

## CHAPTER 1

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# The End of a Mirage

## More Money Increases Inflation but Not Employment

THIS FIRST CHAPTER describes the learning trajectory that led economists and policymakers to regard controlling inflation as a priority and to pursue this goal of greater price stability more effectively. Starting from the final third of the twentieth century, the discipline of macroeconomics generated advances in the understanding of inflation that went on to have a powerful impact on the design of effective monetary policies to counter inflation.<sup>1</sup> At the heart of these advances was the concept of the neutrality of money over the long run as established by the classical school of economics: changes in the money supply affect nominal variables such as the general level of prices but not real variables such as unemployment or output. Yet if money is neutral in the long run, this is not always the case in the short run. Real short-term effects can be observed to result from changes in the supply of money. This duality has been well described by Robert Lucas (1996: 664):

This tension between two incompatible ideas—that changes in money are neutral unit changes and that they induce movements in employment and production in the same direction—has been at the center of monetary theory at least since Hume wrote.

Lucas is referring here to David Hume’s seminal essays *Of Money*, *Of Interest*, and *Of the Balance of Trade*, first published in *Political Discourses* (1752). The fundamental importance of Hume’s contribution lies in his attack on the prevalent mercantilist school of thought and his advocacy

<sup>1</sup>The term “macroeconomics” is attributed to Ragnar Frisch (1895–1973) (Schumpeter, [1954] 1997: 278). Sandmo (2011: 330) seems to confirm it as well: “The origin of the terms micro- and macroeconomics is not quite clear, but much suggests that they are due to the Norwegian economist Ragnar Frisch who in a 1933 article used the concepts of micro- and macrodynamics. The words microeconomics and macroeconomics were later used by the research group surrounding the Dutch economist Jan Tinbergen, who in his early work was strongly influenced by Frisch.”

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of free trade—which had a direct influence on Adam Smith—and also because in these three essays Hume articulates the key principles of the classical school of economics. As a result, his work has been the wellspring and catalyst for most debates and controversies in monetary economics to this day. His economic ideas have been incessantly pored over by academic commentators. For our purposes, it is worth picking out from this vast literature Joseph Schumpeter’s examination ([1954] 1997, 276–334) of the advances in the understanding of “value and money” during the seventeenth and eighteenth centuries. More recently Carl Wennerlind (2005) not only offered a brilliant tour of the literature but also made his own contribution by resolving one of the most contentious controversies surrounding Hume’s work—namely, whether Hume misapplied the quantity theory.

In brief, in *Of Money* Hume is credited with formulating the position that money is neutral in the long run—meaning that only the price level will be affected by changes in the quantity of money—but not in the short run. As a result, there is a time lag between an increase in the quantity of money and its effects on the price level. In *Of Interest* Hume drew from his analysis of the work of his contemporaries and predecessors the conclusion that interest rates are more a symptom of wealth than its cause, and that the rate of interest is determined by the demand for loans and the supply of savings rather than solely by changes in the quantity of money (Schumpeter, [1954] 1997: 331–32). In *Of the Balance of Trade* Hume sets the framework of the monetary approach to the balance of payments by linking the money supply, trade balance, and price level. His price-specie flow adjustment mechanism describes an automatic balance of payments adjustment process: an increase (decrease) in the money supply leads to an increase (decrease) in prices, which discourages (encourages) exports and encourages (discourages) imports, resulting in an outflow (inflow) of money that eventually decreases (increases) the price level back to its original position. There is therefore a “natural balance” of trade between nations. Hume’s automatic flow mechanism of international trade denied any need for governments to interfere with this “natural balance” and thus directly opposed the position of the mercantilists.

The above quotation of Lucas evokes three centuries of controversy among thinkers on political economy and practitioners of the modern discipline of economics. Successive theories have been developed to make sense of the ever-changing nature of the world economy; and ideology has never lain far below the surface of the resulting debates and disputes. Every time a “new” crisis shakes the world, the previously prevalent theories

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are called into question, and the old ideological battle reemerges between the partisans of laissez-faire on one side and, on the other, advocates of a “managed” economy in which fiscal and monetary policy is used to tackle economic downturns. Each cycle of controversy in economic thought generates ideas that are more or less ephemeral (depending on the timing and intensity of the next crisis) and produce illumination or obfuscation. Progress is conditional on how much economic history is remembered—while remembering also that history does not repeat itself. Most controversies can be resolved by maintaining a clear view of the distinctions between time periods—current, short, or long; or, put another way, some phenomena are valid either in the short or the long run—but not both. In this way and by keeping in mind also that the validity of new analysis is contingent on current conditions, a unified theory can be attempted.

This chapter focuses on one particular episode in the history of macroeconomic controversy—namely, how a set of economic ideas shifted the general conduct of monetary policy that had prevailed since John Hicks’s interpretation (1937) of John Maynard Keynes’s *The General Theory of Employment, Interest and Money* (1936). This “new” thinking about inflation and monetary policy reacted against the contemporary orthodoxy because the prevailing theory had proved to be unsatisfactory in analyzing the changing nature of the economy.

### KEYNES’S REVOLUTION

Keynes’s *General Theory* too had changed the way policies were conducted. It had this effect by designing a model to express “the world in which we live,” and in doing so attacked the prevailing orthodoxy—the classical theory. His perception was that “classical” economics did not provide a satisfactory interpretation of the 1920s and 1930s and therefore was unable to offer policies to cure unemployment. Keynes’s thinking was informed by his lifetime involvement in public policy debates—for him, economists should base policy advice on observed circumstances—and his experience of the events of the 1920s and 1930s. The perception of disorder and the high unemployment rates that characterized the British economy in the interwar years led Keynes to think that market forces alone were not enough to restore full employment and that state intervention was needed. This ran contrary to the principles of classical economists with their tradition of laissez-faire based on the idea that the economy was self-adjusting.

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Keynes's prescription to actively use monetary and fiscal policies to counter the cycles of recession and booms, together with his preference for discretion rather than changes in rules, initiated a revolution in economic thinking. While corresponding with George Bernard Shaw about Marx's *Das Kapital*, Keynes announced in January 1935 (1979, 42):

To understand my state of mind, however, you have to know that I believe myself to be writing a book on economic theory, which will largely revolutionize—not I suppose, at once but in the course of the next ten years—the way the world thinks about economic problems. When my new theory has been duly assimilated and mixed with politics and feelings and passions, I can't predict what the final upshot will be in its effects on action and affairs. But there will be a great change, and, in particular, the Ricardian foundations of Marxism will be knocked away.

Keynes's high expectations of the impact of his ideas in the *General Theory* were vindicated. Following the year of the book's publication and many years after that,

The discussion that went on was of two kinds, the first concerned with the relationship between Keynes's theory and orthodox theory, the second with the interpretation, internal development and presentation of Keynes's own theory. The two discourses overlap, since the question of whether the *General Theory* was a revolutionary break with classical theory or a rearrangement of its pieces concerned both critics and followers. (Skidelsky, 1992: 593–94)

Even if, according to Davidson (2007), some of his most prominent followers never actually read the book nor really comprehended it, and despite what in reality was a blurred line between the classical and Keynesian camps (as Hicks [1937: 147] pointedly remarked, most of the economists classified by Keynes as “classical” “find it hard to remember that they believed in their unregenerate days the things Mr. Keynes says they believed”), there can be no doubting the revolutionary effect that Keynes himself foresaw. Keynes's “work of genius” (Samuelson, 1946: 190) was revolutionary in linking the monetary side of the economy to the real side—output and unemployment. In other words, a core message was that “money is not neutral” (Keynes, 1933: 411).

This led to a new orthodoxy called Keynesian economics developed over the two decades following WWII. As explained by Keynes's biographer Robert Skidelsky (1992: 621):

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[T]he version of Keynesianism which came out of the debates following the publication of the *General Theory* was by no means wholly Keynes's. . . . Perhaps Joan Robinson was right to call it "bastard Keynesianism." But only in that form could the Keynesian Revolution survive and grow.

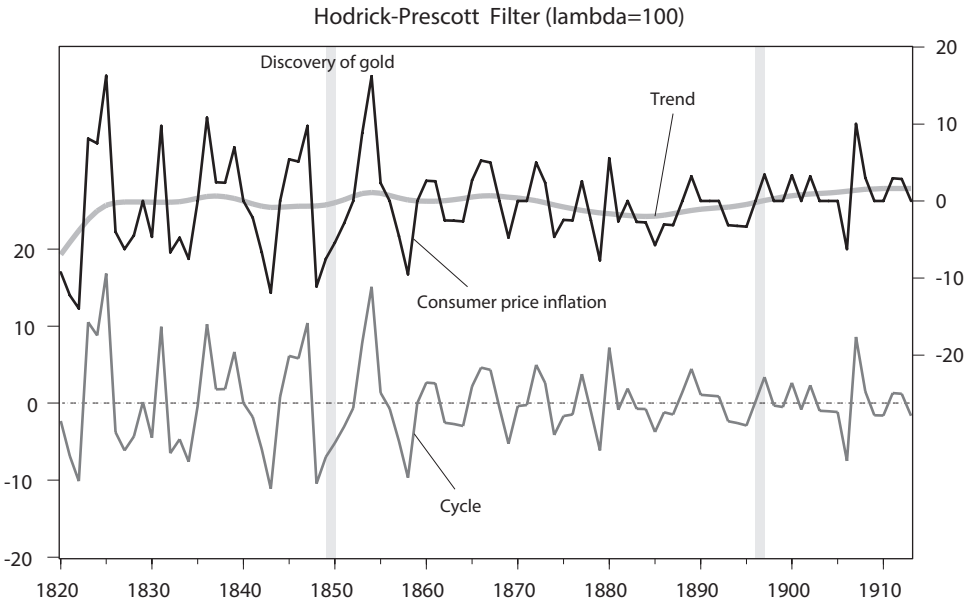
And for two postwar decades this new orthodoxy seemed to work in the main Western industrial countries: price stability was achieved in the 1950s, while the steady expansion of output continued into the 1960s. But then, in the late 1960s, prices began to rise. Keynesianism no longer appeared to offer all the answers, and was challenged by a new would-be orthodoxy—monetarism.

