

2nd edition

# **THE GOLD STANDARD IN THEORY AND HISTORY**

Edited by BARRY EICHENGREEN and MARC FLANDREAU

**Also available as a printed book**  
see title verso for ISBN details

## *The Gold Standard in Theory and History*

The revised edition of this acclaimed book provides a comprehensive analysis of the theory and history of the gold standard. It contains six new essays drawing on the latest research to provide a framework for contemporary debates about the gold standard. New topics include:

Applications to the gold standard of the post-1990 literature on exchange-rate target zones

The significance of the gold standard in the European Monetary Union debate

*The Gold Standard in Theory and History* will be an invaluable resource for students of macroeconomics, international economics and economic history at all levels.

**Barry Eichengreen** is John L. Simpson Professor of Economics and Political Science at the University of California, Berkeley. He has written books on a wide variety of economics subjects. **Marc Flandreau** is a researcher at the Centre National Recherche Scientifique in Paris, and an associate researcher at the Observatoire Français des Conjonctures Economiques, Paris. He is a specialist in the theory and history of the international monetary system.

# ***THE GOLD STANDARD IN THEORY AND HISTORY***

**Second Edition**

*Edited by*

***Barry Eichengreen and  
Marc Flandreau***



*London and New York*

First published in 1985 by  
Methuen Inc  
29 West 35th Street, New York, NY 10001

This edition published in the Taylor & Francis e-Library, 2005.

“To purchase your own copy of this or any of Taylor & Francis or Routledge’s collection of thousands of eBooks please go to  
[www.eBookstore.tandf.co.uk](http://www.eBookstore.tandf.co.uk).”

Second edition published 1997  
by Routledge  
11 New Fetter Lane, London EC4P 4EE

Simultaneously published in the USA and Canada  
by Routledge  
29 West 35th Street, New York, NY 10001

© 1997 Barry Eichengreen and Marc Flandreau

All rights reserved. No part of this book may be reprinted or reproduced or utilized in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

*British Library Cataloguing in Publication Data*  
A catalogue record for this book is available from the British Library

*Library of Congress Cataloging in Publication Data*  
A catalogue record for this book has been requested

ISBN 0-203-97887-0 Master e-book ISBN

ISBN 0-415-15060-4 (hbk)  
0-415-15061-2 (pbk)

*For Michelle, pour Mathilde*

# *Contents*

Preface and Acknowledgements	vii
1 Editors' introduction <b>Barry Eichengreen</b> <b>Marc Flandreau</b>	1
<b>Part I The gold standard in theory</b>	<b>22</b>
2 On the balance of trade <b>David Hume</b>	24
3 The working of the prewar gold standard <b>P.B.Whale</b>	31
4 How the gold standard worked, 1880–1913 <b>Donald N.McCloskey and J.Richard Zecher</b>	40
5 A portfolio-balance model of the gold standard <b>Trevor J.O.Dick and John E.Floyd</b>	54
6 The gold standard as a rule <b>Michael D.Bordo and Finn E.Kydland</b>	70
<b>Part II The gold standard in history</b>	<b>93</b>
7 The significance of the gold points <b>John Maynard Keynes</b>	95
8 The myth and realities of the so-called gold standard <b>Robert Triffin</b>	101
9 Notes on the working of the gold standard before 1914 <b>A.G.Ford</b>	116
10 The gold standard since Alec Ford <b>Barry Eichengreen</b>	135
11 The dynamics of international monetary systems: international and domestic factors in the rise, reign, and demise of the classical gold standard <b>Jeffrey A.Frieden</b>	150

<b>Part III The interwar gold exchange standard</b>	<b>164</b>
<b>12</b> First interim report <b>Cunliffe Committee on Currency and Foreign Exchange after the War</b>	<b>166</b>
<b>13</b> Report <b>Macnillan Committee on Finance and Industry</b>	<b>177</b>
<b>14</b> The gold exchange standard <b>Ragnar Nurkse</b>	<b>188</b>
<b>Part IV Bretton Woods and after</b>	<b>207</b>
<b>15</b> The gold-dollar system: conditions of equilibrium and the price of gold <b>Milton Gilbert</b>	<b>209</b>
<b>16</b> The Bretton Woods system: paradise lost? <b>Barry Eichengreen</b>	<b>224</b>
Further reading	<b>235</b>
Index	<b>239</b>

## *Preface and Acknowledgements*

This is the second edition of *The Gold Standard in Theory and History*, revised after an interval of twelve years. In addition to comprehensively revising the editors' introduction, we have recast the table of contents, dropping three chapters from the first edition and adding six new ones.

The editors and publisher would like to thank the following for permission to reproduce copyright material.

P.B.Whale and Tieto Limited, [chapter 3](#); Donald N.McCloskey and J. Richard Zecher, [chapter 4](#), which first appeared in Jacob A.Frenkel and Harry G.Johnson (eds), *The Monetary Approach to the Balance of Payments* (George Allen & Unwin); Trevor Dick, John Floyd and Academic Press, [chapter 5](#), which first appeared in *Explorations in Economic History*, April 1991; Michael D.Bordo, Finn Kydland and Academic Press, [chapter 6](#), which first appeared in *Explorations in Economic History*, October 1995; The Royal Economic Society, [chapter 7](#), which first appeared in *The Treatise on Money* (Macmillan) and was republished as volume 6 of *The Collected Writings of John Maynard Keynes* (Cambridge University Press); Robert Triffin, [chapter 8](#), from *Our International Monetary System: Yesterday, Today and Tomorrow* by Robert Triffin, copyright 1968 by Random House, Inc., reprinted by permission of Random House, Inc.; A. G.Ford, [chapter 9](#), originally printed in *Oxford Economic Papers*, February 1960, reprinted by permission of Oxford University Press; Barry Eichengreen and Cambridge University Press, [chapter 10](#), which originally appeared in Steven Broadberry and N.F.R.Crafts, *Britain in the International Economy, 1870–1939* (Cambridge University Press); Jeffry A. Frieden and Westview Press, [chapter 11](#), which originally appeared in Jack Snyder and Robert Jervis, *Coping with Complexity in the International System* (Westview Press); [chapter 15](#) first appeared in Milton Gilbert, 'The Gold-Dollar System: Conditions of Equilibrium and the Price of Gold', *Essays in International Finance*, No. 70, November 1968, copyright 1968, reprinted by permission of the International Finance Section, Department of Economics, Princeton University; Barry Eichengreen and the Association d'économie financière, [chapter 16](#), which originally appeared (in French) in *Bretton Woods: Mélanges pour un Cinquantenaire* (Association d'économie financière).



*Editors' introduction**Barry Eichengreen and Marc Flandreau*

The financial globalization that followed the collapse of the Bretton Woods System opened a new chapter in the history of international monetary relations. The founding fathers of Bretton Woods—the eminent British economist John Maynard Keynes and US Treasury official Harry Dexter White prominent among them—sought to create a more perfect international monetary order conducive to financial stability and economic growth. Their system was crafted to contain destabilizing flows of ‘hot money’ and to allow governments to adjust policy to domestic conditions. For a few years it seemed to work. But by the 1970s international financial markets had regained the upper hand. International capital flows seemingly unprecedented in scope first undermined fixed currency pegs. Following the transition to floating exchange rates, financial markets threatened officials seeking to avail themselves of their newfound freedom with capital flight, the collapse of the currency, and inflation. When US President Bill Clinton’s advisor James Carville famously remarked that if reincarnated he wanted to come back as the bond market, he was only articulating many officials’ sense of helplessness when confronted by a world of global finance.

Critics of the current system contend that the generalized float now prevailing provides neither the stability needed for effective international specialization nor the flexibility required for independent action. Turbulence and volatility in international financial markets disrupt firms’ production and investment decisions. Misaligned currencies confer arbitrary competitive advantages, evoking complaints from those who produce in competition with imports. The ‘temporary’ trade restraints adopted in response are not easily removed once the exchange-rate fluctuation is reversed.

Dissatisfaction with current arrangements naturally prompts proposals for reform. Virtually all such proposals seek to limit exchange-rate variability by establishing a system of multilateral currency bands (or their variants: crawling pegs and target zones).<sup>1</sup> The member states of the European Union, among whom economic integration is particularly close, have established the European Monetary System (EMS), a multilateral exchange-rate grid, to limit the variability of their currencies. Countries as diverse as Finland, Sweden, Mexico, Argentina, and Estonia have pegged their exchange rates to the currencies of major trading partners for various periods of time.

But the decision to peg the exchange rate is easier to issue than to enforce. In 1992–3, the European Monetary System erupted in a crisis that expelled two major participants, Italy and the United Kingdom, from its Exchange Rate Mechanism and forced the remaining countries to widen their fluctuation bands from  $2\frac{1}{4}$  to 15 per cent. The Mexican policy of pegging the peso to the dollar came asunder in 1994, when an attempt to realign led to a full-blown panic and financial collapse.

The implication is that pegging the exchange rate has become exceedingly difficult—some would say impossible for any length of time—in today’s world of liquid financial markets and quicksilver capital flows. The resources commanded by currency traders far exceed the reserves of central banks. By forcing

governments seeking to defend the currency to raise interest rates to politically insupportable levels, the markets have the capacity to demolish the peg at any time.

Things may have been different under the Bretton Woods System of pegged-but-adjustable exchange rates, but this was because controls limited international capital movements, sheltering currencies from market pressures. In today's globalized capital markets, where capital controls have become exceedingly expensive to enforce, countries will inevitably gravitate toward greater exchange-rate flexibility.

The gold standard is the obvious challenge to this conventional wisdom. When it prevailed, currencies were successfully pegged against one another despite the presence of open capital markets.<sup>2</sup> International financial transactions were unrestricted, and foreign lending and borrowing, as a share of global GNP, reached even higher levels than today.<sup>3</sup> Yet exchange rates were stabilized within 1 per cent bands for extended periods, a record of stability that remains unparalleled even today.

Popular images of the gold standard reflect present problems as much as past realities. When the first edition of this book appeared a dozen years ago, the appeal of the gold standard was its association with price stability. Countries were just emerging from the high inflation of the 1970s. The fact that prices had been little different in 1870 and 1913 recommended the system to those who valued price stability. In the course of the last ten years, inflation was brought under better control, and its threat was superseded in the eyes of many by the problem of exchange-rate instability. Correspondingly, the appeal of the gold standard today is as a mechanism for stabilizing exchange rates and smoothing the balance-of-payments adjustment process.

In the textbook story, the gold standard worked smoothly because it was automatic. Each country's money supply was linked to its gold reserves, and balance-of-payments adjustment was accomplished by international shipments of precious metal. Each country being subject to the same gold standard discipline, the system brought about a *de facto* harmonization of policies and an admirable degree of exchange-rate stability.

Unfortunately, this vision of the gold standard, like the unicorn in James Thurber's garden, is a mythical beast. Far from the normal state of affairs prior to the twentieth century, the gold standard prevailed on a global scale for barely a third of a century. The experience of the industrial economies was more satisfactory than that of countries specializing in the production of primary products; international creditors had happier experiences than debtors. The gold standard did not prevent the international transmission of financial crises, nor did it preclude suspensions of convertibility. Discretionary actions by national authorities featured prominently in the gold standard's operation in both normal periods and times of crisis.

If we reject the gold standard myth, we must then come to terms with the reality. This is an enterprise to which scholars from a number of different disciplines can contribute. In the work of economists we find models of the gold standard as a self-equilibrating system of markets. One class of models focuses on the mechanisms by which balance-of-payments equilibrium and exchange-rate stability were maintained. Another analyzes how deflation stimulated mining activity and augmented the supply of monetary gold, stabilizing the price level. Such models are useful for checking the internal consistency of accounts of the operation of the monetary system, but by their stylized nature they abstract from important aspects of its structure.

In the work of historians we find detailed studies of particular aspects of that structure. Some consider the gold standard's impact on individual countries or on relations between them. Others focus on the role of central banks and even of particular central bankers. These studies have little in common with the gold standard myth. But while providing a wealth of institutional and historical detail on particular episodes and markets, they discourage efforts to generalize by virtue of the detailed and idiosyncratic nature of their accounts.

In work by political scientists, finally, we find attempts to explain the emergence and operation of the gold standard in terms of interest-group pressures, institutions, and international political interactions.<sup>4</sup> These are factors that make no appearance in the models of economists and play at best a subsidiary role in most historians' accounts of international monetary relations: for example, the extent of the electoral franchise, conflicts between landed and industrial interests, and management of the gold standard system by the leading commercial and financial powers.

