 13–14).

This gold standard narrative of the Great Depression is free of many of the problems of other approaches. Its severity is made understandable by the large deflations implied by the full-resumption policies. This single great shock combined with the policies to make it effective was sufficient. No unlucky collection of smaller uncoordinated shocks such as bank failures and demand declines was required. Milton Friedman and Anna Schwartz (1963) explain the acceleration of the Depression as due to the bank panic of 1930, but that panic was limited to the failures of known-to-be-weak institutions and was a consequence more than a cause of price falls (Wicker 1996, 24).[10] American prices had fallen steadily from 1925 to 1930, shrinking home values

9. In fact the Bank of England and its governor Montagu Norman showed little awareness of the problems involved, including the domestic effects of international goals (Moggridge 1972, 228–44; Wood 2005, 280–93). The British decision to return to gold with an overvalued exchange rate, which was influenced by the expectation of foreign (especially American) inflation in a world expecting deflation, demonstrated a lack of understanding of the gold standard—but the British were not alone.

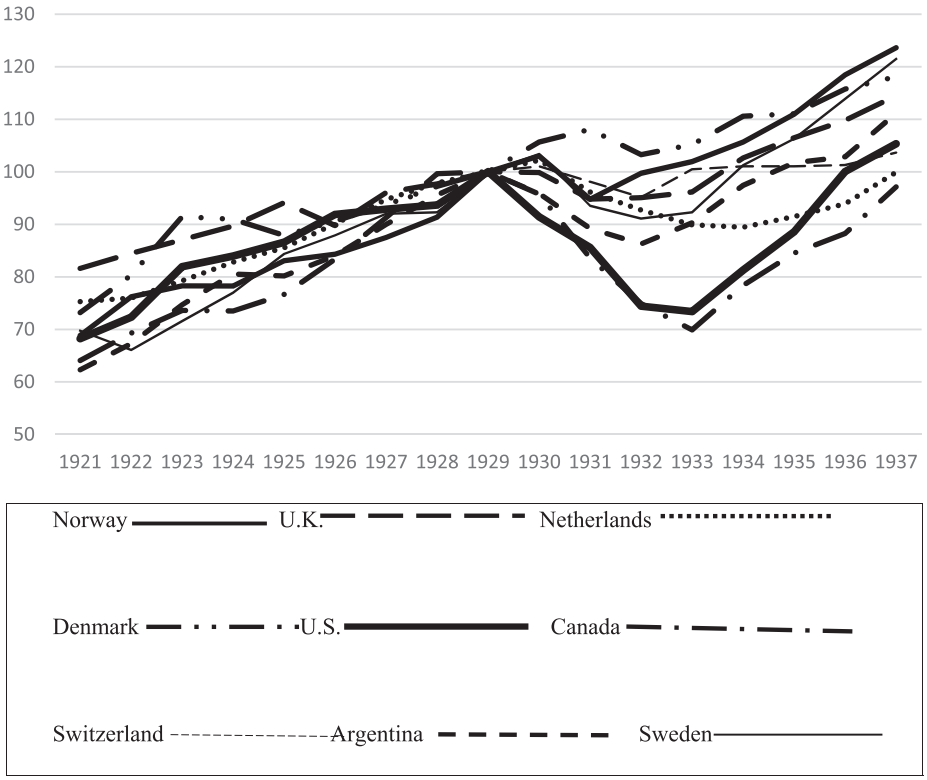
and other bank investments. Other so-called bank panics were also local, limited, and understood and so were unlikely to have spurred general losses of confidence and bank runs.

In fact, the U.S. demand for money (relative to income) increased during the Great Depression, consistent with a gold standard explanation in which the price level is determined by the relative costs of gold and other goods and money is demand determined. U.S. money fell 30 percent between 1928 and 1933, compared with 43 percent for nominal gross domestic product. The same was true of most of the other countries listed in table 1. U.S. bank deposits did not fall faster than income until the second half of 1931.