To understand the coming of the monetarist counterrevolution, it is first important to review why and how Keynes came to differ from the classical theory. One episode is of primary importance in this discussion: while Britain was slowly recovering from the First World War, Winston Churchill announced in the budget speech that he delivered as Chancellor of the Exchequer on April 28, 1925, the return of the pound sterling to the gold standard at its prewar exchange rate of \$4.867. Due to the war, the gold standard had been suspended in Britain and by most other members. Members were allowed to leave the gold standard in case of shocks (war, financial crises, and terms of trade), but the assumption was that when they returned to the gold standard this would be at the preshock parity (Bordo and Kydland, 1992).

The literature on the gold standard is vast and has been beautifully surveyed by scholars such as Bordo (1981), Bordo and Schwartz (1984), and Eichengreen (1995, 1996). It will suffice here to pick out points that are particularly relevant to our subject of developments in thinking about inflation and—by extension—monetary policy. The start of the gold standard in Britain has been dated either to 1717, when silver specie disappeared from circulation, or to 1821 when the Bank Restriction Act was lifted. In other industrialized countries the demonetization of silver occurred between 1870 and 1880, marking the start of the international gold standard.

The main objective of the monetary authorities was not price stability, as in today's world, but rather to preserve the convertibility of the domestic currency into gold. The movements of the price level were regulated by the total supply of gold, which determined the money supply and price level of every country participating in the system. An increase in gold production relative to output due to new discoveries or better mining techniques led,

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**Figure 1.1.** Consumer price inflation (annual percentage change), Britain, 1820–1913.  
*Source:* Calculated from Bank of England publications.

with a lag, to a rise in the money supply and prices, just as a slowing down or a decrease in the gold supply relative to output implied stable or even decreasing world prices. For instance, during the period 1879 to 1896, when there were only a few gold discoveries, average annual inflation rates (calculated using national product deflators) in Britain and the United States fell into negative territory (respectively  $-0.58$  percent and  $-1.08$  percent), while from 1897 to 1913, a time when new sources of gold were discovered in Australia, Canada, and South Africa, they rose (respectively  $0.88$  and  $1.99$  percent) (Barsky and Bradford DeLong, 1991: 816, table 1). The volatility of the price level during the period 1820–1913 is seen in figure 1.1 and in table 1.1, with high short-term volatility measured by the coefficient of variation.

To ensure convertibility, each member fixed a “rule.” In Britain the rule was set by the Bank Charter Act of 1844 (Peel’s Act), which guaranteed the equivalence between sterling and gold by maintaining a fixed par between gold reserves and note issue. All members’ central banks pegged their local currency to a fixed quantity of gold at a fixed price using gold reserves to

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TABLE 1.1  
Descriptive statistics, consumer price inflation (annual percentage change), 1820–1913.

	1820–49	1850–74	1875–96	1897–1913
Mean	-0.9516	0.5387	-1.5205	1.3286
Median	-1.0870	0.0000	-2.5000	0.0000
Maximum	16.2791	16.2162	5.5556	10.0000
Minimum	-13.9535	-9.5238	-7.6923	-6.2500
Standard deviation	7.8864	5.2279	2.9231	3.2448
Coefficient of variation	-8.2876	9.7049	-1.9224	2.4423
Observations	30	25	22	17

*Sources:* Bank of England; author's calculations.

TABLE 1.2  
Par exchange rate between the dollar and pound sterling (1870–1914; 1925–31).

	£	\$	\$/£
a. Quantity of grains of gold per unit of currency	113.00	23.22	4.867
b. Price of 1 ounce of gold	3 17s. 10 <sup>1/2</sup> d.	20.67	4.867
c. Number of grains in 1 ounce of gold	437.50	437.50	
Ounce per unit of currency (=a)/(c)	0.258	0.053	4.867

*Sources:* Bank of England; author's calculations.

stabilize gold prices in the local currency, and it was at this fixed price that their currencies were freely converted to gold. All members' currencies were linked internationally through their tie to gold. In Britain between 1870 and 1914 (and in 1925–31), one pound sterling and one dollar were respectively fixed to 113 and 23.22 grains of gold, therefore the dollar was equal to 113/23.22, or \$4.867 per pound. The price of gold was (and is) quoted in ounces, with an ounce of gold equaling 473.5 grains (table 1.2); the price of one ounce of gold was fixed respectively at £3 17s. 10<sup>1/2</sup>d. and \$20.67, this too gives the exchange rate of \$4.867 per pound.

To maintain the convertibility of the pound sterling into gold at a fixed price, the Bank of England would use its discount rate (the so-called bank rate)—raising it to prevent gold outflows and decreasing it in case of inflows, with the consequences of tightening or loosening credit accordingly, affecting demand and the price level. These changes in the bank rate would

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also influence capital flows, with higher rates reducing capital exports from London and increasing investment in London (Williams, 1963: 514). The directors of the bank based their decision on the proportion of gold reserves to liabilities (which was monitored on a daily basis), on movements of the European exchanges (because these acted as an indicator for likely reserve changes), and on the governor's discretion—which was guided by the overall economic circumstances both at home and abroad (Ferguson, 2001: 159). For the rate to be effective it had to influence market interest rates, ensuring that the bank rate “constituted the opportunity cost of funds at the margin for market participants” (Dutton, 1984: 177). The bank rate on its own seems to have had little effect on money market interest rates, as in the 1850s the Bank of England had seen its share in the financial sector considerably reduced relative to a growing number of joint stock banks. Until the 1910s, the bank influenced market rates either by exchanging bills or by borrowing from the commercial banks (Eichengreen, 1996: 29).

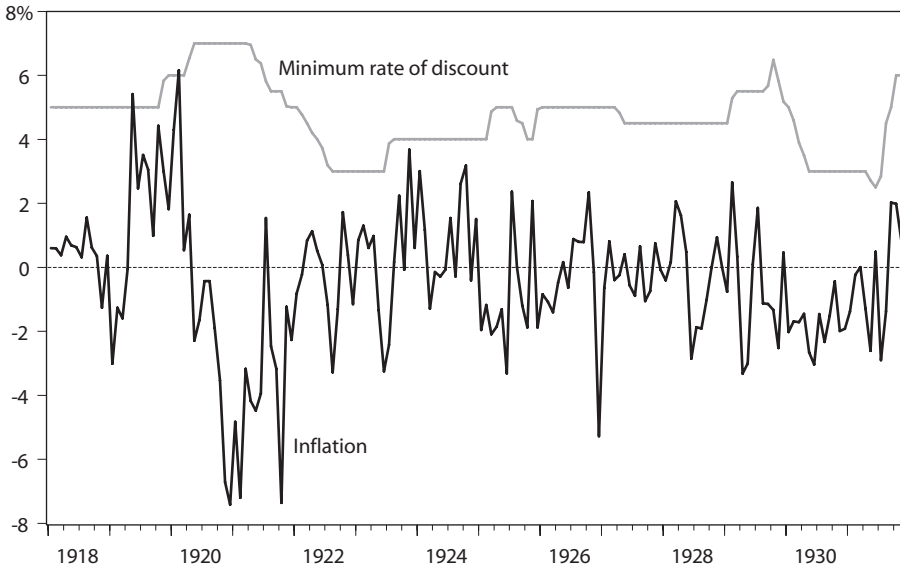
At the end of WWI, the case for an immediate return to the gold standard at the prewar parity was made by the members of the “Cunliffe” committee (appointed in January 1918 under the chairmanship of the governor of the Bank of England—Lord Cunliffe). The return to gold was seen as the way to reestablish a market framework in which British industry and finance would prosper again (Booth, 1987). The Cunliffe committee was constituted mainly of bankers, apart from the Cambridge economist Arthur Pigou (1870–1957), and its report was presented in December 1919. Their conclusions—subsequently approved by the Committee on the Currency and Bank of England in 1925, and on which Churchill based his decision—were that

[b]efore the war the country possessed a complete and effective gold standard. The provisions of the Bank Act of 1844, operated automatically to correct unfavorable exchanges and to check undue expansions of credit (Paras 2 to 7). (Sayers, 1976: 7:58, appendix)

The Cunliffe Report extended the Humeian price specie flow model. The functioning of the gold standard rested on the classical theory of automatic monetary adjustments, and such adjustments were now understood to be caused not only by the trade balance but also by fluctuations across the entire balance of payments (Eichengreen, 1995: 34–35; 1996: 26–27).

In anticipation of the return to the prewar gold parity, the Bank of England increased its discount rate from about 5 percent in 1919 to 7 percent in 1920 and 1921. Inflation fell accordingly (figure 1.2), and the exchange

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**Figure 1.2.** Minimum rate of discount versus inflation rate (percentage), 1918–30.