The existence of three distinct literatures is frequently taken to indicate that our knowledge of the gold standard is incomplete. In fact, most of the elements needed to paint a complete picture are at hand. Completing it requires only that we blend the contributions of economic theorists, historians, and political scientists. Like the blind man with the elephant, students of the gold standard have gained their impressions from an awareness confined to parts of the beast. Theorists have sought to model the gold standard's operation, but only occasionally have they drawn guidance from the work of historical scholars. Historians have concentrated on particular instances of the gold standard's operation. Political scientists have downplayed the role of markets and historical happenstance in order to highlight political dynamics.

Interaction between these three sets of scholars and integration of these literatures are needed to provide fresh insights. This volume therefore brings together selections on the international gold standard from the literatures of economics, history, and political science. It is directed at students of all three disciplines in the hope that their understanding of the gold standard will be enriched and that they will acquire a new appreciation of the gains from intellectual trade.

### **The emergence of the international gold standard**

The gold standard is frequently portrayed as the normal state of affairs prior to 1913. But in fact, it prevailed on a global scale only for a third of a century, from 1880 to 1914. Prior to that, currencies were generally based on silver instead of gold or on a combination of the two metals. Britain was the principal exception, having been on a full legal gold standard from 1821 and on a *de facto* gold standard from 1717, when Sir Isaac Newton, then Master of the Mint, set too high a silver price for the gold guinea. With the Mint price of silver lower than its international market price, Britain's newly reminted full-bodied silver coins were quickly driven from circulation.

During the Napoleonic Wars, the imperatives of war finance led to inflation and suspension of convertibility. Parliament brought this episode to a close by passing a law in 1819 that required the Bank of England to make its notes redeemable in gold at the market price prevailing in 1821. This placed the Bank of England in a peculiar position, since it was still a private institution, albeit one with special privileges and obligations, including the obligation to redeem its notes for specified quantities of gold. Its position was further complicated by the Bank Charter Act of 1844, which divided the Bank into an Issue Department responsible for backing the note circulation with gold, and a Banking Department to undertake commercial activities and market intervention.

All the while, the United States and France operated bimetallic standards. Their Mints stood ready to transform specified quantities of gold or silver into coins of comparable value. In effect, these countries ran two simultaneous commodity price stabilization schemes, pegging their currencies to those of countries on both gold and silver standards, and thus implicitly pegging the gold-silver price ratio. Although the US had to adjust Mint prices of the two metals from time to time to keep both metals in circulation, this arrangement was remarkably successful at stabilizing the gold-silver price ratio at  $15\frac{1}{2}$  to 1 for more than three-quarters of a century (Flandreau 1995).

In the United States, the Coinage Act of 1792 established a Mint ratio of 15 ounces of silver to an ounce of gold, approximating the market price. But increases in Mexican and South American silver production soon caused the price of silver to fall to  $15\frac{1}{2}$  to 1. With gold undervalued at the Mint, silver was brought there to be coined, and gold was shipped abroad where its price was higher (the opposite of the effect of Isaac Newton's undervaluation of silver—cf. p. 4 above). As a result, through the first half of the 1830s the United States was effectively on a silver standard. The Coinage Act of 1834 raised the Mint ratio to 16 to 1 in an attempt to restore gold coins to circulation. Gold discoveries in California and Australia and the steady output of Russia's mines then depressed the price of gold, causing silver to be exported and gold to be coined.<sup>5</sup> The US was effectively placed on the gold standard until convertibility was suspended with the outbreak of the Civil War.

While France's experience was similar in many respects, its larger internal circulation of both gold and silver insulated it from disturbances to the availability of the two metals. The Mint ratio of  $15\frac{1}{2}$  to 1 was below the market ratio for many years after 1803, and gold was exported (in exchange for silver) until the 1840s. Once mid-century gold discoveries augmented supplies of the yellow metal, gold came to dominate the French monetary circulation. But, even at the height of the California gold rush, both gold and silver coin continued to circulate (Flandreau, 1995).

While Britain was first to adopt the gold standard, her example was not followed until the second half of the nineteenth century. Fears of inflation due to gold discoveries deterred other nations (Sayers, 1933),<sup>6</sup> and until the 1870s there did not exist a critical mass of gold standard countries to attract others to the system. Indeed, at mid-century the dominant direction of movement was away from the gold standard, not toward it. The possibility of inflation due to newly mined gold flowing into the coffers of central banks led governments to suspend gold coinage. This was the response of Belgium, Switzerland, and the Netherlands, although larger countries like France and England hesitated to take this step for fear of further destabilizing the international system.<sup>7</sup>

In the end, the anticipated inflation never materialized, due in part to the operation of the bimetallic system itself. As gold flowed toward the bimetallic countries, their silver flowed toward countries on silver standards. Thus the impact of the gold rushes in California and elsewhere on the money stocks of the bimetallic countries was minimized by the operation of this 'parachute effect'.<sup>8</sup>

By 1860 it had become clear that the gold-silver exchange rate would not be significantly displaced by discoveries in California and elsewhere; in response, Belgium and Switzerland resumed coining gold. Their resumption of bimetallism turned out to be the first step toward the creation of a global gold standard.

The expansion of Europe's trade in the 1860s heightened the attractions of exchange-rate stability. Although France's bimetallic system helped to stabilize the exchange rates linking the gold and silver blocs, a common basis for Europe's currencies would have been even better for weaving together the continent's trade. In 1867 an international conference was held in Paris for the purpose of establishing a common standard. With gold now comprising the majority of the French monetary circulation and England on the gold standard, the yellow metal was the natural focus of negotiations. The bimetallic lobby remained powerful, however, and the 1867 conference failed to overcome its opposition and agree on international action.

The outcome hoped for by many delegates, namely the establishment of an international gold standard, eventually resulted anyway from the unilateral actions of individual governments. Germany initiated the process in 1871. Although the country had previously derived some advantage from its silver standard in trade with Eastern Europe, by 1870 most of that region had suspended convertibility. The indemnity received in 1871–3 as victor in the Franco-Prussian War provided the resources needed to carry out a

currency reform. Germany established a gold-based currency unit, the mark, and used her indemnity to purchase about half of the gold needed for circulation.

The Germans sought to complete the process by selling their silver on world markets, taking advantage of bimetallic France's commitment to purchase it (and sell gold). Concerned not to aid its German rival, Paris responded by limiting silver coinage. Without France to peg the gold-silver exchange rate, the solidity of the bimetallic bloc was shattered. The members of the Latin Monetary Union (Belgium, Switzerland, Italy, and Greece, along with France), as well as smaller silver standard countries (the Netherlands, Denmark, Norway, and Sweden), followed by limiting or suspending silver coinage and shifting to gold (Flandreau, 1996b).

The more countries adopted the gold standard, the more attractive it became for the others. Gold soon became the monetary standard in virtually every European country.<sup>9</sup> The international gold standard reached across the Atlantic in 1879, when the United States, putting civil war and reconstruction behind it, restored gold convertibility, and into Asia when Japan followed. By the early 1900s most of the non-European world had gone on to gold; the principal exceptions were China, which remained on silver, portions of Latin America with silver and bimetallic standards, and bimetallic Persia (Eichengreen and Flandreau, 1996).

### **Forms of the gold standard**

There were important differences in how different countries operated their gold standards. Gold coin circulated only in France, Germany, the United States, Australia, South Africa, and Egypt. Other countries issued token coin and paper currency convertible into gold. Some countries were on full gold standards, where gold convertibility was automatic (Britain, Germany, and the United States), while others operated 'limping' gold standards, where gold convertibility was at the option of the authorities, who reserved the right to make use of the silver clause of their still officially bimetallic monetary statutes (France and Belgium).

One might also differentiate gold standards according to the 'cover system', which linked currency and coin in circulation to the gold reserve. Countries with a 'fiduciary system' allowed the authorities to issue a certain quantity of unbacked currency (the fiduciary issue), while requiring remaining currency to be fully collateralized with gold. This was the arrangement in Britain, Finland, Japan, Norway, and Russia. Countries with 'proportional systems', on the other hand, treated all currency alike but permitted the central bank to maintain a ratio of gold reserves to currency issue of less than 100 per cent.<sup>10</sup> This was the system used by Belgium, Holland, and Switzerland. Germany, Austria-Hungary, Italy, and Sweden maintained hybrid arrangements combining features of the two systems. In some countries additional flexibility was lent by permitting the note issue to exceed the legal limit upon payment of a tax by the central bank or by permitting reserves to fall below their legal minimum on the Finance Minister's authorization.

Finally, the statutes and practices governing the composition of international reserves differed across countries. In India, the Philippines, and much of Latin America, reserves took the form of claims on countries whose currencies were convertible into gold. In Russia, Japan, Austria-Hungary, Holland, Scandinavia, and the British Dominions, some but not all international reserves were held in this form. Typically, such countries maintained a portion of their reserves in British treasury bills or bank deposits in London. If their liabilities were presented for conversion, the central bank or government could convert an equivalent quantity of sterling into gold at the Bank of England. Japan, Russia, and India were the largest countries to engage in this practice; together they held nearly two-thirds of all foreign exchange reserves.

### Price performance under the gold standard

John Stuart Mill (1865) described the mechanism by which the gold standard worked to preserve price stability. He emphasized the link between money supplies and gold stocks and the tendency for the flow of newly mined gold to respond to changes in the price level. For example, as the world economy expanded and demands for money grew, downward pressure was placed on prices. With governments pegging the price of gold in terms of domestic currency, the relative prices of other commodities fell. The increase in the real price of gold then elicited additional supplies of the metal.<sup>11</sup> The larger monetary gold stock that resulted meant a larger money supply, limiting the downward pressure on prices (Barro, 1979).

Even Mill admitted that time was required for the mining response to occur: for instance, it took more than twenty years of deflation, from 1873 to 1896, before gold discoveries in the Klondike and elsewhere reversed the trend and inaugurated a period of inflation. Moreover, a number of economists emphasized the randomness of gold finds, arguing that chance discoveries dominated relative prices as a determinant of gold production. Marshall (1923) for one was dubious that long-run price stability would be provided by a system dependent on the ‘hazards of mining’.

Ultimately, this dispute over price performance can only be settled by comparisons between the gold standard and alternative monetary regimes. Bordo (1981) compared the rate of inflation, unemployment, and income growth under the gold standard and after World War II for Britain and the United States. He found that the rate of change of wholesale prices was more moderate under the gold standard.<sup>12</sup> Even the relatively low inflation rates under the gold standard can be cast in a less favorable light, however, since they result from averaging together two decades of deflation prior to 1896 with two subsequent decades of inflation.<sup>13</sup>

Some would argue that it was not inflation or deflation but their variability that complicated decision making.<sup>14</sup> Bordo (1981) therefore computed the variability of inflation under the gold standard, Bretton Woods and the post-Bretton Woods float; he concluded that it is difficult to conclude in favor of any of these monetary regimes.<sup>15</sup> In his 1993 article he extended these comparisons to seven industrial countries: again, the finding was that the standard deviation of inflation was no lower under the gold standard than in the heyday of Bretton Woods (1959–71) or in the subsequent period of floating rates.<sup>16</sup>

It might be argued that only that proportion of the variation in prices that was unpredictable is relevant for economic welfare. Had individuals been able to predict prices, they could have adapted accordingly and avoided misallocating resources. The historian’s problem then becomes to estimate predictability. Cooper (1982) attempts to infer price predictions from *ex post* real interest rates. He finds that under the gold standard *ex post* real interest rates rose during deflationary periods and fell during inflation as if individuals failed to anticipate price changes.<sup>17</sup> Callahan (1994) estimates forecasting equations for prices and compares the mean squared error of the forecast across monetary regimes. An advantage of this approach is that it considers prices directly rather than attempting to infer price forecasts from interest rates. Its weakness is that it is based on an ‘as if’ assumption; it assumes that agents behaved ‘as if’ they had knowledge of the forecasting equation. Moreover, there are innumerable plausible specifications of the forecasting equation. For all these reasons, rankings of the gold standard and alternative monetary regimes in terms of price predictability remain inconclusive.