The gold standard explanation of American money and prices is consistent with the failure of the Federal Reserve's apparent attempt to raise them in 1932. "Using forward exchange rates and interest rate differentials to measure devaluation expectations," Christina Romer and Chang-Tai Hsieh "find virtually no evidence that the large monetary expansion [i.e., open-market purchases of $1 billion] led investors to believe that the United States would devalue. The financial press and Federal Reserve records also show scant evidence of expectations of devaluation or fear of speculative attack" (2006, 140), implying, they argue, that the Fed could have engaged in substantial monetary expansion even in the presence of gold standard arrangements. In fact, reductions in the Fed's Treasury bill holdings combined with gold losses to reduce the effects of the open-market purchases on high-powered money by one-half, with most of the rest held in bank excess reserves. The money stock continued its fall before stabilizing the next year and then rising. In 1932, expectations of a monetary expansion could not have been strong in any case because the Fed's open-market purchases were known to have been taken under political pressure and ended soon after Congress adjourned (Wood 2005, 204–5). Expansive expectations had to wait for President Franklin Roosevelt's inflationary regime, including the effective suspension of the gold standard. Prices and production turned around after Roosevelt's inauguration, although the real money stock did not begin to rise until some months later, indicating, as Gauti Eggertsson writes, that what ended the Depression in the United States was a change in the monetary policy regime, "leading to a dramatic change in inflation expectations." The new regime brought by Roosevelt's promises and actions engineered "a shift in expectations from 'contractionary' (i.e., the public expected future economic contraction and deflation) to 'expansionary' (i.e., the public expected future economic expansion and inflation). The expectation of higher future inflation lowered real interest rates, thus stimulating demand, while the expectation of higher future income stimulated demand by raising permanent income" (2008, 1476, 1478; see also Temin and Wigmore 1990; Romer 1992; Hausman, Rhode, and Wieland 2019). Stock prices increased 66 percent in Roosevelt's first one hundred days, commodity prices "skyrocketed," and investment doubled in 1933.

10. This explanation differs from the one offered by Ben Bernanke and Harold James (1991), who maintain that the panics were causes rather than consequences of the Great Depression.

Figure 4
Real Gross Domestic Product, 1921–1937 (1929 = 100)



Note: From top 1937: Norway, Sweden, Denmark, United Kingdom, Argentina, United States, Switzerland, Netherlands, Canada. *Sources:* Mitchell 2007a, 2007b.

The greater severity of the U.S. Depression (figure 4) might have been due to the country's firmer attachment to the gold standard. Congress had reinforced the Fed's independence and therefore the sanctity of its gold-reserve requirements when the Joint Commission of Agricultural Inquiry resolved that "the discount policy of the Federal Reserve should not have yielded to the apprehension of the Treasury Department" that led to the 1919–20 inflation and collapse (U.S. Congress 1922, 7, 12, 44). Many public groups pressed for monetary expansion after 1929, but to no avail. More than fifty bills to increase money and prices were introduced in the U.S. House of Representatives, but none became law (Krooss 1977, 2661–662). Other central banks lacked the independence of the Fed, being formally subordinate to their legislatures, and most had suspended their gold constraint by 1931, after which their national outputs turned upward (figure 4). The increased intensity of depression in the United States after 1931 followed the affirmation of its commitment to the gold standard by its decision not to join other countries in their devaluations or suspensions. As Kirsten Wandschneider

(2008) suggests, the poor performance of the American economy had made the United States one of the prime candidates for relaxation of the gold restraint.

The order of events corresponding to the gold-standard-resumption explanation of the Great Depression can be summarized as follows: (1) suspension, inflation, and falls in currency gold values and gold production (1914–20); (2) tight-money policies in support of decisions to return to gold convertibility at prewar exchange rates (early 1920s); (3) official resumptions of the gold standard in the mid-1920s, reinforcing the deflations; (4) reversal of U.S. foreign lending, which had slowed deflations, in the 1920s; (5) devaluations or suspensions of gold convertibility by several countries in 1931, but not by the United States, thus reinforcing expectations of continued deflation in the latter; and (6) a shift from a deflationary to an inflationary American monetary regime with the coming of the New Deal in 1933. The long fall in prices before the onset of the Depression, to which Friedman and Schwartz call attention, can be included within this explanation, as can the bank failures of 1930–31, which were consequences rather than causes of deflation, and there need be no concern about the lack of large demand shifts.[11] The substantial differences between countries' rates of recovery (figure 4) were due in part to their different monetary and fiscal policies, which were no longer subject to the uniform gold constraint.