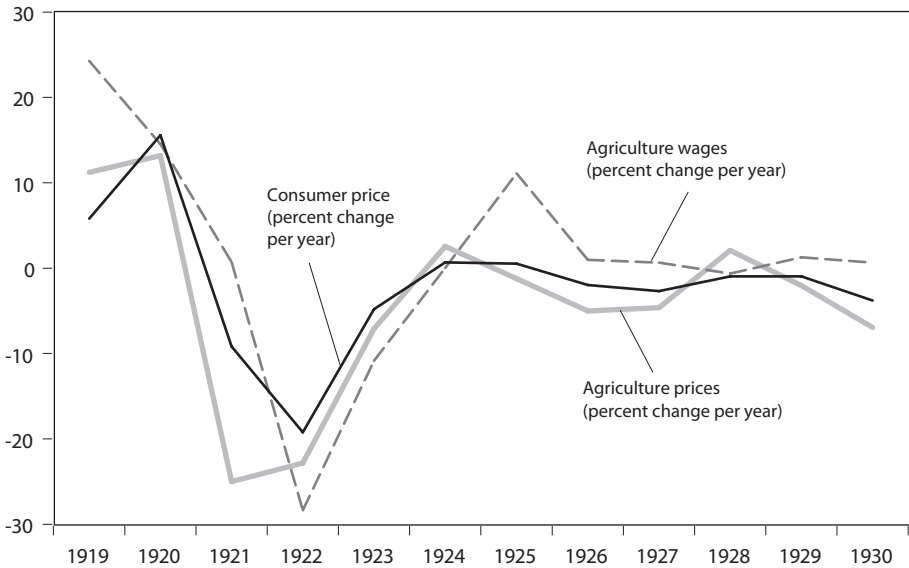
*Sources:* The minimum rate of discount is from the NBER series 13013, which runs from January 1836–December 1939, compiled from Bank of England publications. Data for 1836–1938: *Burdett's Official Intelligence*, 1894: 1771, 1935: 3286, and following editions (name changes to stock exchange official intelligence; then to the official *Stock Exchange Yearbook*). Data for 1939: Federal Reserve Board, Banking and Monetary Statistics, 1943. <http://www.nber.org/databases/macrohistory/contents/uk.html>.

*Note:* With regard to the minimum rate of discount, whenever rates changed within a month, NBER weighted the rates by the number of days each were in effect. The proxy for the rate of inflation is calculated as the percentage change in the wholesale price index compiled from *Journal of the Royal Statistical Society*, vol. 50: 727, *The Statist*, beginning 1913, vol. 28: 134, and the subsequent issues. *The Statist* compiled the data according to Augustus Sauerbeck's method. The base for July 1886–March 1895 is 69.0695. The base for April 1895–September 1904 is 67.2868. The base for October 1904–September 1909 is 75.1466. The base for October 1909–September 1914 is 81.960. The base for October 1914–April 1919 is 151.66. The base for May 1919–June 1921 is 220.79. The base for July 1921–July 1926 is 134.58.

rate appreciated—sharply correcting the inflation differential between the United States and Britain (figure 1.8).

Price adjustment was observed notably in the agricultural sector. Falls in the general level of agricultural prices and nominal wages were largely the result of monetary changes (Frankel, 1953: 35). These changes were greater

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**Figure 1.3.** Annual changes in consumer prices compared to the changes of agricultural prices and wages, 1919–30.

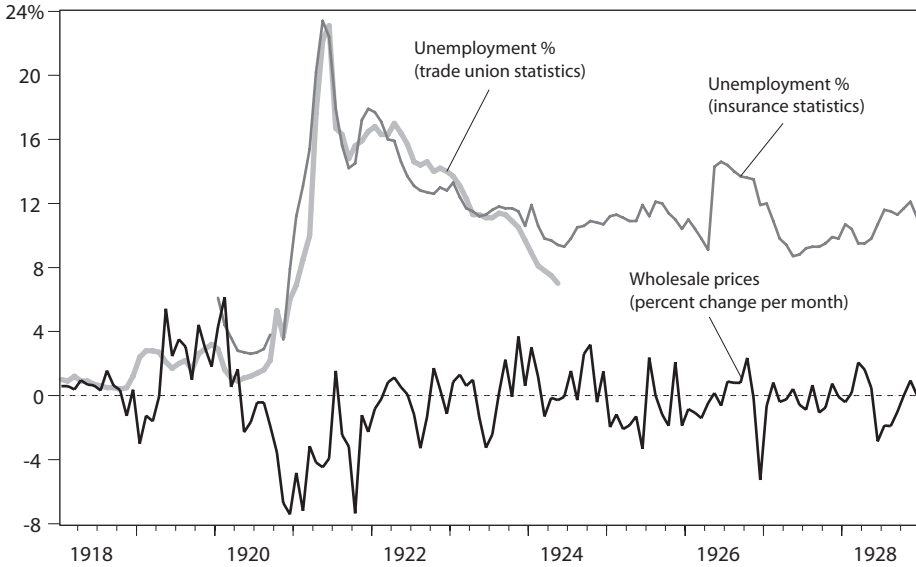
*Sources:* Consumer prices: Bank of England. Agricultural prices: Agricultural Statistics, England and Wales; Annual Abstract and Monthly Digest of Statistics; Farm Economist quoted in Frankel (1953: 40–41). Wage rates: Abstract of Labour Statistics; Farm Economist; Ministry of Agriculture and Fisheries, Report of Proceedings under the Agricultural Wages (regulation) Act 1924 (for year ending September 30, 1925), Ministry of Agriculture, press notices quoted in Frankel (1953: 40–41).

than in the overall consumer price level and were followed by a corresponding fall in wages (figure 1.3).

The unemployment rate, according to trade union statistics, rose from about 3 percent in January 1920 to a peak of 23 percent in June 1921; a similar set of data is obtained from unemployment insurance statistics (figure 1.4).

With unemployment as a top concern, the return to the gold standard was seen as a proemployment policy restoring trade and financial patterns of the prewar period. However, resumption had to wait until 1925. But this view was by now outdated, for the war had fundamentally altered financial linkages between advanced countries: most of Europe had financed war imports with dollars borrowed from the United States (inter-allied loans);

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**Figure 1.4.** Monthly unemployment percentages derived from trade union and unemployment insurance statistics and inflation rates, 1918–28.

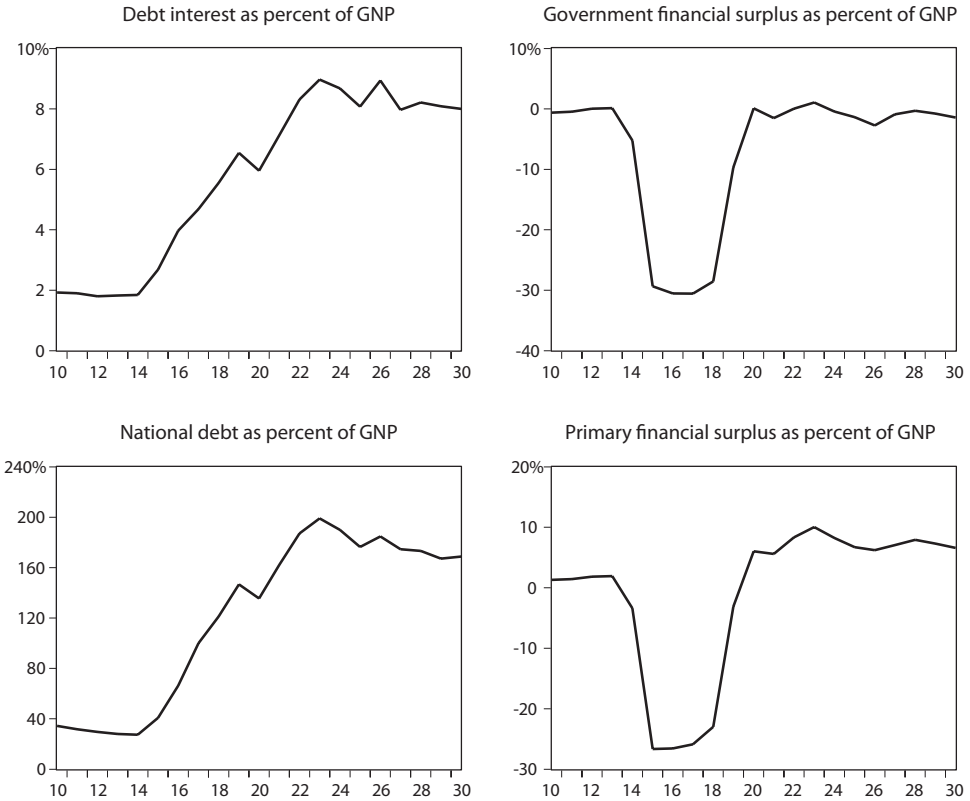
Sources: Unemployment percentages derived from Trade Union, NBER series 08002a, United Kingdom, percentage of total, monthly coverage: 01/1887–05/1924, Board of Trade, Labour Department (later changed to Ministry of Labour), Abstract of Labour Statistics of the United Kingdom, especially 21st abstract, 1919–33.

a. Unemployment percentages derived from Trade Union series 08002a are presented here as two variables: (1) original data, 1887–1924 and (2) original data, 1920–39. These data are based on returns collected by the Board of Trade and the Ministry of Labour from various trade unions that paid unemployment benefits; persons on strike, locked out persons, and the sick or superannuated are excluded.

b. The proxy for the rate of inflation is calculated as the percentage change in the wholesale price index compiled from the *Journal of the Royal Statistical Society*, vol. 50: 727, *The Statist*, beginning 1913, vol. 28: 134, and the subsequent issues. *The Statist* compiled the data according to Augustus Sauerbeck's method. The base for July 1886–March 1895 is 69.0695. The base for April 1895–September 1904 is 67.2868. The base for October 1904–September 1909 is 75.1466. The base for October 1909–September 1914 is 81.960. The base for October 1914–April 1919 is 151.66. The base for May 1919–June 1921 is 220.79. The base for July 1921–July 1926 is 134.58.

c. Insured workers unemployed, NBER series 08002a, area covered: United Kingdom, percentage of total, monthly coverage: 01/1920–09/1920, 11/1920–10/1939, Ministry of Labour, Abstract of Labour Statistics 18th and 21st. <http://www.nber.org/databases/macroeconomy/contents/uk.html>.