### Exchange rates under the gold standard

In the absence of any clear-cut superiority in terms of price performance, the outstanding feature of the gold standard would seem to be the extent of exchange-rate stability. But even this generalization should be taken with a grain of salt. A non-negligible number of countries abandoned the gold standard and allowed



their currencies to depreciate between 1880 and 1914. They included Italy, Portugal, Spain, Greece, Bulgaria, Argentina, Chile, and Mexico. Exchange-rate stability did not extend to China, El Salvador, or Honduras, which remained on silver throughout the period and whose currencies fluctuated in terms of gold.

Exchange-rate adjustments were often the result of balance-of-payments crises. A country's export prices collapsed, or its capital imports dried up. As its balance of payments moved into deficit, the imminent exhaustion of its gold reserves forced the central bank to suspend gold convertibility (to abandon the policy of pegging the domestic currency price of gold). Often balance-of-payments crises were accompanied by financial crises, in which banks collapsed and stock and bond markets crashed. These panics spread contagiously across borders, transmitted at the speed of the international telegraph, provoking global financial crises in 1884, 1890, 1893, and 1907.

And yet what is striking about the gold standard is that none of the major powers was forced to depart from it for any extended period of time. This statement holds for North America, Western Europe, and Britain's overseas Dominions and Commonwealth, as well as for the Austro-Hungarian and Russian Empires after 1890. Throughout this area, exchange rates were impressively stable. Although there was no shortage of shocks to commodity and financial markets, disturbances to the balance of payments were dispatched without destabilizing exchange rates or otherwise undermining the solidity of the gold standard system.

This ease of adjustment should perhaps not be credited to the gold standard itself. It could have been nothing more than a reflection of favorable underlying conditions. In this view causality ran not from the stability of exchange rates to the relatively rapid growth of international trade and incomes; rather, the autonomous factor was industrialization, which stimulated incomes and trade, and currency stability and smooth balance-of-payments adjustment were the consequences. This could have been the case insofar as favorable underlying conditions lent countries the capacity to accommodate whatever disturbances came down the pike. In particular, the decline in spending needed to curtail the demand for imports and the fall in domestic prices needed to stimulate the demand for exports would have been relatively easy to bear when incomes were growing.

Generations of scholars have insisted that there was more to it than this. How the adjustment process worked has thus become 'the ritual question' of students of the gold standard (to quote de Cecco, 1974). Three main approaches to it can be distinguished. One emphasizes the efficiency and automaticity of the adjustment mechanism. A second portrays the gold standard as a check on inflationary government finance and ascribes exchange-rate and balance-of-payments stability to the soundness of the public finances. A third finds the key in the unique combination of policy credibility and flexibility that the gold standard allowed.

### *The efficiency view*

The traditional explanation for ease of balance-of-payments adjustment (and, by implication, for the stability of exchange rates) is the efficiency and automaticity of the adjustment mechanism. The inevitable starting point for any discussion of that mechanism is the price-specie flow model of David Hume (1752)—[chapter 2](#) of this volume. The simplest way to understand Hume's model is in terms of a stylized model of a world economy with two commodities: a consumer good and gold. Consider the effect of a disturbance to this economy, say a one-time addition to the home country's stock of gold. At initial prices, there will be an excess supply of gold and an excess demand for goods. Prices must adjust to restore equilibrium in both markets. The assumption of the price-specie flow model is that transactions occur initially among domestic

residents. As they simultaneously attempt to sell gold and purchase consumer goods, the price of goods rises (equivalently, the real price of gold falls). The price of consumer goods in terms of gold is now higher at home than abroad. Domestic residents have an incentive to obtain consumer goods from abroad where they are relatively cheap. Foreigners, for their part, have an incentive to obtain gold from the home country, where its price is low (in terms of consumer goods). A surplus of consumer goods is shipped to the home country, and a surplus of gold is shipped abroad. In the absence of adjustments on the production side (which we consider below), residents of the foreign country must reduce their spending on consumer goods to make a surplus available for export. Residents of the home country, meanwhile, increase their spending, absorbing additional imports. In terms of the external accounts, the home country runs a balance-of-payments deficit whose corollary is a loss of gold.

This description of the price-specie flow mechanism illustrates a point that is frequently overlooked or misunderstood. It demonstrates that disputes over whether balance-of-payments equilibrium is restored through adjustments in commodity markets or adjustments in gold markets are fundamentally misplaced. Adjustments in these two markets are two sides of the same coin. In a two-commodity world there exists only one relative price, so a rise in one commodity price is the same as a fall in the other. When one market clears, so must the other, as a result of Walras' law. It is not meaningful to ask whether adjustment takes place in one market or the other, or to debate whether the gold market or other markets were 'more important' to the adjustment mechanism.

Hume intended his model as an analytical device rather than a description of reality. He was aware, for example, that transactions do not occur first within and only then between nations. Arbitrage in both gold and consumer goods creates a powerful incentive for the maintenance of the international law of one price, as emphasized by McCloskey and Zecher (1982)—[chapter 4](#) of this volume. Except for tariff barriers and transport costs, there is no reason for prices to differ by wider margins across than within countries.

McCloskey and Zecher's objection has some basis in fact, as students of the gold standard have understood since the beginning of the twentieth century. The Harvard professor Frank Taussig and his students, in a series of studies published early in the century, established that relative price of home and foreign goods (the international terms of trade) rarely behaved in the manner predicted by the price-specie flow model.<sup>18</sup> Whale (1937) similarly observed that commodity-price equilibrium was maintained so continuously that few if any relative price movements could be observed during the adjustment process.

This tendency to downplay the influence of the terms of trade led commentators to stress the role of interest-rate differentials and international capital flows in the elimination of payments imbalances. Britain's Cunliffe Committee (1919), [chapter 12](#) of this volume, in recommending that the gold standard should be restored as soon as possible after World War I, described its operation in terms of a price-specie flow model extended to admit a role for interest-rate differentials and international capital flows. To understand the implications of these extensions, it is useful to repeat our previous 'thought experiment', a one-time increase in the domestic gold stock under the assumption that transactions take place first among residents of the home country.<sup>19</sup> The initial excess supply of gold now has as its counterpart an excess demand for both consumer goods and financial assets. The domestic prices of goods and securities both rise; the domestic gold price falls. Residents of the home country have an incentive to obtain their consumer goods and securities from abroad, where both are now cheap; foreigners have an analogous incentive to obtain their gold from the home country. The value of the home country's net exports of gold equals the value of its net imports of consumer goods and securities. The trade deficit no longer equals the gold outflow; now, the balance-of-payments deficit equals the international transfer of gold.<sup>20</sup> It matters little whether we describe this process in terms of price or interest-rate effects, since saying that security prices are higher at home than abroad following the gold discovery is the same as saying that interest rates are



lower at home than abroad. Capital will flow from the country where interest rates are low to where they are high, until security prices and interest rates are equalized internationally.

Early discussions of the role of capital movements in gold standard adjustment posited that this process took time. Capital flowed gradually from low- to high-interest-rate countries until the interest differential disappeared. In parallel with McCloskey and Zecher's critique of the assumption that price differentials in commodity markets were eliminated gradually, subsequent authors asked why capital should not flow with sufficient speed to eliminate the interest differential all but immediately. Dick and Floyd (1992) and Calomiris and Hubbard (1996) take this point to an extreme, arguing that interest differentials were negligible and that the quick response of capital flows played a dominant role in adjustment.

The point of this excursion through alternative models of the balance-of-payments adjustment process is that interpretations emphasizing the role of commodity prices, spending, interest rates, and capital flows are in fact compatible with one another. They simply focus on different nodes of the same interconnected markets. Some emphasize international divergences in the prices of traded goods. Others stress the parallelism in commodity prices, focusing instead on changes in spending and interest rates (Whale, 1937; Scammell, 1965; Triffin, 1968). Still others argue that arbitrage was equally prevalent in commodity and asset markets, precluding persistent divergences across countries in either prices or interest rates; they emphasize instead the importance of changes in spending (McCloskey and Zecher, 1976) or equilibrating capital flows (Dick and Floyd, 1992).

Yet these authors should be seen not as presenting incompatible models but simply as attaching different values to the same parameters. Their answers boil down to different answers to a common set of questions. How quickly did arbitrage equalize the prices of traded goods across countries? How efficient was arbitrage in financial markets? Were securities denominated in different currencies better substitutes for gold or one another? The essential point is that these are all questions of how much weight to attach to different aspects of the same adjustment process.

### *The discipline view*

Economists have long argued that the obligation to maintain convertibility served as a check on inflationary finance. The key to price and exchange-rate stability, according to this view, was that sound public finances were an integral part of the gold standard ideology. Governments ran balanced budgets, which insulated central banks from pressure to purchase government debt and inject currency and credit into the economy. Indeed, adherence to the gold standard mandated this behavior, since persistent budget deficits which led to monetization and inflation would have exhausted the central bank's reserves and forced the abandonment of gold convertibility.

In consequence, the gold standard became a signal of financial probity—a Good Housekeeping Seal of Approval. Bordo and Rockoff (1996) show that governments were charged lower interest rates by the markets when they adhered to the gold standard. This is consistent with the notion that investors were in the business of evaluating the financial integrity of governments and took gold convertibility as an important signal. But it falls short of proving that this in turn led governments to avoid deficits. The very fact that some countries (Portugal, Argentina) moved off gold suggests that the seal-of-approval mechanism worked less than perfectly.

Other authors have focused on monetary rather than fiscal discipline. In their view, whatever the behavior of the fiscal authorities, the central bank saw itself as responsible for doing what was necessary to defend its gold reserves. Central banks therefore adjusted the interest rates at which they made credit available with an eye toward the maintenance of external balance. If the exchange rate fell to the gold export point and

reserves began to decline, the central bank raised the discount rate (the rate at which it advanced money to discount houses and other financial intermediaries).<sup>21</sup> This increase in the cost of credit put upward pressure on interest rates and reduced the availability of finance economywide. It discouraged spending in interest-rate sensitive sectors, depressing inventory accumulation and fixed investment. As spending fell, the trade balance strengthened. And, as financial conditions tightened, capital flowed in from abroad, attracted by higher returns. The higher central bank discount rate thus helped the exchange rate to recover. Keynes called this practice playing by the gold standard ‘rules of the game’.<sup>22</sup>

An appeal of this account was that it could explain the great anomaly of the price-specie flow model: that gold flows on the predicted scale were rarely observed. A country experiencing a payments deficit had to adjust by cutting its spending; in the price—specie flow model, the mechanism prompting this was a gold outflow, which reduced the money supply and tightened financial conditions. But a central bank playing by the rules could produce the same effect without waiting for significant gold movements. At the first sign of gold losses, it would raise the discount rate, producing the requisite financial tightening without the need for significant gold flows.

The problem, it turned out, was that evidence of ‘rules-of-the-game’ behavior was weak. In a classic study, Bloomfield (1959) found that pre-World War I central banks violated those rules in the majority of years and countries he considered. Rather than draining liquidity from the market when their reserves declined (and augmenting it when they rose), they frequently did the opposite.

### *The modern synthesis: the gold standard as a credible target zone*

Bloomfield’s important article underscored the discretion possessed by nineteenth-century central banks. In doing so it identified a paradox: if central banks were committed to defending the gold parity, how could they at the same time behave in this way, violating the rules of the game?

The answer, modern analysts have emphasized, is that the gold standard implied not pegged exchange rates but rather a narrow band within which the exchange rate could move; and even this narrow band endowed the authorities with significant monetary autonomy. In modern terminology, the gold standard was not a system of currency pegs; it was a set of target zones.

Explaining this requires us to describe two of the gold standard’s technical features: the gold points and gold devices. The nineteenth-century gold market was highly developed, but it operated subject to transaction costs. These costs meant that exchange rates could fluctuate within narrow margins, known as the gold export and import points, without offering gold traders significant arbitrage profits. The easiest way to see this, paradoxically, is to imagine a world free of transaction costs. The Bank of England stood ready to convert a pound sterling into an ounce of (11/12 fine) gold on demand. The US Treasury, for its part, committed to paying out an ounce of gold of equal purity for \$4.86. The exchange rate between sterling and the dollar was then locked at 4.86 to one. If it fell even slightly (toward 4.85), there would be an incentive to buy gold from the Bank of England for £1, ship it to the US, sell it to the American Treasury for \$4.86, and convert those dollars into sterling on the foreign exchange market, where they now commanded more than £1 (£1.0021 to be precise). This would increase the demand for sterling and reduce the demand for dollars until equilibrium was restored. Indeed, in the absence of transactions costs in international gold markets, the response would be instantaneous, and there would be no leeway for the exchange rate to move at all.