Conclusion

A primary responsibility of governments and central banks under the gold standard was the maintenance of the gold values of their currencies. The international gold standard had functioned in line with this responsibility for several decades before it was suspended during World War I and resumed its functions after the war when governments decided to recover their prewar gold/currency values. That policy implied deflations that proceeded as expected under the gold standard, although timing and production changes depended on government policies and other events in the various countries. In particular, substantial production changes followed related monetary regime changes, such the New Deal's devaluation and promise of expansion and suspension of the gold constraint in some countries in 1931. These overriding determinants of aggregate prices and production provide a straightforward explanation of the main outlines of the Great Depression as instigated by the postwar decisions to return to gold on prewar terms.

11. From data on fifteen countries between the early nineteenth century and 2000, Andrew Atkeson and Patrick Kehoe (2004) found little relation between five-year periods of deflation and output declines, except for the Great Depression (which is consistent with the view that the latter was special). It should also be noted that every significant U.S. recession was associated with some deflation until the post–World War II high-inflation normal, and the recessions in 1973–75 and 2007–9 saw inflation declines.

References

Atkeson, Andrew, and Patrick J. Kehoe. 2004. Deflation and Depression: Is There an Empirical Link? *American Economic Review* 94 (May): 99–103.

Barro, Robert. 1979. Money and the Price Level under the Gold Standard. *Economic Journal* 89 (March): 13–33.

Bernanke, Ben S. 2000. *Essays on the Great Depression*. Princeton, N.J.: Princeton University Press.

Bernanke, Ben S., and Harold James. 1991. The Gold Standard, Deflation, and Financial Crisis in the Great Depression: An International Comparison. In *Financial Markets and Financial Crises,* edited by R. Glenn Hubbard, 33–68. Chicago: University of Chicago Press.

Blainey, Geoffrey. 1970. A Theory of Mineral Discovery: Australia in the Nineteenth Century. *Economic History Review* 32 (August): 298–313.

Brown, William A., Jr. 1929. *England and the New Gold Standard, 1919–26*. London: King & Son.

Cairnes, J. E. [1858] 1873. Essay towards a Solution of the Gold Question: The Course of Depreciation. Paper read before the British Association, September. In *Essays in Political Economy*, 53–76. London: Macmillan.

Cassel, Gustav. 1922. *Money and Foreign Exchange after 1914*. London: Macmillan.

———. 1932. *The Crisis in the World's Monetary System*. Oxford: Oxford University Press.

Clarke, Stephen V. O. 1967. *Central Bank Cooperation, 1924–31*. New York: Federal Reserve Bank of New York.

Crane, Walter R. 1908. *Gold and Silver: Comprising an Economic History of Mining in the U.S.* New York: Wiley.

DeVroey, Michel, and Lugo Pensieroso. 2006. Real Business Cycle Theory and the Great Depression. *Contributions to Macroeconomics* 6 (January): 1–26.

Eggertsson, Gauti B. 2008. Great Expectations and the End of the Depression. *American Economic Review* 98 (September): 1476–516.

Eichengreen, Barry. 1992. *Golden Fetters: The Gold Standard and the Great Depression, 1919–39*. Oxford: Oxford University Press.

Estey, James A. 1956. *Business Cycles*. 3rd ed. Englewood Cliffs, N.J.: Prentice-Hall.

Feavearyear, A. E. 1931. *The Pound Sterling*. Oxford: Oxford University Press.

Federal Reserve Board. 1943. *Banking and Monetary Statistics*. Washington, D.C.: U.S. Government Printing Office.

Fisher, Irving. 1911. *The Purchasing Power of Money*. New York: Macmillan.

Friedman, Milton. 1957. *A Theory of the Consumption Function*. Princeton, N.J.: Princeton University Press.

Friedman, Milton, and Anna J. Schwartz. 1963. *A Monetary History of the United States, 1867–1960*. Princeton, N.J.: Princeton University Press.

Gordon, Robert A. 1952. *Business Fluctuations*. New York: Harper and Brothers.