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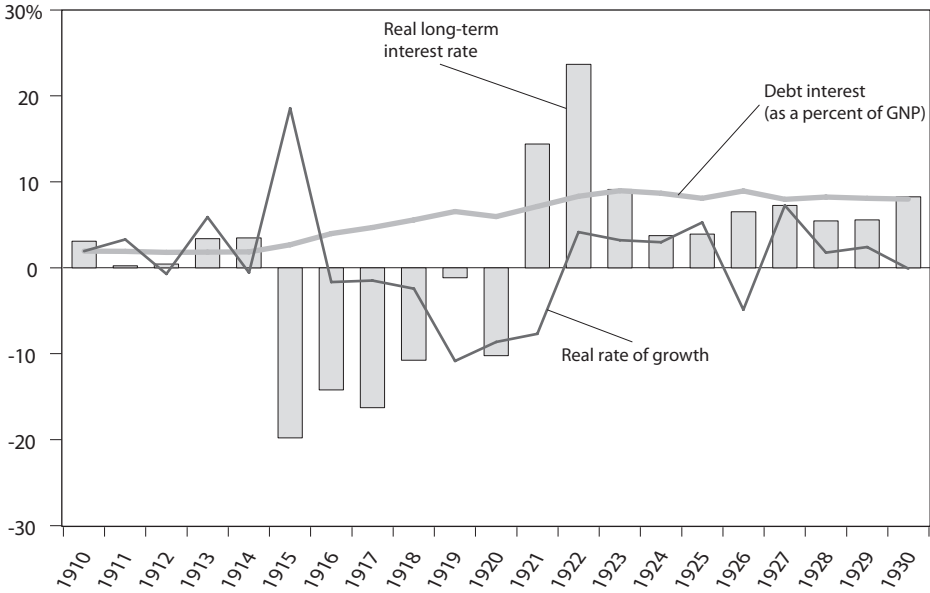


**Figure 1.5.** Trends in 1910–30.  
*Source:* Bank of England.

and the issue of war reparations (transfers in gold and in kind expected from Germany by the victors) added an extra layer of complication to the reactivation of an international financial network able to release individual countries from liquidity constraints.

To finance the war Britain had ran large budget deficits, averaging 30 percent of GNP annually between 1915 and 1918 (the primary deficit averaged about 25 percent during the same period). As a result, the national debt increased from £651 million in 1914 to £7,435 million by 1919, which, as a percentage of GNP, translated into 27.3 percent and 146.4 percent, respectively, increasing the debt service from 1.85 percent of national income to 6.54 percent in 1919 and 8 percent in 1929, representing about 40 percent of the budget (these trends are shown in figure 1.5).

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**Figure 1.6.** The debt burden.

*Source:* Bank of England.

In the 1920s the budget was kept broadly in balance—which, given the weight of post-WWI debt service entailed a substantial primary surplus. Yet the combination of deflation and low growth did not alleviate the debt burden, as seen in figure 1.6. The postwar high level of public debt made the return to the prewar parity hazardous.

Churchill did not take the decision lightly; he paid careful attention to the arguments of both advocates and critics of the move. This is demonstrated by the close consultations with his direct advisers from the Bank of England and the Treasury. He also assembled at a dinner party a group of outside experts to debate the issue, including Keynes among those opposed to the move (Sayers, 1970). Keynes was not alone in being concerned by the return to the gold standard at the prewar parity; others included the Federation of British industries and “men of influence and authority in financial matters” (Hume, 1970: 145) such as Felix Schuster, governor of the Union Bank of London, and E. H. Holden, managing director of the London, City and Midland Bank. But as many countries including the United Kingdom were faced with inflation and unemployment, and five countries—Austria,

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TABLE 1.3  
Inflation episodes.

Country	Dates	Average inflation rate (percentage per month)
Austria	October 1921–August 1922	47.1
Germany	August 1922–November 1923	322.0
Hungary	March 1923–February 1924	46.0
Poland	January 1923–January 1924	81.4
Russia	December 1921–January 1924	57.0

*Source:* Cagan (1956: 26, table 1).

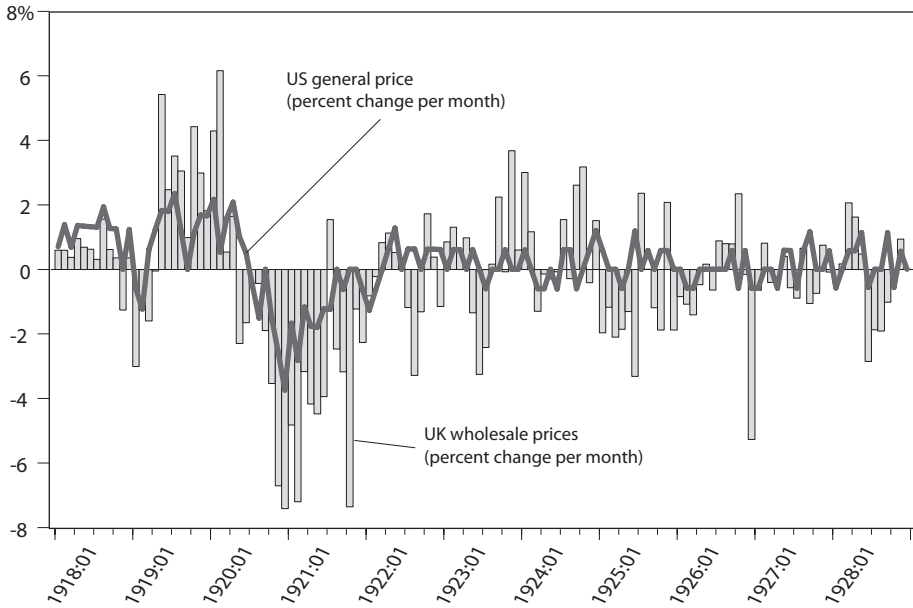
Germany, Hungary, Poland and Russia—had a monthly inflation rate close to or above 50 percent (table 1.3), the return to the gold standard came to be seen as the key to price stability and economic recovery: “[W]e simply had to go back to the gold standard” (Cassel, 1932: 659).

But despite the price adjustment that took place in 1920–21, the inflation differential that had accumulated between Britain and the United States since the war made a return to the prewar parity questionable and was attacked by Keynes in “The Economic Consequences of Mr Churchill” (1970) (figure 1.7). In 1925 the British price level was still 76 percent above the 1913 value.

Not only was the U.K. inflation rate higher than the U.S. inflation rate, but it was also more volatile, as indicated by comparing the coefficients of variation (respectively 5.75 for the United Kingdom and 2.86 for the United States) measuring short-term volatility in table 1.4.

Keynes’s argument was that as a result of labor becoming much more organized in the postwar period, reductions in wages would be strongly resisted. In the first instance, workers would resist any loss of salary; therefore, wages would not fall as rapidly as prices, and this would force enterprises to reduce their demand for labor, in turn causing a fall in output. Workers would start to negotiate only when unemployment reached a level sufficient to scare them into negotiation. For Keynes, restoring the gold standard at its prewar parity meant a reevaluation of about 10 percent, this “involves a reduction of 10 percent in the sterling receipts of our export industries” (Keynes, 1970: 27). As a result of tight monetary policy, aggregate demand would contract but wages were not going to fall at the same pace as prices. (There is some argument about whether the revaluation involved was 10 percent or 1.1 percent, according to the Chamberlain-Cradbury advisory

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**Figure 1.7.** Comparison of the U.S. and U.K. inflation rates, 1918:01–1928:12.

Sources: Bank of England and NBER.

Note: NBER series 04051; Federal Reserve Bank of New York City, letter from reports department for 1860–1933.