In practice, arbitrageurs had to pay to ship gold across the Atlantic, to insure it while in transit, and to borrow the funds needed for its purchase (or forego interest earnings on bank deposits in the meantime). Due to technological progress in shipping and other markets, these expenses declined from about 2½ per cent of the value of the gold bought and sold in the 1840s to perhaps 0.5 per cent on the eve of World War

I.<sup>23</sup> Thus, the dollar/sterling exchange rate could rise or fall by at most this amount before there was an incentive to engage in arbitrage and prevent the exchange rate from moving further. These upper and lower bounds were the gold import and export points.

While the computation of transactions costs in trade in bullion is as old as international banking, gold point estimates made their official debut in September 1877, when *The Economist* began reporting them for the leading financial centers. Its figures were based on the work of Ernest Seyd, a bullion dealer who had authored a study of international financial markets (Seyd, 1868). Seyd's estimates were the basis for Morgenstern's pioneering statistical study (Morgenstern, 1959), in which he claimed that the exchange rates between the major financial centers had repeatedly strayed outside the bands defined by the gold points. This led some authors (viz. Clark, 1984) to conclude that the gold market was inefficient—that arbitrage had failed to prevent violations of the gold points. Officer (1986, 1989, 1996) explained away these anomalies by challenging Morgenstern's assumption that central banks always sold gold at the Mint price. The Bank of England, although obligated to buy gold at £3 17s 9d an ounce and to redeem its notes with gold coins whose mint price was £3 17s 10d, could also dispense worn coins that were worth significantly less than their mint price. By paying out such coin, the Bank could manipulate the gold points.<sup>24</sup> Exchange rates adjusted for these variations, according to Officer, never violated the band given by the gold points.<sup>25</sup>

The practice of paying out worn coin was an example of the so-called gold devices. In addition to paying out coin whose metallic content was eroded by wear, tear, and clipping, the central banks of countries like France and Belgium on 'limping gold standards' could also redeem their notes in depreciated silver. Thus, while exchange-rate fluctuations between the currencies of countries on full gold standards were limited by the gold import and export points, those *vis-à-vis* France and Belgium, whose central banks might pay out silver instead, were potentially not constrained to equally narrow bands.<sup>26</sup>

Let us now return to the question of how discretionary monetary policy was compatible with gold convertibility. The key, we now see, lay in the gold points and gold devices, which gave central banks room for maneuver. Governments could pursue monetary policies which caused the exchange rate to depreciate so long as the latter did not violate the gold points and threaten the central bank with reserve losses. Interestingly, monetary autonomy might be quite significant, as Keynes (1930, [Chapter 7](#) in this volume) was first to show. He provided an analysis of the tradeoff between the width of the band and the extent of monetary autonomy which uncannily anticipated Krugman's (1991) model of exchange-rate target zones and Svensson's (1994) use of it to analyze the tradeoff between exchange-rate stability and monetary independence. The Keynes-Svensson analysis showed that even a narrow band endowed the authorities with significant capacity to buffer shocks. This suggests that the gold points and gold devices, by providing macroeconomic room for maneuver, contributed importantly to the gold standard's success.

An increase in domestic credit which caused the currency to depreciate would produce the lower interest rates desired by central banks only if, of course, the exchange rate was expected to recover subsequently. Imagine that this was so. Say the exchange rate fell toward the gold export point (where domestic currency was sufficiently cheap that it was profitable to convert currency into gold, export the latter, and use it to purchase foreign exchange). As soon as the central bank began losing reserves, funds would flow in from abroad in anticipation of the profits that would accrue to investors in domestic assets once the central bank took steps to support the exchange rate. Because there was no question about the authorities' commitment to the parity, capital flowed in quickly and in significant quantities.<sup>27</sup> Interest rates tended to fall. The depreciation of the exchange rate was limited, leaving it well above the gold export point.

Thus, central banks could deviate from the 'rules' because their commitment to the maintenance of gold convertibility was credible. Although it was possible to find repeated 'violations of the rules' over periods as short as a year, over longer intervals central banks' domestic and foreign assets moved together. Central

banks possessed the capacity to breach the rules of the game in the short run, in other words, because there was no question about their obeying them in the long run.<sup>28</sup> Knowing that the authorities would ultimately take whatever steps were needed to defend convertibility, investors shifted capital toward weak-currency countries, financing their deficits even when their central banks temporarily violated the rules of the game.

The capstone of this new literature is Bordo and Kydland's (1995) synthesis of the discipline and discretion views ([Chapter 6](#) in this volume), which characterizes the gold standard as a contingent rule. In the target zone interpretation, capital flows tended to react in stabilizing ways, keeping the exchange rate within the band given by the gold points, so long as the markets were convinced of the authorities' commitment to the defense of gold convertibility. Bordo and Kydland argue that the same could even be true when governments were forced to suspend convertibility temporarily and allow the exchange rate to fall out of that band, so long as the markets were convinced that they remained committed to resuming convertibility at the previous rate once the exceptional disturbance motivating the temporary suspension had passed. So long as the markets were convinced of the government's commitment to gold convertibility, they would bid up the currency in anticipation of the eventual restoration of convertibility at the traditional parity, stabilizing the exchange rate. This mechanism only operated, of course, provided that the contingency in response to which suspension took place was exceptional and independently verifiable—a war or a natural disaster, for example—and so long as the authorities remained committed to restoring convertibility as soon as that contingency passed. But if these conditions were met, the gold standard worked as a contingent rule, to be obeyed in normal times but which could be disregarded in crises without damaging the authorities' credibility.

### **The roots of credibility**

Everything depended, then, on the credibility of the authorities' commitment to the maintenance (or restoration) of convertibility. The key to understanding how the gold standard worked, therefore, is to identify the roots of that credibility.

In the late nineteenth century, the credibility of governments' commitment to the maintenance of gold convertibility rested on foundations grounded in economics, diplomacy, politics, and ideology. That the decades leading up to 1913 comprised a period of international peace, compared to what came before and after, minimized shocks to government budgets and international payments.<sup>29</sup> The absence of a clearly articulated theory linking central bank policy to the state of the economy limited the pressure on the monetary authorities to pursue output and employment goals. The same was true of the absence of a Keynesian theory linking budget deficits to aggregate demand and the level of employment. Thus, the ideology of hard money extended to the maintenance of budget balance, limiting the scope for reckless fiscal policy to destabilize the external accounts. In the countries at the core of the system, ruling parliamentary elites held a substantial fraction of their wealth in government bonds and thus favored price stability. Those who valued other policy targets—workers concerned with unemployment, for example—rarely possessed the vote.<sup>30</sup> For all these reasons, political support for the gold standard was pervasive. Political scientists have thus come to characterize it as a 'diffuse regime' that did not rely on a formal system of rules and restraints but rather on broad-based support of the society and polity.<sup>31</sup>

Admittedly, there were always skeptics of the gold standard's merits.<sup>32</sup> Nor could ruling elites always afford to ignore potential political threats from populist and socialist forces. In France, for example, the 1878 Plan Freycinet providing for massive infrastructure investments aimed at increasing the supply of jobs in order to keep more radical French socialists at bay. It led to a deterioration in the public accounts, raising the government debt as a share of GDP from 80 to almost 100 per cent. In Germany, civil servants pressed

for increased public spending on retirement funds, and neither the government budget nor the monetary system was entirely insulated from the effects. In the United States, farmers strapped by falling agricultural prices lobbied for the restoration of free silver coinage. Their populist movement came close to electing the presidential candidate William Jennings Bryan and pushing the country off the gold standard in 1896 (Frieden, 1996, [Chapter 11](#) in this volume).

Still, in none of these countries did anti-gold standard agitation succeed. What pressure existed for the pursuit of other policy goals was exceptional and, ultimately, limited. At the gold standard's European and North American core, its political, ideological, and economic underpinnings sufficed to sustain the system. When push came to shove and the authorities in these countries had to choose between interest-rate increases to keep the gold standard from collapsing and interest-rate reductions to stimulate production, they never hesitated to opt for the former (Sayers, 1936).

The situation was different elsewhere. In Latin America, for example, credibility was less complete. Inflationist agitation among farmers, *à la* the US, combined with unstable political systems, shaky finances, and external shocks to drive governments on to depreciated paper. But the very contrast with Europe highlights what was unique and distinctive about the gold standard system. At its core—in the industrial nations of Northern Europe and their overseas dependencies—the commitment to gold convertibility remained paramount.

But, as time would show, this constellation of circumstances was unique. Neither it nor the commitment to gold would long survive the coming of the twentieth century.

### *From the prewar gold standard to the interwar gold exchange standard*

World War I, like the Napoleonic Wars a century before, threw a wrench in the works of this carefully balanced international monetary mechanism. The imperatives of war led to unbalanced budgets, export controls, and inflation incompatible with a fixed domestic currency price of gold. Virtually every country but Britain and the United States suspended the convertibility of currency into gold and placed barriers in the way of international gold shipments.<sup>33</sup> Budget deficits persisted beyond the conclusion of hostilities, although it was the financial needs of reconstruction rather than the war itself that now drove public spending. With the return to peacetime conditions, it was no longer feasible to control prices and foreign exchange transactions. Rates of inflation and currency depreciation accelerated, forcing even the UK to suspend gold convertibility.

Not until 1925 did Britain stabilize financial conditions sufficiently to restore convertibility at the prewar rate. The members of her Commonwealth and most of the smaller countries of Continental Europe followed suit. But France, Belgium, Italy, and Germany found it impossible to turn back the clock. Given the length of time that inflation had run out of control, restoring the old gold parity would have meant reducing prices by more than half (often significantly more), which was impossible economically and politically. France settled for six months of deflation before stabilizing at a devalued parity at the end of 1926. In Germany, inflation so debased the currency as to require monetary reform; the Weimar Republic established a new currency unit before restoring gold convertibility.

Superficially, normalcy had been restored by the end of 1926, with the major countries back on gold. Except for the withdrawal of gold coin from circulation (in most countries, residents had been required to turn it over to the authorities to help finance the war, and the latter were not inclined to turn it back), the system's structure had not obviously changed. But subsequent experience bore little resemblance to that under the gold standard of prewar years. Balance-of-payments adjustment was anything but smooth; discount-rate increases now threatened recession and failed to attract gold inflows.

The gold standard as an international system survived for barely five years. Starting in 1931 one country after another, beginning with the UK itself, was forced to abandon convertibility and allow its currency to float downward. By 1936 the transition to floating was complete, and the international gold standard was no more.

There is no shortage of explanations for this unsatisfactory experience. (A catalog of popular interpretations and a critique of the interwar gold standard's operation is the 1931 *Report* of Britain's Macmillan Committee—[chapter 13](#) of this volume.) One strand of thought emphasizes that the interwar system was more fragile and susceptible to shocks than its prewar predecessor. Central banks now held a substantial share of their reserves in the form of interest-bearing foreign exchange (for example, the bonds of governments whose currencies were themselves convertible, mainly sterling and the dollar). Any question about the stability of sterling or the dollar could lead to a massive liquidation of foreign reserves, as central banks scrambled to replace them with gold before suffering capital losses due to foreign devaluation. By their actions, they might cause the reserve base of the system to implode and deflationary pressure to ramify internationally.

In addition, the prewar pattern of trade relations had been shattered by the creation of new national borders in Central and Eastern Europe (due mainly to the breakup of the Austro-Hungarian Empire) and by the proliferation of tariffs, on which governments new and old relied to raise revenues. International flows of financial and physical capital did not fit together as neatly as before 1913. Before World War I, Britain, the major exporter of financial capital, was also a major exporter of capital goods. This stabilized the payments of the country at the center of the international system. When London lent abroad, the countries on the receiving end used the funds to purchase machinery, equipment, and ships from the industries of Lancashire and Clydeside, automatically balancing Britain's external accounts.

After World War I, however, Britain was no longer the preeminent lender, that role having been assumed by the United States. The borrowers no longer relied on one country for their imports of machinery and capital equipment, as members of her Commonwealth had relied on Britain before 1913. Thus, merchandise exports no longer financed foreign lending to the same extent.

While all these points are relevant, there is a tendency to exaggerate their novelty. None was really a radical departure from the prewar status quo. The practice of holding of foreign exchange reserves was widespread under the prewar gold standard (Lindert, 1969); paper currency and bank deposits already accounted for 90 per cent of the money supply before 1913, and gold only 10 per cent (Triffin, 1968). Countries other than Britain had relied heavily on import tariffs for revenue and other purposes. While London accounted for perhaps half of all overseas lending in the four decades ending in 1913, Paris, Berlin, Amsterdam, and, toward the end of the period, New York had also played significant roles. And the linkage from exports of financial capital to exports of physical capital, however important for Britain, was hardly evident in these other countries.