Gordon, Robert J., and Nathan S. Balke. 1986. Appendix B: Historical Data. In *The American Business Cycle,* edited by Robert J. Gordon, 781–850. Chicago: University of Chicago Press.

Gordon, Robert J., and James A. Wilcox. 1981. Monetarist Interpretations of the Great Depression. In *The Great Depression Revisited,* edited by Karl Brunner, 165–73. Boston: Kluwer Nijhoff.

Hall, Thomas E., and J. David Ferguson. 1998. *The Great Depression: An International Disaster of Perverse Economic Policies.* Ann Arbor: University of Michigan Press.

Hausman, Joshua K., Paul W. Rhode, and Johannes F. Wieland. 2019. Recovery from the Great Depression: The Farm Channel in Spring 1933. *American Economic Review* 109 (February): 427–72.

Hawtrey, R. G. 1962. *A Century of Bank Rate.* 2nd ed. London: Frank Cass.

Irwin, Douglas A. 2012. The French Gold Sink and the Great Deflation of 1929–32. *Cato Papers on Public Policy* 2:1–56.

———. 2014. Who Anticipated the Gold Standard? Gustav Cassel versus Keynes and Hayek on the Interwar Gold Standard. *Journal of Money, Credit, and Banking* 46 (February): 199–227.

Jastram, Roy W. 1977. *The Golden Constant: The English and American Experience, 1560–1967.* New York: Wiley.

Jevons, W. S. [1863/1884] 1964. *A Serious Fall in the Value of Gold Ascertained, and Its Social Effects Set Forth.* Reprinted as *Investigations in Currency and Finance.* New York: Augustus M. Kelley.

Johnson, H. Clark. 1997. *Gold, France, and the Great Depression, 1919–32.* New Haven, Conn.: Yale University Press.

Katzen, Leo. 1964. *Gold & the South African Economy.* Cape Town, South Africa: A. A. Balkema.

Keynes, John Maynard. 1930. *A Treatise on Money.* 2 vols. London: Macmillan.

———. [1925] 1932. The Economic Consequences of Mr. Churchill. *Evening Standard,* July 22–24. Reprinted in *Essays in Persuasion,* edited by John Maynard Keynes, 207–30. London: Macmillan.

Kindleberger, Charles P. 1973. *The World in Depression, 1929–39.* London: Allen Lane, Penguin.

Kitchin, Donald 1933. Revised Trade Cycles Chart. *Times* (London), June 20.

Klamer, Arjo. 1984. *The New Classical Macroeconomics: Conversations with New Classical Economists and Their Opponents.* Brighton, U.K.: Harvester Press.

Krooss, Herman E. 1977. *Documentary History of Banking and Currency in the United States.* New York: McGraw-Hill.

League of Nations. 1931. *Memorandum on Commercial Banks, 1913–29.* Geneva: League of Nations.

———. 1932. *Statistical Yearbook of the League of Nations.* Geneva: League of Nations.

Lucas, Robert E., Jr. 1980. Methods and Models in Business Cycle Theory. *Journal of Money, Credit, and Banking* 12, pt. 2 (November): 696–715.

———. 1987. *Models of Business Cycles.* Oxford: Blackwell.

Mazumder, Sandeep, and John H. Wood. 2013. The Great Deflation of 1929–33: It (Almost) Had to Happen. *Economic History Review* 66 (February): 156–77.

McCloskey, Donald N., and J. Richard Zecher. 1976. How the Gold Standard Worked, 1880–1913. In *The Monetary Approach to the Balance of Payments,* edited by Jacob A. Frenkel and Harry G. Johnson, 184–208. London: George Allen and Unwin.

Meade, Edward S. 1897. The Production of Gold since 1850. *Journal of Political Economy* 6 (December): 1–26.

Meltzer, Allan H. 2003. *A History of the Federal Reserve.* Vol. 1: *1913–51.* Chicago: University of Chicago Press.

Mill, J. S. [1848/1909] 1987. *Principles of Political Economy with Some of Their Applications to Social Philosophy.* 7th ed. Edited by W. J. Ashley. New York: Augustus M. Kelley.

Mitchell, B. R. 2007a. *International Historical Statistics: The Americas, 1750–2005.* Cham, Switzerland: Palgrave Macmillan.