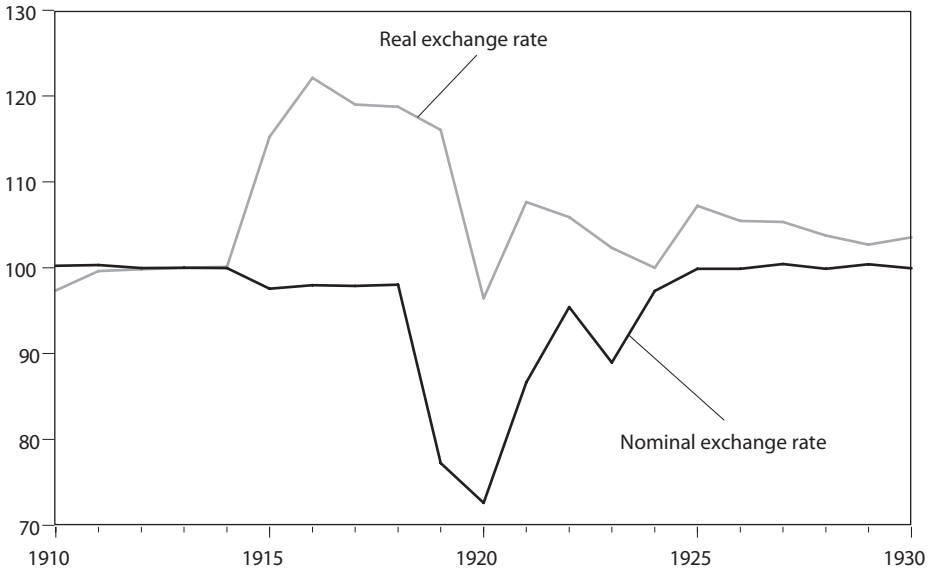
TABLE 1.4

Descriptive statistics—Comparison of U.S. and U.K. inflation rates, 1914:01–1924:12.

	1914:01–1924:12	
	U.K. wholesale price (percentage change per month)	U.S. general price (percentage change per month)
Mean	0.47	0.40
Median	0.58	0.57
Maximum	6.67	3.28
Minimum	-7.42	-3.74
Standard deviation	2.68	1.15
Coefficient of variation	5.75	2.86
Observations	132	132

Sources: Bank of England; NBER; author's calculations.

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**Figure 1.8.** U.K. pound sterling exchange rates versus U.S. dollar, 1910–30, 1913=100.  
*Source:* Friedman and Schwartz (1963: 769–71, table A-4).

committee, or 3 percent as the daily exchange rates of the time seem to reveal). In fact, there is considerable discussion about the extent of the overvaluation of sterling. Depending on which index is used (see Bordo and Bayoumi, 1996), the exchange rate had started to appreciate toward parity in 1924, and in real terms the exchange rate rose by about 7 percent between 1924 and 1925 (Bordo and Bayoumi, 1996: 16) (figure 1.8).

The question of the appropriate parity at which to restore the link with gold hardly troubled most proponents. Bordo and Kydland (1992) argue that it was considered part of the gold standard normal commitment device. Moreover, and as highlighted by Bordo and Rockoff (1996), there was a strong commitment to the rule that the so-called good housekeeping seal was correlated with easier access to the capital market, facilitating the sale of bonds and therefore the financing of the large war debt. The deflationary effect of a return to the gold standard was considered minimal as “many people . . . hoped that America’s large gold hoard would lead to a rise of prices across the Atlantic and so bring the pound sterling back to parity without a fall of prices here” (*The Economist*, June 14, 1924: 1190, quoted by Hume, 1970: 138). This did not happen, but Hume (1970: 138) argues that

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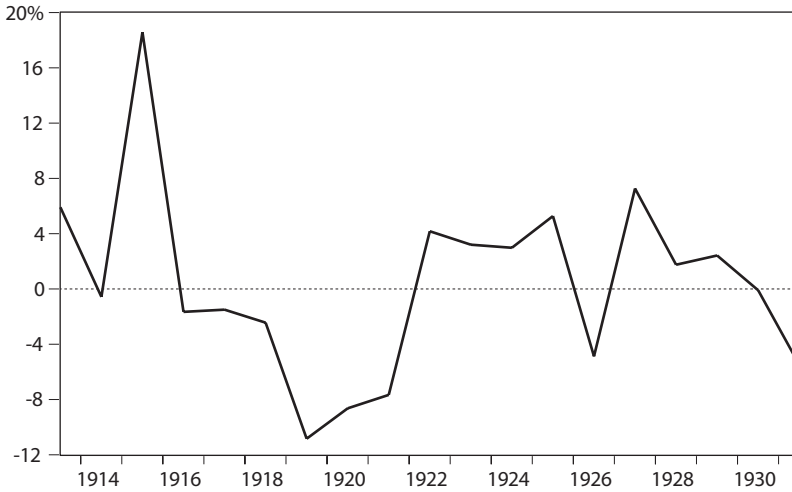
the decisive factor was the “proposition that the famous gap between US and British prices was now very small,” meaning that the adjustment would be small and that the gold standard could therefore be restored without any major deflation—contrary to the view of Keynes, who foresaw deflation as the direct consequence of a return to the gold standard at the prewar parity.

As Keynes had predicted, reducing nominal wages further proved difficult; wages decreased by 40 percent in 1920–21, but prices were still above U.S. prices, and British industries, especially the traditional export industries, suffered—resulting in lower output and job losses. This situation was aggravated by other countries’ return to the gold standard (such as France and Belgium in 1926 and 1927, respectively) at an undervalued rate.

Real GNP fell by about 5 percent year-on-year in 1926, while the unemployment rate reached 11–12 percent by 1925–26, and a general strike ensued in May 1926. The Bank of England increased its interest rate to 5 percent on March 5, 1925, in response to the Federal Reserve Bank’s rate indicating that the policy was to maintain a strong currency. But when the recession started to take effect and fearing more labor unrest, the bank rate was lowered first in August 1925 to 4.5 percent, then in October to 4 percent. Then from December 1925 to February 1930, the bank rate never decreased below 4.5 percent and much of the time was 5 percent. The recession was short-lived, confined to 1926, with real GNP picking up 7 percent in 1927, and the unemployment rate fell to about 9 percent in 1927 (figure 1.9).

For most proponents of a return to the gold standard, the problem resided in world export markets being depressed due to the lack of a stable international monetary system (Sayers, 1970: 88–91). The reasoning was that the revival of world export markets and employment would be achieved thanks to the flexibility of wages and prices; the fall in prices should have been accompanied by an equal fall in nominal wages, leaving real wages untouched as well as output and employment. The subsequent fall in aggregate demand caused prices and wages to fall by an equal amount, boosting exports and slowing down imports toward equilibrium. The former flagship export industries of the prewar period such as coal, cotton, iron, textiles, and shipbuilding failed to modernize and were continuously depressed. These sectors had already been showing signs of technological backwardness before the war. U.S. and Japanese exports had encroached into traditional British export markets in Latin America and Asia, respectively, during the war and in the postwar period of sterling overvaluation. Meanwhile, the war-induced deterioration in Britain’s net external asset position had reduced its net income from abroad by a significant amount (Morgan [1952] estimated this liquidation at £285 million, or 10 percent of the total stock, which in

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1913	5.904	1918	-2.442	1923	3.196	1928	1.750
1914	-0.581	1919	-10.845	1924	2.968	1929	2.408
1915	18.575	1920	-8.655	1925	5.263	1930	-0.112
1916	-1.675	1921	-7.682	1926	-4.881	1931	-5.493
1917	-1.503	1922	4.161	1927	7.259		

**Figure 1.9.** Real rate of growth, 1913–31.

*Source:* Bank of England.

1914 was of the same order of magnitude of British GDP), necessitating a corresponding trade improvement just to maintain current balance.

The classical gold standard of 1880 to 1914 was associated with prosperity and London’s dominance; and it was therefore seen as urgent to return to this arcadia given the chaotic economic conditions of the postwar period. This consensus among bankers failed to see that cause and effect worked the other way around and that the gold standard’s glory years were intrinsically linked to the major role played by the pound sterling, which underpinned an integrated international monetary system thanks to the sophistication of London (Sayers, 1970: 98; Marcuzzo and Rosselli, 1987: 370). The international gold standard was a British-managed standard (Williams, 1963). British monetary policy and the bank rate used to regulate the sterling exchange rate were central to the international monetary arrangement due

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to the key position held by London in world financial markets legitimized by Britain's policy of free trade. For Joan Robinson (1962: 117),

The hard-headed Classics made no bones about it. They were arguing against the narrow nationalism of Mercantilists in favour of a more far-sighted policy, but they were in favour of Free Trade because it was good for Great Britain, not because it was good for the world.

Britain was the "workshop of the world," exporting 7 percent of its national income just before the First World War, a level not seen in the postwar period (James, 2001: 12). Britain supplied its colonies and other countries with industrial goods while acquiring food and raw materials from them. Against this background, the City of London developed into a powerful international clearing house where transactions were cleared in pound sterling. Britain did not engage in accumulating large stocks of gold reserves, as would France and the United States after the war. Instead, surpluses were translated into more attractive investments and foreign loans.

Other countries had no equivalent of Britain's powerful private banking system oriented towards international finance and foreign investments. Most British savings were channeled into foreign investments. British banks operated all around the world, and the bill of London was used for financing not only British trade with the rest of the world, but third-country trade as well. Bills of exchange were the alternative to shipping gold; the bill on London became the favorite means of exchange in international payments after the Napoleonic Wars, a state of affairs supported by the City's well-organized foreign exchange market. Since the early nineteenth century, the discount and accepting houses had complemented the joint stock and private banks, reinforcing the key role of Britain in world trading relations. The City intermediated international claims and debts. A network of branches facilitated monetary circulation. Sterling was the international reserve currency, allowing the Bank of England to dictate its monetary policy to other central banks through its bank rate just as in any fixed exchange rate regime. Some countries held British treasury bills or bank deposits as international reserves in London. This was true not only of British colonies (especially India), but also of Japan and Russia. Therefore, part of the foreign assets held in London were monetary reserves of a large number of countries using sterling as a means of payment and reserve. These reserves and other foreign assets such as speculative capital could be converted into gold at all times on simple demand.