A second set of explanations emphasizes the decline of the international leader, or 'hegemon', Britain, and reluctant acceptance of this mantle by the United States. Keynes, that famous phrase-maker, coined the name for this phenomenon too, referring to Britain, and the Bank of England in particular, as the 'conductor of the international orchestra'. Before 1913, when credit conditions were overly lax and the Bank of England raised its rate, the impact on international financial markets was so profound that other central banks had no choice but to follow suit. This follow-the-leader behavior brought about a *de facto* harmonization of policies worldwide. In effect, the Bank used its discount rate as the conductor's baton. With British trade and finance accounting for such large shares of the respective world totals, what was good for Britannia was good for the international system.



The decline in Britain's commercial and financial leverage over the course of World War I and through the 1920s, coupled with the reluctance of the United States to accept the maestro's baton, allowed other players' eyes to wander from the podium. Central banks and governments no longer played harmoniously. The climax of this cacophony was the collapse of the gold standard in 1931.

Charles Kindleberger (1973) generalized this interpretation of the destabilizing effects of the absence of a hegemon. Before World War I, he argued, Britain had provided an open market for the distress goods of other countries. Her lending fluctuated countercyclically, rising in periods of global slowdown, falling in booms. She acted as international lender of last resort, providing capital to foreign central banks and governments when the stability of the gold standard was threatened. Between the wars, in contrast, US lending was procyclical, and her market was blockaded. Moreover, the US failed to acknowledge the need for an international lender of last resort. When financial crises engulfed the gold standard in 1931, the failure of the United States to provide international-lender-of-last-resort facilities removed the only fire extinguisher capable of dousing the flames.

It is no surprise that this interpretation was advanced by one of the leading historians of international monetary affairs after World War II, a period when the dominance of US policy was overwhelming.<sup>34</sup> But, as a matter of historical fact, it is unclear that the stabilizing influence of Britain had been so dominant prior to 1913. Often it was Britain herself that was subject to international financial strains. In 1890 she was the international borrower of last resort (obtaining support from the Bank of France and the Russian State Bank, among others) not the international lender. Often the Bank of England had to alter her discount rate to conform to international financial conditions rather than leading them.<sup>35</sup>

As these examples illustrate, international cooperation had also contributed importantly to the prewar old standard's success. Scammell (1965) speaks of the growth of an international financial fraternity which was manifested in cooperation among the central banks of the leading countries. That cooperation, while episodic, was critical in times of crisis.<sup>36</sup> But it took place only under very specific circumstances, as emphasized by Flandreau (1997). Its extension was motivated by selfish interests at least as much as by any recognition of the existence of common goals. While apparent between 1890 and 1910 (years known as 'the heyday of the international gold standard'), cooperation was much less extensive before and after.

During the interwar period, in any case, the obstacles to international cooperation were formidable. And, given the difficult financial situation bequeathed by World War I, the need for it was greater than before. Disputes over war debts and reparations, and more generally the fact that the shadow of war was never far removed, spoiled the climate for cooperation. The Bank for International Settlements, the logical vehicle for last-resort lending, was disabled by having been created to manage the transfer of German reparations. The ideological underpinnings of the prewar gold standard no longer carried the same force. Proto-Keynesian ideas surfaced in a growing number of places. Policy makers in different countries interpreted the economic malaise in different ways and prescribed different policy responses, rendering concerted international action all but impossible. Increasingly influential special interest groups emphasized conflicts between the policies needed to advance cooperation with other countries and those required to address domestic problems.

As this last point reveals, perhaps the single most important difference between the prewar and interwar standards was the credibility of the commitment to gold. Before the war, there was no question that convertibility was the preeminent goal of policy. The 1920s saw a growing consciousness of the problem of unemployment: governments and trade unions gathered and published statistics on its prevalence, many for the first time. Keynes and others articulated theories of the connections between central bank policy and the economy. Interest groups lobbied for output and employment—friendly policies. Parliamentary labor parties gave voice to those concerned with unemployment. The extension of the franchise made it costly for governments to neglect their views.

For all these reasons, when the exchange rate fell to the gold export point and a rise in interest rates was required, it was no longer clear that the central bank had political backing. This might render it reluctant to raise rates when employment was growing slowly. Capital, rather than flowing in, in anticipation of the exchange rate's subsequent recovery, might flow out, in anticipation of devaluation. The conflict between internal and external balance was heightened, and with it the dilemma facing the monetary authorities. Between 1925 and 1935, they had more occasion to demonstrate their resolve than in the four decades preceding 1913. But, in the newly politicized conditions of the interwar period, they failed the test. That failure led ultimately to the collapse of their laboriously reconstructed gold standard.

### *The Bretton Woods gold-dollar standard and after*

Thus, a variety of economic and political changes, foremost among them the declining credibility of the commitment to convertibility, had by the second half of the 1930s rendered the gold standard a thing of the past. For similar reasons, the politicization of monetary policy making and pressure for the pursuit of policy goals other than exchange-rate stability make it unlikely that anything resembling a global gold standard will be reestablished in the foreseeable future. Countries may have reformed their central bank statutes to buttress the independence of monetary policy makers, but even the most independent central banks are still accountable to a national parliament or legislature, which can pass laws limiting their autonomy and overriding their decisions. Monetary policy today is embedded in a political environment, inevitably limiting the credibility of officials' commitment to a particular target.

Despite these changes, the gold standard continues to cast a long shadow. The Bretton Woods System that governed international monetary relations for a quarter of a century after World War II is commonly referred to as a gold-dollar standard: while countries other than the US pegged their currencies to the dollar within bands roughly twice as wide as those demarcated by the old gold points, the US as the reserve-currency country continued to peg the dollar to gold. This system differed from the gold standard by the prevalence of controls on capital movements and the option countries possessed to realign, but the inspiration drawn from the gold standard was clear.<sup>37</sup> While the monetary role of gold receded with the collapse of Bretton Woods in 1971–3, as recently as 1994 the chairman of the Federal Reserve Board still cited the price of gold as one of the indicators of inflationary pressure he considered when framing monetary policy.

As noted above, a growing number of developing and semi-industrialized countries have moved toward greater exchange-rate flexibility. Only the member states of the European Union have been moving in the other direction, toward monetary union. While a monetary union which eliminates all scope for exchange-rate changes might be thought to resemble the gold standard in important respects, it is in fact very different. Monetary union eliminates not just exchange-rate variability, *a la* the gold standard, but the exchange rate itself and therefore the very issue of exchange-rate credibility.<sup>38</sup> It not only limits monetary autonomy to that consistent with keeping the exchange rate within a narrow band (like that given by the gold points); rather, in a monetary union the monetary autonomy of the constituent states is eliminated entirely.

A more germane analogy is with the currency boards of countries like Estonia, Hong Kong, Lithuania, and Argentina, under which their central banks are required, by statute or constitution, to convert the domestic currency into fixed amounts of foreign exchange, thereby pegging the exchange rate irrevocably. But countries adopting currency—board arrangements are, without exception, in extreme and exceptional circumstances. A demonstrable inability to control monetary policy, as in Argentina, or a highly unstable domestic and foreign economic environment, as in Estonia at the time of collapse of central planning, are required to justify the adoption of such extreme policies. The exceptional nature of these circumstances



suggests that 'normal' countries are generally unwilling to do the same and that countries currently operating currency boards will forsake them for more discretionary systems sometime in the future. In today's democratic societies, in other words, there is little prospect of the reestablishment of the gold standard or a gold-standard-like system, for better or for worse.

### Notes

- 1 Examples include the recommendation of the Bretton Woods Commission (1994) for closer policy coordination leading to the stabilization of exchange rates, and Williamson's (1985) blueprint for a system of exchange-rate target zones among the leading industrial countries, echoed recently in Bergsten and Henning (1996).
- 2 The basic features of a gold standard are interconvertibility between money and gold at a fixed official price and the freedom for individuals to import and export gold. An international gold standard exists when a number of countries adhere to these principles.
- 3 See Feis (1930), Fishlow (1985), and Bayoumi (1990).
- 4 The *locus classicus* of political-economy analysis of the gold standard is Polanyi (1944). For recent contributions, see in addition to the chapter by Frieden the important book by Gallarotti (1995). The resurgence of interest among political scientists in the operation of the gold standard is another of the new developments in the intervening period between the first and second editions of this book. In part, it can be understood as a product of the early 1980s literature on international regimes (Krasner, 1983).
- 5 By 1851, a silver dollar was worth 104 cents on the open market, and silver was rarely used in transactions.
- 6 One less-developed economy with pervasive public finance problems, Portugal, took advantage of the surge in gold output to reestablish gold convertibility. But given the underdeveloped finances of the Portuguese nation, it is not surprising that this country, 'first to join the gold standard' in 1854 (Reis, 1996), would also be among the first to leave it, in the 1890s.
- 7 In addition, reform was effectively opposed by bankers who derived handsome profits from gold-silver arbitrage.
- 8 The terminology is from Chevalier (1859).
- 9 The principal exceptions were Spain, Russia, and Greece. Spain, however, effectively suspended silver coinage. Russia and Greece, while formally remaining on the bimetallic standard for some time, in practice had inconvertible currencies. Austria-Hungary and Italy did not legally adopt gold convertibility but from the turn of the century pegged their currencies in terms of gold.
- 10 Although the central banks of Finland, Germany, Italy, Japan, Sweden, and even Great Britain did not have a monopoly of note issue in the final decades of the nineteenth century, in all of these countries the circulation of other bank notes was small and declining.
- 11 To put the point another way, the falling price level implied lower costs of production for the gold-mining industry. The value of its output remained unchanged, of course, since governments pegged the domestic-currency price of gold. In response, additional resources were allocated to that activity. In addition, to the extent that deflation caused the price of jewelry to fall relative to that of coin, bracelets and rings were presented at the Mint to be coined, increasing the quantity of money in circulation and moderating the downward pressure on prices.
- 12 In contrast, comparisons of per capita income growth do not suggest any obvious superiority over recent monetary arrangements; if anything, the opposite is true.
- 13 Bordo (1993) provides more comprehensive comparisons for seven countries which point to broadly similar conclusions.
- 14 Similarly, it might be argued that the operation of the monetary standard has relatively little impact on the average rate of income growth but important implications for its stability.
- 15 For Britain, Bordo finds that the standard deviation of prices was lowest under the gold standard, but for the US it was not. In both countries, rates of growth of real income were more variable under the gold standard.
- 16 The same is true of the standard deviation of output.

- 17 A limitation of this approach is that no attempt is made to correct for other factors which may have caused shifts in *ex ante* real interest rates. Barsky and DeLong (1991) estimate more sophisticated interest-rate models: they conclude that short-run price fluctuations under the gold standard were largely unpredictable, but that investors learned with time to anticipate price level trends.
- 18 See for example Taussig (1927).
- 19 As for the restrictive assumption, nothing essential depends on what is essentially an expository device.
- 20 The payments deficit is the sum of the trade deficit and the capital outflow, capital outflow being another name for domestic purchases of foreign securities.
- 21 In addition, they could alter the terms of discounting (broadening or limiting the eligibility of different classes of bills) or announce the rationing of discounts. Increasingly, central banks intervened in the market, using 'open market operations', to back up the effects of discount-rate changes (to make the rate 'effective'), selling securities and draining liquidity from the market at the same time they raised the discount rate. Often security sales were undertaken in conjunction with repurchase agreements. Some central banks like the Bank of France also intervened on the foreign exchange market. But the discount rate was the principal instrument of the Bank of England throughout the gold standard years.
- 22 His first use of the phrase may have been in 'The Economic Consequences of Mr Churchill' (1925).
- 23 Figures are from Officer (1996, p. 182). The total spread between gold points is equal to two times the figures reported here.
- 24 The degree of wear and tear had to be smaller than that required for the coins to be legal tender, which placed an upper limit on the price at which the Bank could sell gold.
- 25 Some of Seyd's formulae had acknowledged that the Bank of England was not committed to sell gold at the Mint price but only to pay out Sovereigns. But his 1868 book was published toward the end of a 20-year period during which the Bank had consistently sold gold at the Mint price, leading him to emphasize that practice.
- 26 Some central banks made only limited use of their wide fluctuation bands. For example, it was thought that the Bank of France should not more than double the size of its fluctuation band relative to that of countries on full gold standards.
- 27 Econometric evidence documenting these relationships is supplied by Olivier Jeanne (1995).
- 28 This is John Pippinger's (1984) characterization of Bank of England discount policy in this period, for which he provides econometric evidence.
- 29 Still, World War I loomed increasingly ominously on the horizon after the turn of the century, signalling clearly that this period was drawing to a close.
- 30 The exceptions, such as the United States and France, where male suffrage was universal, were also places where the operation of the gold standard was disputed and where its structure was subject to exceptional provisions.
- 31 See for example Gallarotti (1995).
- 32 The English economist Ralph Hawtrey, for example, emphasized the impact of central bank policy on output and investment. See Hawtrey (1913).
- 33 Even the British authorities used red tape and moral suasion to discourage gold exports.
- 34 To be precise, the US is credited with having stabilized the international system at the outset, notably through the extension of the Marshall Plan, before destabilizing it subsequently, through the pursuit of inadequately disciplined monetary and fiscal policies.
- 35 This was in order to render her discount rate 'effective'-that is, to keep it in sufficient touch with market rates so as to sustain a reasonable volume of business. The Bank's continual battles to render its rate effective are the subject of Sayers (1957).
- 36 As emphasized in Eichengreen (1992).
- 37 Problems with the composition and volume of reserves under the post-World War II gold-dollar standard are the subject of the chapter by Gilbert. The concluding chapter by Eichengreen emphasizes the role of capital controls.
- 38 Issues of the credibility of the European Central Bank's commitment to the pursuit of price stability will remain, of course, and with it questions about the stability of the euro *vis-à-vis* the currencies of other regions and countries.