———. 2007b. *International Historical Statistics: Europe, 1750–2005.* Cham, Switzerland: Palgrave Macmillan.

Moggridge, D. E. 1972. *British Monetary Policy, 1924–31.* Cambridge: Cambridge University Press.

Mood, James R. 1930. *Handbook of Foreign Currency and Exchange.* Washington, D.C.: U.S. Government Printing Office.

Mundell, Robert. 1993. Debt and Deficits in Alternative Macroeconomic Models. In *Debt, Deficit, and Economic Performance,* edited by Mario Baldassarri, Robert Mundell, and John McCallum, 5–29. London: St. Martin's Press.

Niehans, Jürg. 1978. *The Theory of Money.* Baltimore: Johns Hopkins University Press.

Parker, Randall E. 2002. *Reflections on the Great Depression.* Cheltenham, U.K.: Edward Elgar.

Ricardo, David. 1821. *The Principles of Political Economy and Taxation.* 3rd ed. London: John Murray.

Rist, Charles. 1940. *History of Monetary and Credit Theory.* Translated by Jane Degras. London: Macmillan.

Rockoff, Hugh. 1984. Some Evidence on the Real Price of Gold, Its Cost of Production, and Commodity Prices. In *A Retrospective on the Classical Gold Standard, 1821–1931,* edited by Michael D. Bordo and A. J. Schwartz, 613–44. Chicago: University of Chicago Press.

Romer, Christina D. 1992. What Ended the Great Depression? *Journal of Economic History* 52 (December): 757–84.

Romer, Christina D., and Chang-Tai Hsieh. 2006. Was the Federal Reserve Constrained by the Gold Standard during the Great Depression? Evidence from the 1932 Open Market Purchase Program. *Journal of Economic History* 66 (March): 140–76.

Rothwell, Richard P. 1892. *Mineral Industries.* New York: Scientific.

Samuelson, Paul A. 1955. *Economics.* 3rd ed. New York: McGraw-Hill.

Schumpeter, Joseph A. 1939. *Business Cycles.* New York: McGraw-Hill.

Senior, Nassau. 1829. On the Quantity and Value of Money. In *Three Lectures on the Value of Money,* 5–31. London: B. Fellowes.

Skidelsky, Robert. 1967. *Politicians and the Slump*. London: Macmillan.

Smith, Adam. [1776] 1937. *An Inquiry into the Nature and Causes of the Wealth of Nations*. New York: Random House.

Sumner, Scott B. 2015. *The Midas Paradox: Financial Markets, Government Policy Shocks, and the Great Depression*. Oakland, Calif.: Independent Institute.

Temin, Peter. 1976. *Did Monetary Forces Cause the Great Depression?* New York: Norton.

———. 1989. *Lessons from the Great Depression*. Cambridge, Mass.: MIT Press.

Temin, Peter, and Barrie A. Wigmore. 1990. The End of One Big Deflation. *Explorations in Economic History* 27 (October): 483–502.

U.S. Bureau of the Census. 1975. *Historical Statistics of the United States*, *Colonial Times to 1970*. Washington, D.C.: U.S. Government Printing Office.

U.S. Congress, Joint Commission of Agricultural Inquiry. 1922. *Agricultural Inquiry*. Part 2. Hearings. 67th Cong., 1st sess.

Wandschneider, Kirsten. 2008. The Stability of the Interwar Exchange Standard: Did Politics Matter? *Journal of Economic History* 68 (March): 151–81.

Whale, P. Barrett. 1937. The Working of the Pre-war Gold Standard. *Economica* 4 (February): 18–32.

White, Lawrence H. 1999. *The Theory of Monetary Institutions*. Oxford: Blackwell.

Wicker, Elmus. 1996. *The Banking Panics of the Great Depression*. Cambridge: Cambridge University Press.

Wicksell, Knut. 1936. *Interest and Prices*. Translated by R. F. Kahn. London: Royal Economic Society.

Wood, John H. 2005. *A History of Central Banking in Great Britain and the United States*. Cambridge: Cambridge University Press.

Acknowledgments: We are grateful for comments by Allin Cottrell and three referees.