Therefore, far from being automatic, the entire system rested on central banks' discretion and international cooperation. By its nature the gold

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standard was asymmetrical, meaning that a deficit country losing gold could be forced to reduce its money supply until total depletion of its gold reserves, while a surplus country, sterilizing gold inflows, could accumulate gold without limits and therefore exhaust the gold stock. Adjustment was complicated by short-term capital movements. Speculators gambling that a deficit country would be forced either to abandon the gold standard or to devalue its currency could take their money elsewhere, exacerbating the outflow of gold reserves from the deficit country. Before the war, this asymmetry was managed by the Bank of England using the bank rate to control the sterling exchanges and indicate to other central banks and governments the action to be taken to preserve the convertibility to gold. Through the bank rate, the City of London drew on liquidity from other countries if its own funds were stretched to finance other countries and therefore to cushion the ups and downswings of economic activity. In short, international cooperation was the key to defend currencies (Eichengreen, 1995: 65): when in trouble, a weak country's currency would be rescued thanks to other central banks discounting bills and lending gold, meaning that all countries in fact had access to the full pool of gold available to the entire gold standard system.

Because the entire system was centered on the Bank of England, it had to hold enough gold to ensure convertibility. But since the bank was a private, for-profit institution (it was not nationalized before 1946), its incentive was to hold interest-bearing assets rather than barren gold (Bernanke and James, 1990: 7). As a result, the convertibility of the pound sterling was guaranteed only by a "thin film of gold" (Sayers 1957: 18, quoted in Eichengreen 1995: 49), so thin that on three occasions—during the 1890 Baring crisis, the 1906 sterling crisis, and the 1907 American financial crisis—this very convertibility was very much in doubt. In the later nineteenth century, the ratio of the Bank of England's holding of coin and bullion against the domestic money supply comprising bank deposits and notes in circulation fell below 2 percent (Eichengreen, 1995: 49, quoting Viner, 1951: 124). In 1913 the same ratio was about 3.8 percent (Morrell, 1981: 12). This "thin film of gold" guaranteed the entire system only because all other central banks had a strong interest in assisting the Bank of England in the running of the gold standard. The heyday of the gold standard therefore rested on international integration of trade and financial linkages, the mobility of labor, and international cooperation. In the interwar period, all these were gone (Eichengreen, 1995: 49–54). With the status of Britain transformed from a position of international creditor to short-term debtor, the British managed standard was dead and the system proved unsustainable.

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**Figure 1.10.** World gold production, 1913–29.

*Sources:* The sources of data for gold output are the mineral statistics publications of the U.S. Bureau of Mines (USBM) and the U.S. Geological Survey (USGS)—Minerals Yearbook (MYB) and its predecessor, Mineral Resources of the United States (MR), and Mineral Commodity Summaries (MCS) and its predecessor, Commodity Data Summaries (CDS). U.S. Geological Survey, Statistics, in T. D. Kelly and G. R. Matos, comps., “Historical Statistics for Mineral and Material Commodities in the United States: U.S. Geological Survey Data Series 140,” <http://pubs.usgs.gov/ds/2005/140/>.

*Note:* World gold production data for the years 1900–1926 are from reported estimates by Ridgeway (1929). World gold production data for the years 1927 to the most recent are from the MYB in the “Salient Gold Statistics” and “Gold: World Production by Country” tables. Updated values for world gold production for the year 1929 reflect revised estimates by the USGS gold commodity specialist for some countries.

In the interwar period, there were concerns about gold not being produced in sufficient amount to support economic activity (figure 1.10): gold production was estimated to be about two-thirds of what was necessary to support economic activity at the current price level. The danger was that an insufficient supply of money would lead to a fall in prices and of world output, bringing about borrowers’ insolvency and increasing the real value of public debt to unsustainable levels. Given such pressures, it was considered necessary to prevent government use of the printing press by discounting bills; these measures aimed at preserving price stability and the credibility

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TABLE 1.5  
Value of merchandise exports (in millions of dollars),  
world total and for selected countries.

Year	World exports	U.K.	U.S.	France	Belgium	Germany
1924	27,185	3,538	4,498	2,169	644	1,559
1927	31,378	3,451	4,759	2,164	740	2,435
Percentage of world exports						
1924	100.0	13.0	16.5	8.0	2.4	5.7
1927	100.0	11.0	15.2	6.9	2.4	7.8

*Sources:* League of Nations, Review of World Trade, 1936; Memorandum on International Trade and Balance of Payments 1913–27 and 1927–29, quoted in Sayers (1970: 94, table A).

of the gold standard sometimes were so strict that they prevented gold standard members from coming to the rescue of other members.

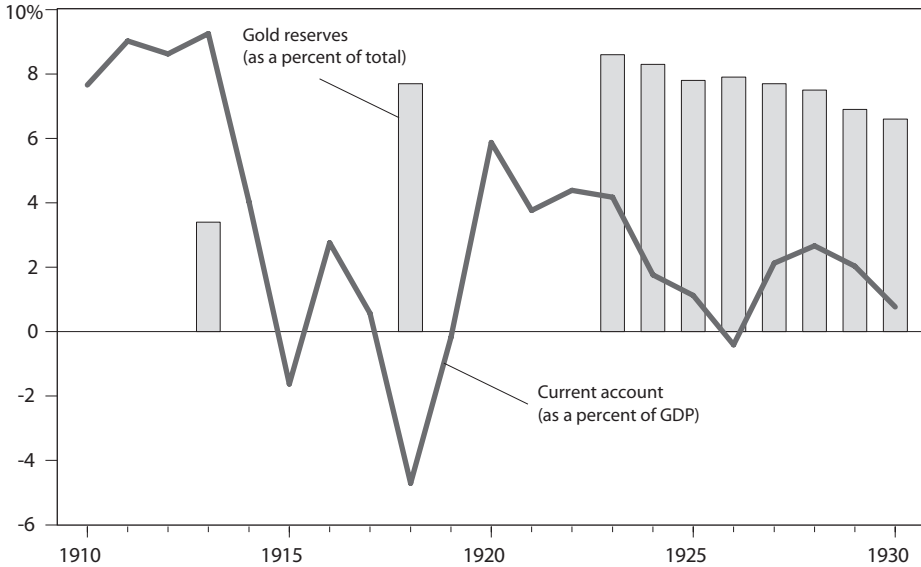
Other measures aimed at economizing gold such as excluding gold coins from circulation and supplementing reserve holdings of gold with foreign currencies. The practice of supplementing gold reserves with reserve currencies such as sterling and U.S. dollar was reinforced by the 1922 Genoa Conference (April 10–May 19) recommending the adoption of a gold exchange standard.

The overvaluation of sterling was reflected in the difficulty of maintaining London's gold reserve and the trade balance. The share of U.K. merchandise exports by value in total world exports declined from 13 percent to 11 percent between 1927 to 1929 (table 1.5 and figure 1.11).

That 2-percentage-point decline was not large enough, however, to explain the sluggish growth and the high unemployment of the late 1920s (Bordo and Bayoumi, 1996: 19). In the prewar period there was little political resistance, leaving the central bank relatively free to use the bank rate whenever necessary to preserve the gold convertibility; this was not the case after the war. While the 1919 Cunliffe Report had still presented the traditional vision of a self-governing international economy under universal gold convertibility, the expansion of the labor movement since the legalization of trade unions in the 1870s had given rise to a tension between employment and balance of payments targets.

But while in deficit countries, wages and other prices were prevented from falling sufficiently to restore external balances, nothing prevented the rise in nominal wages in surplus countries such as France and the United

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**Figure 1.11.** U.K. current account as percentage of GDP and gold reserves as percentage of total reserves, 1910–30.

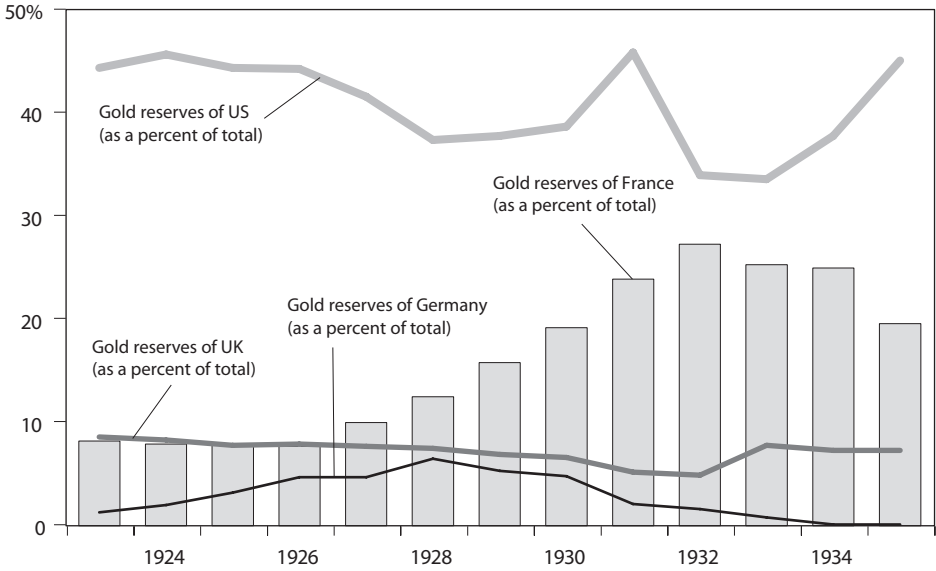
*Source:* GDP and current account figures are from Jones and Obstfeld (2001), [http://elsa.berkeley.edu/users/obstfeld/ftp/account\\_data/copyright.html](http://elsa.berkeley.edu/users/obstfeld/ftp/account_data/copyright.html).