## References

- Barro, Robert J. (1979), 'Money and the Price Level Under the Gold Standard,' *Economic Journal*, 89, 13–33.
- Barsky, Robert and J. Bradford DeLong (1991), 'Forecasting Pre-World War I Inflation: The Fisher Effect and the Gold Standard', *Quarterly Journal of Economics*, 106, 815–36.
- Bayoumi, Tamim (1990), 'Saving-Investment Correlations: Immobile Capital, Government Policy, or Endogenous Behavior?' *IMF Staff Papers*, 37, 360–87.
- Bergsten, C. Fred and C. Randall Henning (1996), *Global Economic Leadership and the Group of Seven*, Washington, DC, Institute for International Economics.
- Bloomfield, Arthur (1959), *Monetary Policy Under the International Gold Standard*, New York, Federal Reserve Bank of New York.
- Bordo, Michael D. (1981), 'The Classical Gold Standard: Some Lessons for Today', *Federal Reserve Bank of St. Louis Review*, 63 (May), 2–17.
- (1993), 'The Bretton Woods International Monetary System: A Historical Overview', in Michael D. Bordo and Barry Eichengreen (eds), *A Retrospective on the Bretton Woods System: Lessons for International Monetary Reform*, Chicago, University of Chicago Press, pp. 3–108.
- Bordo, Michael D. and Finn Kydland (1995), 'The Gold Standard as a Contingent Rule', *Explorations in Economic History*, 32, 423–64.
- Bordo, Michael D. and Hugh Rockoff (1996), 'The Gold Standard as a Good Housekeeping Seal of Approval', *Journal of Economic History*, 56(2), 389–428.
- Bretton Woods Commission (1994), *Bretton Woods: Looking to the Future*, Washington, DC, Bretton Woods Commission.
- Callahan, Colleen M. (1994), 'The Nineteenth-Century Silver Movement and Aggregate Price Uncertainty', in Thomas Weiss and Donald Schaeffer (eds), *American Economic Development in Historical Perspective*, Stanford, Stanford University Press, pp. 223–40.
- Calomiris, Charles and Glenn Hubbard (1996), 'International Adjustment under the Classical Gold Standard: Evidence for the US and Britain, 1879–1914', in Tamin Bayoumi, Barry Eichengreen, and Mark Taylor (eds), *Modern Perspectives on the Gold Standard*, Cambridge, Cambridge University Press, pp. 189–217.
- Chevalier, Michel (1859), *On the Probable Fall of Gold: The Commercial and Social Consequences which may Enue, and the Measures which it Invites, With a Foreword by Richard Cobden*, New York, D. Appleton and Company.
- Clark, T. A. (1984), 'Violations of the Gold Points, 1890–1908', *Journal of Political Economy*, 92, 791–823.
- Clarke, Stephen V. O. (1967), *Central Bank Cooperation, 1923–1931*, New York, Federal Reserve Bank of New York.
- Cooper, Richard (1982), 'The Gold Standard: Historical Facts and Future Prospects', *Brookings Papers on Economic Activity*, I, 1–45.
- De Cecco, Marcello (1974), *Money and Empire: The International Gold Standard*, London, Blackwell.
- Dick, Trevor J. O. and John Floyd (1992), *Canada and the Gold Standard: Balance of Payments Adjustment, 1871–1913*, Cambridge, Cambridge University Press.
- Dutton, John (1984), 'The Bank of England and the Rules of the Game Under the International Gold Standard: New Evidence', in Michael D. Bordo and Anna J. Schwartz (eds), *A Retrospective on the Classical Gold Standard*, Chicago, University of Chicago Press, pp. 173–202.
- Eichengreen, Barry (1992), *Golden Fetters: The Gold Standard and the Great Depression, 1919–1939*, New York, Oxford University Press.
- Eichengreen, Barry and Marc Flandreau (1996), 'The Geography of the Gold Standard', in Jorge Braga de Macedo, Barry Eichengreen, and Jaime Reis (eds), *Currency Convertibility: The Gold Standard and Beyond*, London, Routledge, pp. 113–43.
- Einzig, Paul (1962), *The History of Foreign Exchange*, London, Macmillan.
- Feis, Herbert (1930), *Europe: The World's Banker*, New Haven, Yale University Press.
- Fishlow, Albert (1985), 'Lessons from the Past: Capital Markets During the Nineteenth Century and the Inter-War Period', *International Organization*, 39, 383–439.

- Flandreau, Marc (1995), *L'or du monde: la France et la stabilité du système monétaire international, 1848–1873*, Paris, L'Harmattan.
- (1996a), 'Adjusting to the Gold Rush: Endogenous Bullion Points and the French Balance of Payments: 1846–1870', *Explorations in Economic History* 33, 417–39.
- (1996b), 'The French Crime of 1873: An Essay on the Emergence of the International Gold Standard 1870–1880', *Journal of Economic History* 56, 862–97.
- (1997), 'Central Bank Co-operation in Historical Perspective 1829–1914: A Skeptical View', *Review of Economic History* (forthcoming).
- Flood, R.P. and P.Garber (1984), 'Gold Monetization and Gold Discipline', *Journal of Political Economy*, 92(1), 90–107.
- Ford, A.G. (1962), *The Gold Standard, 1880–1913: Britain and Argentina*, London, Oxford University Press.
- Frieden, Jeffry (1996), 'The Dynamics of International Monetary Systems: International and Domestic Factors in the Rise, Reign and Demise of the Classical Gold Standard', in Jack Snyder and Robert Jervis (eds), *Coping with Complexity in the International System*, San Francisco, Westview Press, pp. 137–62.
- Gallarotti, Giulio (1995), *The Anatomy of an International Monetary Regime: The Classical Gold Standard 1880–1914*, New York, Oxford University Press.
- Gregory, T.E. (1932), *The Gold Standard and its Future*, New York, Dutton.
- Hawtrey, Ralph (1913), *Good and Bad Trade*, London, Constable.
- Jeanne, Olivier (1995), 'Monetary Policy in England 1893–1914: A Structural VAR Analysis', *Explorations in Economic History*, 32, 302–26.
- Keynes, John Maynard (1925), *The Economic Consequences of Mr Churchill*, London, Macmillan.
- (1930), *A Treatise on Money, Vol. II: The Applied Theory of Money*, London, Macmillan.
- Kindleberger, Charles (1973), *The World in Depression, 1929–1939*, Berkeley, University of California Press.
- (1985), *Keynesianism Versus Monetarism and Other Essays in Financial History*, Boston, Allen & Unwin.
- Krasner, Stephen (1983), *International Regimes*, Ithaca, Cornell University Press.
- Krugman, Paul (1991), 'Target Zones and Exchange Rate Dynamics', *Quarterly Journal of Economics*, 106, 669–82.
- Lindert, Peter B. (1969), 'Key Currencies and Gold, 1900–1913', *Princeton Studies in International Finance*, No. 24, International Finance Section, Department of Economics, Princeton University.
- McCloskey, Donald and J.Richard Zecher (1976), 'How the Gold Standard Worked 1880–1913', in Jacob Frenkel and Harry G.Johnson (eds), *The Monetary Approach to the Balance of Payments*, London, Allen & Unwin, pp. 184–208.
- (1984), 'The Success of Purchasing Power Parity: Historical Evidence and Its Implications for Macroeconomics', in Michael D.Bordo and Anna J.Schwartz (eds), *A Retrospective on the Classical Gold Standard*, Chicago, University of Chicago Press, pp. 121–72.
- Machlup, Fritz (1964), *International Payments, Debts and Gold*, New York, Charles Scribners Sons.
- Marshall, Alfred (1923), *Money, Credit and Commerce*, London, Macmillan.
- Mill, J.S. (1865), *Principles of Political Economy*, reprinted A.M.Kelly, New York, 1961.
- Morgenstern, Oskar (1959), *International Financial Transactions and Business Cycles*, Princeton, Princeton University Press.
- Officer, Lawrence H. (1986), 'The Efficiency of the Dollar-Sterling Gold Standard, 1890–1908', *Journal of Political Economy* 94, 1038–73.
- (1989), 'The Remarkable Efficiency of the Dollar-Sterling Gold Standard, 1890–1906', *Journal of Economic History*, 49, 1–41.
- (1996), *Between the Dollar-Sterling Gold Points*, Cambridge, Cambridge University Press.
- Pippinger, John (1984), 'Bank of England Operations, 1893–1913', in Michael D. Bordo and Anna Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821–1931*, Chicago, University of Chicago Press, pp. 203–33.
- Polanyi, Karl (1944), *The Great Transformation*, New York, Rinehart & Company.
- Reis, Jaime (1996), 'Portugal: First to Join the Gold Standard, 1854', in Jorge Braga de Macedo, Barry Eichengreen, and Jaime Reis (eds), *Currency Convertibility: The Gold Standard and Beyond*, London, Routledge, pp. 159–81.

- Sayers, Richard S. (1933), 'The Question of the Standard in the 1850s', *Economic History, Economic Journal Supplement*, 2, 575–601.
- (1936), *Bank of England Operations 1890–1914*, London, P.S.King.
- (1957), *Central Banking After Bagehot*, Oxford, Clarendon Press.
- Scammell, W.M. (1965), 'The Working of the Gold Standard', *Yorkshire Bulletin of Economic and Social Research*, 17, 32–45.
- Seyd, E. (1868), *Bullion and Foreign Exchanges, Theoretically and Practically Considered, Followed by a Defence of the Double Valuation*, London, Effingham Wilson.
- Svensson, Lars E.O. (1994), 'Why Exchange Rate Bands? Monetary Independence in Spite of Fixed Exchange Rates', *Journal of Monetary Economics*, 33, 157–99.
- Taussig, Frank (1927), *International Trade*, New York, Macmillan.
- Triffin, Robert (1968), *Our International Monetary System: Yesterday, Today and Tomorrow*, New York, Random House.
- Viner, Jacob (1937), *Studies in the Theory of International Trade*, New York, Harper and Row.
- Whale, P.B. (1937), 'The Working of the Prewar Gold Standard', *Economica*, 4, 18–32.
- Williamson, John (1985), *The Exchange Rate System*, Policy Analyses in International Economics No. 5, Washington, DC, Institute for International Economics, revised edn (1st edn 1983).
- Yeager, Leland B. (1969), 'Fluctuating Exchange Rates in the Nineteenth Century: The Experiences of Russia and Austria', in Robert Mundell and Alexander Swoboda (eds), *Monetary Problems of the International Economy*, Chicago, University of Chicago Press, pp. 61–89.
- (1976), *International Monetary Relations: Theory, History and Policy*, New York, Harper and Row.

# References

## 1 Editors' introduction

Barro, Robert J. (1979), 'Money and the Price Level Under the Gold Standard,' *Economic Journal*, 89, 13-33.

Barsky, Robert and J. Bradford DeLong (1991), 'Forecasting Pre-World War I Inflation: The Fisher Effect and the Gold Standard', *Quarterly Journal of Economics*, 106, 815-36.

Bayoumi, Tamim (1990), 'Saving-Investment Correlations: Immobile Capital, Government Policy, or Endogenous Behavior?' *IMF Staff Papers*, 37, 360-87.

Bergsten, C. Fred and C. Randall Henning (1996), *Global Economic Leadership and the Group of Seven*, Washington, DC, Institute for International Economics.

Bloomfield, Arthur (1959), *Monetary Policy Under the International Gold Standard*, New York, Federal Reserve Bank of New York.

Bordo, Michael D. (1981), 'The Classical Gold Standard: Some Lessons for Today', *Federal Reserve Bank of St. Louis Review*, 63 (May), 2-17.

—(1993), 'The Bretton Woods International Monetary System: A Historical Overview', in Michael D. Bordo and Barry Eichengreen (eds), *A Retrospective on the Bretton Woods System: Lessons for International Monetary Reform*, Chicago, University of Chicago Press, pp. 3-108.

Bordo, Michael D. and Finn Kydland (1995), 'The Gold Standard as a Contingent Rule', *Explorations in Economic History*, 32, 423-64.

Bordo, Michael D. and Hugh Rockoff (1996), 'The Gold Standard as a Good Housekeeping Seal of Approval', *Journal of Economic History*, 56(2), 389-428.

Bretton Woods Commission (1994), *Bretton Woods: Looking to the Future*, Washington, DC, Bretton Woods Commission.

Callahan, Colleen M. (1994), 'The Nineteenth-Century Silver Movement and Aggregate Price Uncertainty', in Thomas Weiss and Donald Schaeffer (eds), *American Economic Development in Historical Perspective*, Stanford, Stanford University Press, pp. 223-40.

Calomiris, Charles and Glenn Hubbard (1996), 'International Adjustment under the Classical Gold Standard: Evidence for the US and Britain, 1879-1914', in Tamin Bayoumi, Barry Eichengreen, and Mark Taylor (eds), *Modern Perspectives on the Gold Standard*, Cambridge, Cambridge University Press, pp. 189-217.

Chevalier, Michel (1859), *On the Probable Fall of Gold: The Commercial and Social Consequences which may Ensurue, and the Measures which it Invites*, With a Foreword by Richard Cobden, New York, D.Appleton and Company.

Clark, T.A. (1984), 'Violations of the Gold Points, 1890-1908', *Journal of Political Economy*, 92, 791-823.

Clarke, Stephen V.O. (1967), *Central Bank Cooperation, 1923-1931*, New York, Federal Reserve Bank of New York.

Cooper, Richard (1982), 'The Gold Standard: Historical Facts and Future Prospects', *Brookings Papers on Economic Activity*, I, 1-45.

De Cecco, Marcello (1974), *Money and Empire: The International Gold Standard*, London, Blackwell.

Dick, Trevor J.O. and John Floyd (1992), *Canada and the Gold Standard: Balance of Payments Adjustment, 1871- 1913*, Cambridge, Cambridge University Press.

Dutton, John (1984), 'The Bank of England and the Rules of the Game Under the International Gold Standard: New Evidence', in Michael D.Bordo and Anna J. Schwartz (eds), *A Retrospective on the Classical Gold Standard*, Chicago, University of Chicago Press, pp. 173-202.

Eichengreen, Barry (1992), *Golden Fetters: The Gold Standard and the Great Depression, 1919-1939*, New York, Oxford University Press.

Eichengreen, Barry and Marc Flandreau (1996), 'The Geography of the Gold Standard', in Jorge Braga de Macedo, Barry Eichengreen, and Jaime Reis (eds), *Currency Convertibility: The Gold Standard and Beyond*, London, Routledge, pp. 113-43.

Einzig, Paul (1962), *The History of Foreign Exchange*, London, Macmillan.

Feis, Herbert (1930), *Europe: The World's Banker*, New Haven, Yale University Press.

Fishlow, Albert (1985), 'Lessons from the Past: Capital Markets During the Nineteenth Century and the Inter-War Period', *International Organization*, 39, 383-439.

Flandreau, Marc (1995), *L'or du monde: la France et la stabilité du système monétaire international, 1848-1873*, Paris, L'Harmattan.

—(1996a), 'Adjusting to the Gold Rush: Endogenous Bullion Points and the French Balance of Payments: 1846- 1870', *Explorations in Economic History* 33, 417-39.

—(1996b), 'The French Crime of 1873: An Essay on the Emergence of the International Gold Standard 1870-1880', *Journal of Economic History* 56, 862- 97.

—(1997), 'Central Bank Co-operation in Historical Perspective 1829-1914: A Skeptical View', *Review of Economic History* (forthcoming).

Flood, R.P. and P.Garber (1984), 'Gold Monetization and Gold Discipline', *Journal of Political Economy*, 92(1), 90-107.

Ford, A.G. (1962), *The Gold Standard, 1880-1913: Britain and Argentina*, London, Oxford University Press.

Frieden, Jeffry (1996), 'The Dynamics of International Monetary Systems: International and Domestic Factors in the Rise, Reign and Demise of the Classical Gold Standard', in Jack Snyder and Robert Jervis (eds), *Coping with Complexity in the International System*, San Francisco, Westview Press, pp. 137-62.

Gallarotti, Giulio (1995), *The Anatomy of an International Monetary Regime: The Classical Gold Standard 1880-1914*, New York, Oxford University Press.

Gregory, T.E. (1932), *The Gold Standard and its Future*, New York, Dutton.

Hawtrey, Ralph (1913), *Good and Bad Trade*, London, Constable.

Jeanne, Olivier (1995), 'Monetary Policy in England 1893-1914: A Structural VAR Analysis', *Explorations in Economic History*, 32, 302-26.

Keynes, John Maynard (1925), *The Economic Consequences of*



Mr Churchill, London, Macmillan.

—(1930), *A Treatise on Money*, Vol. II: *The Applied Theory of Money*, London, Macmillan.

Kindleberger, Charles (1973), *The World in Depression, 1929-1939*, Berkeley, University of California Press.

—(1985), *Keynesianism Versus Monetarism and Other Essays in Financial History*, Boston, Allen & Unwin.

Krasner, Stephen (1983), *International Regimes*, Ithaca, Cornell University Press.

Krugman, Paul (1991), 'Target Zones and Exchange Rate Dynamics', *Quarterly Journal of Economics*, 106, 669-82.

Lindert, Peter B. (1969), 'Key Currencies and Gold, 1900-1913', *Princeton Studies in International Finance*, No. 24, International Finance Section, Department of Economics, Princeton University.

McCloskey, Donald and J.Richard Zecher (1976), 'How the Gold Standard Worked 1880-1913', in Jacob Frenkel and Harry G.Johnson (eds), *The Monetary Approach to the Balance of Payments*, London, Allen & Unwin, pp. 184-208.

—(1984), 'The Success of Purchasing Power Parity: Historical Evidence and Its Implications for Macroeconomics', in Michael D.Bordo and Anna J.Schwartz (eds), *A Retrospective on the Classical Gold Standard*, Chicago, University of Chicago Press, pp. 121-72.

Machlup, Fritz (1964), *International Payments, Debts and Gold*, New York, Charles Scribners Sons.

Marshall, Alfred (1923), *Money, Credit and Commerce*, London, Macmillan.

Mill, J.S. (1865), *Principles of Political Economy*, reprinted A.M.Kelly, New York, 1961.

Morgenstern, Oskar (1959), *International Financial Transactions and Business Cycles*, Princeton, Princeton University Press.

Officer, Lawrence H. (1986), 'The Efficiency of the Dollar-Sterling Gold Standard, 1890-1908', *Journal of Political Economy* 94, 1038-73.

—(1989), 'The Remarkable Efficiency of the Dollar-Sterling Gold Standard, 1890-1906', *Journal of Economic History*, 49, 1-41.

—(1996), *Between the Dollar-Sterling Gold Points*, Cambridge, Cambridge University Press.

Pippinger, John (1984), 'Bank of England Operations, 1893-1913', in Michael D. Bordo and Anna Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821-1931*, Chicago, University of Chicago Press, pp. 203-33.

Polanyi, Karl (1944), *The Great Transformation*, New York, Rinehart & Company.

Reis, Jaime (1996), 'Portugal: First to Join the Gold Standard, 1854', in Jorge Braga de Macedo, Barry Eichengreen, and Jaime Reis (eds), *Currency Convertibility: The Gold Standard and Beyond*, London, Routledge, pp. 159-81.

Sayers, Richard S. (1933), 'The Question of the Standard in the 1850s', *Economic History*, *Economic Journal Supplement*, 2, 575-601.

—(1936), *Bank of England Operations 1890-1914*, London, P.S.King.

—(1957), *Central Banking After Bagehot*, Oxford, Clarendon Press.

Scammell, W.M. (1965), 'The Working of the Gold Standard', *Yorkshire Bulletin of Economic and Social Research*, 17, 32-45.

Seyd, E. (1868), *Bullion and Foreign Exchanges, Theoretically and Practically Considered, Followed by a Defence of the Double Valuation*, London, Effingham Wilson.

Svensson, Lars E.O. (1994), 'Why Exchange Rate Bands? Monetary Independence in Spite of Fixed Exchange Rates', *Journal of Monetary Economics*, 33, 157-99.

Taussig, Frank (1927), *International Trade*, New York, Macmillan.

Triffin, Robert (1968), *Our International Monetary System: Yesterday, Today and Tomorrow*, New York, Random House.

Viner, Jacob (1937), *Studies in the Theory of International*

Trade, New York, Harper and Row.

Whale, P.B. (1937), 'The Working of the Prewar Gold Standard', *Economica*, 4, 18-32.

Williamson, John (1985), *The Exchange Rate System*, Policy Analyses in International Economics No. 5, Washington, DC, Institute for International Economics, revised edn (1st edn 1983).

Yeager, Leland B. (1969), 'Fluctuating Exchange Rates in the Nineteenth Century: The Experiences of Russia and Austria', in Robert Mundell and Alexander Swoboda (eds), *Monetary Problems of the International Economy*, Chicago, University of Chicago Press, pp. 61-89.

—(1976), *International Monetary Relations: Theory, History and Policy*, New York, Harper and Row.

#### 4 How the gold standard worked, 1880-1913\*

Angell, J.W. (1926), *The Theory of International Prices*, Cambridge, Mass., Harvard University Press.

Beach, W.E. (1935), *British International Gold Movements and Banking Policy, 1881-1913*, Harvard Economic Studies, Cambridge, Mass., Harvard University Press.

Bloomfield, Arthur I. (1959), *Monetary Policy under the International Gold Standard, 1880-1914*, New York, Federal Reserve Bank of New York.

—(1963), *Short-term Capital Movements under the Pre-1914 Gold Standard*, Princeton Studies in International Finance, no. 11, Princeton, Princeton University Press.

Clark, Colin (1951), *The Conditions of Economic Progress*, 2nd edn, London, Macmillan.

Davis, Lance E. (1971), 'Capital mobility and American economic growth', in R. W. Fogel and S. L. Engerman, *The Reinterpretation of American Economic History*, New York, Harper & Row, pp. 285-300.

Edelstein, Michael (1982), *Overseas Investment in the Age of High Imperialism*, New York, Columbia University Press.

Feinstein, C.H. (1971), *National Income, Expenditure and Output of the United Kingdom, 1855-1965*, Cambridge, Cambridge University Press.

Friedman, Milton and Anna J. Schwartz (1963), *A Monetary History of the United States, 1867-1960*, Princeton, Princeton University Press.

Glass, D.V. and E. Grebenik (1965), 'World Population, 1800-1950', in H. J. Habakkuk and M. Postan, *Cambridge Economic History of Europe*, Cambridge, Cambridge University Press, vol. VI, pt 1.

Keynes, J.M. (1930), *A Treatise on Money*, London, Macmillan.

Kuznets, Simon (1966), *Modern Economic Growth*, New Haven, Yale University Press.

Lindert, Peter H. (1969), *Key Currencies and Gold, 1900-1913*, Princeton Studies in International Finance, no. 24, Princeton, Princeton University Press.

Lipsey, R.E. (1963), *Price and Quantity Trends in the Foreign Trade of the United States*, New York, National Bureau of Economic Research.