States, and indeed they did, but despite this increase both countries remained in surplus (Eichengreen, 1995: 204–6).

Therefore while the resumption of the prewar parity played a role in the poor economic performance of Britain after 1925, the main reason lies elsewhere and has to do with fundamental flaws inherent in the gold standard system such as the distribution of gold reserves (figure 1.12). Bernanke and James (1990: 9–11) explain that both France and the United States had no incentive contrary to Britain to avoid hoarding gold. They relied on a statutory fractional reserve requirement, of at least 40 percent in the case of the Federal Reserve’s gold holdings, as opposed to a fiduciary issue. The United States and other surplus countries (especially France) kept accumulating gold, and between them held about half the world’s monetary gold in 1928 while reining in domestic prices. Persistent sterilization of their balance of payments surpluses transmitted deflationary pressures to the rest of the world (Bordo and Kydland, 1992: 34).

Summing up the recent literature on this subject (Temin, 1989; Bordo and Bayoumi, 1996; Eichengreen, 1995, 1996; Bernanke and James, 1990),

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**Figure 1.12.** Gold reserves of central banks and governments, 1923–35, percentage of total.

*Source:* Hardy (1936: 93), quoted in Eichengreen (1996: 65, Table 3.1).

returning to the gold standard itself in an environment of considerable uncertainty caused by the war and of minimal international cooperation had a strong deflationary impact. With the United States and France generating balance of payments surpluses resulting from mercantilist policies of tariff protection and sterilization of current account surpluses, the distribution of gold became increasingly uneven, and this, in turn, caused inadequate money supply.

Keynes objected to the prewar parity and the monetary policy, which he judged misguided (Keynes, 1970: 29). For Keynes if credit could have been restricted by raising the bank rate further, this policy “will be, in a sense, successful” (Keynes, 1970: 39) by bringing down monetary wages and the cost of living, hence restoring real wages to their former level—albeit at the cost of strong social inequalities. Unless American prices were going to rise or the price of gold fall, his solution was to reverse the decision to restore the gold standard at the prewar parity.

For Keynes and his followers, a “drastic remedy” was needed as Keynes wrote in “Does Unemployment Need a Drastic Remedy?” The reigning

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orthodoxy could not provide this remedy. In this paper, as in “Can Lloyd George Do It?” (1929) in advance of the *General Theory* (1936), Keynes advocated the use of public works to reduce unemployment.

Keynes in the *General Theory* was concerned to explain the realities of the British economic situation in the 1920s and the Depression in the 1930s. The classical theory framework with its monetary neutrality and its assumption of full employment was inconsistent with these events; and this required the design of a new model in which free markets were replaced with interventionist government policies. The demand primed by the pump of public money would cushion the fall in output and resulting job losses.

In the *General Theory* Keynes formalized his theory of aggregate output and employment. His analytical framework is mainly static, as his concern was to solve the main problem of the time, which was unemployment. High rates of unemployment are due to a lack of aggregate demand, defined as the sum of consumption and investment; therefore demand had to be stimulated by increasing expenditures. Say’s law does not work; supply does not create its own demand, at least not at full employment equilibrium because wages are sticky. Investment decisions are constrained by uncertainty, and this results in oversaving and thus underinvestment—a situation that could be corrected only by using public investment to fill the gap left by the lack of private investment. Fiscal policies such as cutting taxes and increasing government spending are the solution to counter a recession and a depression. Such expansionary fiscal action will expand output and therefore employment. The income of those employed in public works projects will rise—as, therefore, will their consumption expenditures, which in turn will produce a virtuous circle generating a second round of job creation.

By advocating government intervention in fiscal and more generally in monetary affairs, Keynes was breaking with the “classical” tradition. His theory was welcome because, as so beautifully put by Harry Johnson (1976), the *General Theory* offered a theory of “deep depression” (Johnson, 1976: 593) stemming from the perception of the circumstances of the depression as casting serious doubt on “the efficacy of monetary policy” (Johnson, 1976: 588). In making this pragmatic move to correct the shortcomings of accepted economic theory as laid bare by the severity of the economic crisis, Keynes drew at will on the concepts that economists had developed up to that point while at the same time upending much generally accepted economic thinking. The point that needs to be stressed in this context, however, is that what is often thought of as the Keynesian revolution in economics was a side effect of Keynes’s own main pragmatic project of applying common sense—supported by the best available tools of the economist’s

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trade—to the urgent contemporary threat not only to the material welfare of the masses but also (as Keynes saw things) to civilization itself.

This reality—that Keynes was pursuing a specific contemporary agenda more than a universal blueprint—has since been obscured from view in various ways. First, the two decades of strong growth in Western Europe and North America after the Second World War prompted a relapse into the complacency prevalent before the Great Depression that viewed actual conditions as validating economic theories (the only difference now being that the theories in question were no longer the classical framework but instead a selective formulation of Keynes’s own ideas). Second, when the next big shock to the system did materialize—in the form of the “stagflation” that followed the first oil shock of the early 1970s (showing that the supposedly alternative evils of rising prices and unemployment could perfectly well be combined)—Keynes’s revolution was championed as a panacea cure. But the inadequacies of would-be Keynesian cures as revealed by real life (an irony that Keynes himself would surely have cherished) led to a waning of the influence of Keynesianism as it had evolved by that stage—a development supported intellectually by Milton Friedman’s critique of the project of cushioning the business cycle by using fiscal policy to stimulate demand. Yet the global financial crash of 2008 sparked a new round of the veneration of Keynes, with the authority of “The Master” invoked in support of the stimulus policies adopted by the United States, the United Kingdom, and other high-income countries to combat the effects of sharp recession.<sup>2</sup>

### THE COMEBACK OF CLASSICAL PRINCIPLES

The “Keynesian revolution” turned “a theory designed to illuminate the role of money and monetary policy in a monetary economy into the dogmatic contention that money does not matter” (Johnson, 1976: 588). The monetarist counterattack against that “bastard” Keynesianism “established that monetary policy can do something about inflation and that central banks can reasonably be held accountable for controlling inflation” (Woodford, 2007: 3).

This result did not materialize overnight. After the Second World War and in the heyday of the new Keynesian thinking, central bankers and what might be called the economic policy community more generally took years

<sup>2</sup> See Skidelsky (2009).

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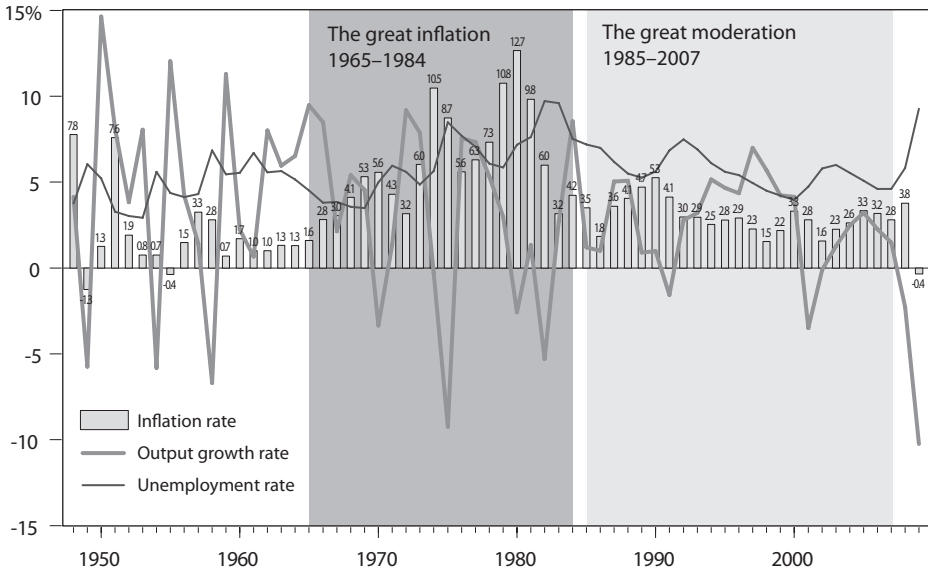
to come around to the view that price stability was a worthy objective. Policymakers were slow in particular to learn how to conduct policy under the new monetary regime that succeeded the eras of the gold standard, which ended in 1931 when Britain left the standard, and of Bretton Woods. Arthur Burns, for example, who headed the Federal Reserve from 1970 to 1978, was skeptical about the role of monetary policy in stopping inflation (Goodfriend, 2007: 50). On this view, higher output and employment were associated with expansionary monetary policy and moderate inflation was merely a price to be paid for higher employment.

The United States emerged from Second World War as the preeminent world power, and the dollar became the main international reserve currency—formally linked to gold until 1971. The shift at that point to fully fiat money and floating exchange rates was accompanied by high inflation and economic dislocation. Four periods can be distinguished between 1948 and 2009 (figure 1.13):

- 1948–64: the period of postwar prosperity when the average annual rates of inflation, output, and unemployment were, respectively, 1.9 percent, 4.3 percent, and 4.9 percent.
- 1965–84: what became known as the Great Inflation when annual inflation, output growth, and unemployment rates averaged about 6.1 percent, 2.9 percent, and 6.1 percent. This is the period that interests us most as the high inflation rates resulted in the reduction of inflation becoming policymakers' primary concern.
- 1985–2007—the Great Moderation when annual inflation, output growth, and the unemployment rate averaged 2.9 percent, 2.2 percent, and 5.8 percent, respectively.
- The contrast with the most recent period since the financial crash of 2008 is startling. In 2008–9, the rates of inflation and unemployment averaged 1.7 percent and 7.5 percent, respectively, while output contracted in real terms by 6.3 percent. This raises the question of whether this shock could presage for the dollar's global reserve asset role what the shock of the First World War set in train for sterling.

Keynes (1919) wrote of debauching the currency (with specific reference to Bolshevik state-sponsored inflation) as the key to destroying a market economy. But there was a time when economists, including many who identified themselves strongly with Keynes, saw inflation as a necessary evil (or perhaps not even an evil at all) in the pursuit of social welfare and justice. The dominant doctrine was that inflation needed to be “traded off” against employment.

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**Figure 1.13.** U.S. annual inflation, CPI, output growth rate, industrial production index (IPI), and unemployment rate, 1948–2009.

*Sources:* The Federal Reserve System and the Bureau of Labor Statistics.

*Note:* Inflation is calculated as  $\pi_t = 100 * (\log CPI_t - \log CPI_{t-1})$

This doctrine was rooted in the empirical relation between the rate of inflation and unemployment observed by Alban Phillips (1958)—a relation that became known as the “Phillips curve.” Favoring employment, Samuelson and Solow in “Analytical Aspects of Anti-Inflation Policy” (1960) famously suggested that the Phillips curve showed clearly a trade-off between output and price stability and that this result should be taken into account when implementing monetary policy. Their view was reflected in policymakers’ standard perception during the 1960s and 1970s that there was a trade-off between inflation and unemployment (DeLong, 1997; Meltzer, 2005; Sargent, 1999; Taylor, 1997, 1998). But then inflation rose and employment on average did not increase; high inflation set in motion high wage demands and expected inflation, which in turn led to high inflation and high unemployment. These ideas contributed to the Great Inflation, where annual inflation rates rose above 10 percent in the United States and other industrialized countries in the 1970s. That experience directly supported Friedman’s conclusions by showing that, beyond the short run, any trade-off is deceptive. The way for the monetarist counterrevolution was opened.

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Independently at around the same time, Milton Friedman (1966, 1968) and Edmund Phelps (1967, 1968) contested the reasoning of Samuelson and Solow and argued that the Phillips curve was a short-term relation. In the long run there is a natural rate of unemployment defined as the rate “which has the property that it is consistent with equilibrium in the structure of real wage rates” (Friedman, 1968: 8). In other words the natural rate of unemployment is determined by supply and demand of labor at an equilibrium real wage. At that natural rate of unemployment, the so called nonaccelerating inflation rate of unemployment (NAIRU), inflation is stable. In other words, the monetary authorities can target the inflation rate at a level satisfying the price stability goal; there will be no trade-off between inflation and unemployment, and the Phillips curve is vertical. Divergences between the actual and natural rates of unemployment condition whether inflation accelerates or decelerates.

In his Presidential Address to the American Economic Association in December 1967, Friedman focused on the role of monetary policy and reached the conclusion that monetary policy does not influence real variables in the long run but may exert an influence in the short run, at the cost of accelerated inflation. This line of argument led to Friedman’s famous formulation that in the long run monetary policy determines inflation—which is essentially a monetary phenomenon.

In the short run the data show a trade-off between inflation and unemployment because the money illusion is at work. For a short time consumers take inflation as a rise in purchasing power and therefore adjust their consumption; firms that take inflation as a rise in their real returns will increase their production and hire more workers. In other words unemployment can be traded off against inflation only if higher absolute prices are mistaken for higher relative prices; this trade-off is temporary as over time economic agents realize their mistake, and when they do cut back on their consumption and production, the trade-off is revealed to be an illusion. As a result of rising inflationary expectations, policymakers hoping to exploit the temporary trade-off to reduce the actual unemployment rate below the natural rate through expansionary policy will achieve only a temporary reduction in unemployment at the risk of higher inflation in the long run.

One of the most important developments to stem from Friedman’s address and Phelps’s paper—in particular, Friedman’s insight about the possibility of a short-run economic stimulus as a result of an *unanticipated* increase in inflation—was the growing importance of the concept of expectations in economists’ thinking about inflation. For both Phelps and Friedman, people take time to anticipate inflation and to adjust their behavior

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accordingly, and this allows the monetary authorities to trade off inflation against unemployment in the short term. The introduction of the expected rate of inflation in the relationship describing the links between inflation and unemployment led to the name of “expectations-augmented Phillips curve” (Friedman, 1970b). Accordingly unemployment varies with unanticipated inflation. If inflation is not fully anticipated, meaning that actual inflation is above or below expected inflation, workers will take the increase or decrease in nominal wages as real and will be tempted to take on or refuse job offers, leading to the actual unemployment rate falling below or increasing above the natural rate. However, once workers realize that real wages have not increased or decreased, unemployment will return to the natural rate, demonstrating that there is no permanent effect of inflation on unemployment. But if people can be fooled by the monetary authorities not once but twice, this means that they are not rational since they are not learning from the past. By using the concept of rational expectations as reformulated by John Muth in 1961, both Lucas (1972) and Sargent (1973) incorporated rational expectations into the natural rate theory. This led them to conclude that monetary authorities should not try to exploit any short-run trade-off between unemployment and inflation. For since manipulating the inflation rate will now be expected, the monetary authorities’ action will be ineffective—leading to more inflation but not to more employment. Hoover (2008) quotes Abraham Lincoln’s adage to explain this result, which led to warning monetary authorities against using policies exploiting people’s misunderstanding:

You can fool some of the people all the time, and all of the people some of the time, but you cannot fool all of the people all of the time.

To be sure, adaptive expectations is not always a straightforward mechanism. Adapting requires many turns as learning from past mistakes can take some time. This is certainly the case with governments’ developing inflation policy in the 1980s and ’90s. Thomas Sargent (1999) in *The Conquest of American Inflation* tells the story of inflation policy with a model using adaptive expectations.

This study considers monetary authorities’ trajectory in learning from past policies aimed at exploiting the Phillips curve. The experience of the 1970s clearly left an impression on Paul Volcker and Alan Greenspan, whose respective tenures at the head of the U.S. Federal Reserve reflect a clear intellectual commitment to the natural rate hypothesis—leading them to pursue the lowest rate of unemployment compatible with price stability. Developments of this kind informed Timothy Cogley and Thomas

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Sargent's (2005) interpretation of the history of inflation in the United States since World War II as an interactive government learning process. The outcome of that process—as we will see in more detail in chapter 3—was that by the 1990s many central banks from high- and middle-income countries were committing themselves more strongly to the goal of price stability and adopted explicit inflation targets (Bernanke, Laubach, Mishkin, and Posen, 1999).

But if the experience in the decades since 1980 has borne out the notion that monetary policy determines inflation in the long run and influences unemployment only temporarily, the “dynamic relationship between inflation and unemployment remains a mystery” (Mankiw, 2001a: C59). For a start, although the NAIRU concept is powerful, and inflation forecasts using the empirical Phillips curve tend to be more accurate than those using other variables such as interest rates or monetary aggregates or commodity prices (Stock and Watson, 1999), estimates of the natural rate of unemployment are imprecise. Economists still have to agree on the reasons why the 1990s were characterized by low and stable unemployment and inflation rates compared to the 1970s and 1980s. In the 1980s, the U.S. natural rate of unemployment was believed to be in the range of 6–7 percent, while in the 1990s it seems to have fallen to 5 percent. There is no firm understanding of what the actual level of NAIRU is or should be at any particular time, how stable or unstable that level will be and what have been the main drivers for changing that level. The list of factors that have been propounded is long—ranging from changes in demography and labor market regulations to productivity growth. The only certainty is that these factors are outside the control of monetary policy. This uncertainty as regards the natural rate of unemployment (and also the level of potential output and hence the output gap) can lead to seriously misguided policies (Orphanides, 2003). For instance, reexamining the reasons for the 1970s stagflation, Orphanides (2004) reached the conclusion that the natural rate of unemployment was underestimated (at around 4 percent), leading to monetary policy being excessively stimulatory and therefore generating increasing inflation. However, if inflation expectations had been stable as during the 1960s, these errors would have had relatively small consequences; but in a world of “perpetual learning,” the public learned and integrated these errors into their inflation expectations and in doing so “unpegged” inflation expectations from the monetary authorities’ objectives, leading to the 1970s stagflation (Orphanides and Williams, 2005).

Taylor (1998) warned against the danger that as inflation becomes lower and more stable, econometric-based questioning of the natural rate

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hypothesis will strengthen—in turn undermining support for low inflation. Cogley and Sargent (2001) back up Taylor in cautioning policymakers to not be tempted by the mirage once again of the Phillips curve trade-off between inflation and unemployment.

The pragmatic response to the objective uncertainties in estimating NAIRU and the output gap has been for central banks to focus primarily on price stability (Mishkin, 2008a) and to communicate this paramount goal of monetary policy—and the chosen methods of pursuing that goal—as transparently and clearly as possible to the public.