McCloskey, D.N., 'Markets abroad and British economic growth, 1820-1913', unpublished MS.

Maizels, Alfred (1965), *Industrial Growth and World Trade*, Cambridge, Cambridge University Press.

Mitchell, B.R. (1962), *Abstract of British Historical Statistics*, Cambridge, Cambridge University Press.

Ohlin, Bertil (1967), *Interregional and International Trade*, rev. edn (1st edn, 1933), Cambridge, Mass., Harvard University Press.

Palmer, R.R. (1957), *Atlas of World History*, Chicago, Rand McNally.

Triffin, Robert (1964), *The Evolution of the International Monetary System: Historical Reappraisal and Future Perspectives*, Princeton Studies in International Finance, no. 12, Princeton, Princeton University Press.

US Bureau of the Census (1960), *Historical Statistics of the United States*, ser. U6, Washington DC, US Government Printing Office.

Viner, Jacob (1924), *Canada's Balance of International Indebtedness 1900-1913*, Cambridge, Mass., Harvard University Press.

White, Harry D. (1933), *The French International Accounts, 1880-1913*, Harvard Economic Studies, Cambridge, Mass., Harvard University Press.

Williams, J.H. (1920), *Argentine International Trade under Inconvertible Paper Money: 1880-1900*, Harvard Economic Studies, Cambridge, Mass., Harvard University Press.

## 5 A portfolio-balance model of the gold standard\*

Barsky, R.B. and L.H.Summers (1988), 'Gibson's Paradox and the Gold Standard', *Journal of Political Economy*, 96, 528-50.

Bloomfield, A.I. (1959), *Monetary Policy under the International Gold Standard*, New York, Federal Reserve Bank of New York.

—(1963), *Short-Term Capital Movements Under the Pre-1914 Gold Standard*, *Princeton Studies in International Finance* 11, Princeton, Department of Economics, Princeton University.

—(1968), *Patterns of Fluctuation in International Investment Before 1914*, *Princeton Studies in International Finance* 21, Princeton, Department of Economics, Princeton University.

Bordo, M.D. (1984), 'The Gold Standard: The Traditional Approach', in M.D. Bordo and A.J.Schwartz (eds), *A Retrospective on the Gold Standard*, NBER Conference Report, Chicago, University of Chicago Press, pp. 23-113.

Bordo, M.D. and A.J.Schwartz (eds) (1984), *A Retrospective on the Classical Gold Standard, 1821-1931*, NBER Conference Report, Chicago, University of Chicago Press.

Capie, F. and A.Webber (1985), *A Monetary History of the United Kingdom: 1870-1982*. Vol. 1, Data, Sources, Methods, London, Allen & Unwin.

Curtis, C.A. (1931), *Statistics of Banking*. Vol I of *Statistical Contributions to Canadian Economic History*, Toronto, Macmillan.

Dick, T.J.O. (forthcoming), 'Canadian Wheat Production and Trade, 1896-1913', *Explorations in Economic History*, 17, 275-302.

Dick, T.J.O. and J.E.Floyd, (forthcoming), 'Canada and the Gold Standard, 1871-1913', Toronto, University of Toronto (mimeo).

Eichengreen, B. (1987), 'Conducting the International Orchestra: Bank of England Leadership under the Gold Standard', *Journal of International Money and Finance*, 6, 5-29.

Evans, L.T. and N.C.Quigley (1990), 'Discrimination in Bank Lending Policies: A Test Using Data from the Bank of Nova Scotia', *Canadian Journal of Economics*, 23, 210-25.

Fleming, J.M. (1962), 'Domestic Financial Policies under Fixed and Flexible Exchange Rates', *International Monetary Fund Staff Papers*, 39, 369-79.

Floyd, J.E. (1969), 'International Capital Movements and Monetary Equilibrium', *American Economic Review*, 49, 472-92.

—(1985), *World Monetary Equilibrium*, Philadelphia, University of Pennsylvania Press.

Ford, A.G. (1962), *The Gold Standard, 1880-1914: Britain and Argentina*, Oxford, Clarendon Press.

Fratianni, M. and F.Spinelli (1984), 'Italy in the Gold Standard Period, 1911-1914', in M.D.Bordo and A.Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821-1931*, NBER Conference Report, Chicago, University of Chicago Press, pp. 405-41.

Frenkel, J.A. and G.G.Johnson (eds) (1976), *The Monetary Approach to the Balance of Payments*, London, Allen & Unwin.

Frenkel, J. and C.Rodriguez (1975) 'Portfolio Equilibrium and the Balance of Payments: A Monetary Approach', *American Economic Review*, 65, 674-88.

Friedman, M. and A.J.Schwartz (1982), *Monetary Trends in the United States and the United Kingdom*, Chicago, University of Chicago Press.

Goodhart, C.A.E. (1969), *The New York Money Market and the Finance of Trade, 1900-1913*, Cambridge, Mass., Harvard University Press.

Green, A. and M.C.Urquhart (1987), 'New Estimates of Output Growth in Canada: Measurement and Interpretation', in Douglas McCalla (ed.), *Perspectives on Canadian Economic History*, Toronto, Copp Clark Pitman, pp. 182-99.

Harkness, J. (1969), 'Monetary and Fiscal Policies in Closed and Open Economies: The Portfolio Approach', unpublished Ph.D. dissertation, Queen's University.

Johnson, H.G. (1958), 'Towards a General Theory of the

Balance of Payments', in *International Trade and Economic Growth*, London, Allen & Unwin, Chap. 6.

McCloskey, D.N. and J.R.Zecher (1976), 'How the Gold Standard Worked, 1880-1913', in J.A.Frenkel and H.G.Johnson (eds), *The Monetary Approach to the Balance of Payments*, London, Allen & Unwin, pp. 357-85.

—(1984), 'The Success of Purchasing Power Parity: Historical Evidence and Its Implications for Macroeconomics', in M.D.Bordo and A.J.Schwartz (eds), *A Retrospective on the Gold Standard*, NBER Conference Report, Chicago, University of Chicago Press, pp. 121-50.

Mitchell, B.R. (1975), *European Historical Statistics, 1750-1970*, London, Macmillan.

Mundell, R.A. (1960), 'The Monetary Dynamics of International Adjustment under Fixed and Flexible Exchange Rates', *Quarterly Journal of Economics*, 74, 227-57.

—(1961), 'The International Disequilibrium System', *Kyklos*, 14, 153-70.

—(1963), 'Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates', *Canadian Journal of Economics and Political Science*, 29, 475-85.

—(1968), *International Economics*, New York, Macmillan.

Mussa, M. (1982), 'A Model of Exchange Rate Dynamics', *Journal of Political Economy*, 90, 74-104.

Neufeld, E.P. (1972), *The Financial System in Canada*, New York, St. Martin's Press.

Rich, Georg (1988), *The Cross of Gold: Money and the Canadian Business Cycle, 1867-1913*, Carleton Library 153, Ottawa, Carleton University Press.

—(1989), 'Canadian Bank and the Gold Crisis of 1907', *Explorations in Economic History*, 26, 135-60.

Sargent, T.J. (1973), 'Interest Rates and Prices in the Long Run', *Journal of Money, Credit and Banking*, 5, 385-449.

Triffin, R. (1964), *The Evolution of the International Monetary System: Historical Reappraisal and Future Perspectives*, Princeton Studies in International Finance



12, Princeton, Department of Economics, Princeton University.

Urquhart, M. (1986), 'New Estimates of Gross National Product, 1870-1926: Some Implications for Canadian Development', in S.L.Engerman and R.E.Gallman (eds), Long-Term Factors in American Economic Growth, NBER Studies in Income and Wealth 51, Chicago, University of Chicago Press, pp. 9-88.

Viner, J. (1924), Canada's Balance of International Indebtedness: 1900-1913, Cambridge, Mass., Harvard University Press.

Williamson, J.G. (1961), 'International Trade and US Economic Development 1827-1843', Journal of Economic History, 21, 372-83.

—(1964), American Growth and the Balance of Payments, 1820-1913, Chapel Hill, University of North Carolina Press.

## 6 The gold standard as a rule\*

Akerlof, G. (1970), 'The Market for Lemons: Quality Uncertainty and the Market Mechanism', *Quarterly Journal of Economics*, 84 (Aug), 488-500.

Alogoskoufis, G.S. (1992), 'Monetary Accommodation, Exchange Rate Regimes and Inflation Persistence', *Economic Journal*, 2 (May), 461-80.

Alogoskoufis, G.S. and R.Smith (1991), 'The Phillips Curve, the Persistence of Inflation and the Lucas Critique: Evidence from Exchange-Rate Regimes', *American Economic Review*, 81(2), 1254-73.

Bancroft, H.H. (1890), *History of California*, Vol. VII, San Francisco, History.

Barro, R.J. (1979), 'On the Determination of the Public Debt', *Journal of Political Economy*, 87, 940-71.

Barro, R.J. and D.B.Gordon (1983), 'Rules, Discretion and Reputation in a Model of Monetary Policy', *Journal of Monetary Economics*, 12, 101-21.

Barsky, R.B. (1987), 'The Fisher Hypothesis and the Forecastability and Persistence of Inflation', *Journal of Monetary Economics*, 19(1), 3-24.

Barsky, R.B. and L.H.Summers (1988), 'Gibson's Paradox and the Gold Standard', *Journal of Political Economy*, 96 (3), 528-50.

Bloomfield, A. (1959), *Monetary Policy Under the International Gold Standard, 1880-1914*, New York, Federal Reserve Bank of New York.

Bordo, M.D. (1986), 'Money, Deflation and Seigniorage: A Review Essay', *Journal of Monetary Economics*, 18(3), 337-46.

— and F.E.Kydland (1995), 'The Gold Standard as a Commitment Mechanism', in T.Bayoumi, B.Eichengreen and M.Taylor (eds), *Economic Perspectives on the Gold Standard*, Cambridge, Cambridge University Press.

— and A.Redish (1990), 'Credible Commitment and Exchange Rate Stability: Canada's Interwar Experience', *Canadian Journal of Economics*, 23(2), 357-80.

—and Schwartz, A.J. (1994), 'The Specie Standard as a Contingent Rule: Some Evidence For Core and Peripheral Countries, 1880-1990', NBER Working paper 4860, September.

—and E.N.White (1993), 'British and French Finance During the Napoleonic Wars', in M.D.Bordo and F.Capie (eds), *Monetary Regimes in Transition*, Cambridge, Cambridge University Press.

Calomiris, C.W. (1988), 'Price and Exchange Rate Determination During the Greenback Suspension', *Oxford Economic Papers* (Dec).

—(1993), 'Greenback Resumption and Silver Risk: The Economics and Politics of Monetary Regime Change in the United States, 1862-1900', in M.D.Bordo and F.Capie (eds), *Monetary Regimes in Transition*, Cambridge, Cambridge University Press.

Chari, V.V., L.J.Christiano and P.J.Kehoe (1991), 'Optimal Fiscal and Monetary Policy: Some Recent Results', *Journal of Money, Credit and Banking*, 23(2), 519-39.

—and P.J.Kehoe (1989), 'Sustainable Plans and Debt', *Federal Reserve Bank of Minneapolis Staff Report* 125.

Clark, T. (1984), 'Violations of the Gold Points, 1890-1908', *Journal of Political Economy*, 92, 791-823.

Cole, H.L. and P.J.Kehoe (1991), 'Reputation With Multiple Relationships: Reviving Reputation Models of Debt', *Federal Reserve Bank of Minneapolis Staff Report* 137.

Davis, L.E. and R.A.Huttenback (1986), *Mammon and the Pursuit of Empire: The Political Economy of British Imperialism, 1860-1912*, Cambridge, Cambridge University Press.

Della Paolera, G. (1993), 'Monetary and Banking Experiments in Argentina: 1861- 1930', Mimeo, Universidad Torcuato Di Tella Buenos Aires.

Dutton, J. (1984), 'The Bank of England and the Rules of the Game Under the International Gold Standard: New Evidence', in M.D.Bordo and A.J.Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821-1931*, Chicago, University of Chicago Press.

Edelstein, M. (1982), *Overseas Investment in the Age of High Imperialism: The United Kingdom, 1850-1914*, New York,

Columbia University Press.

Eichengreen, B. (1992a), 'The Gold Standard Since Alec Ford', in S.N.Broadberry and N.F.R.Cruts (eds), *Britain in the International Economy: 1870-1939*, Cambridge, Cambridge University Press.

—(1992b), *Golden Fetters: The Gold Standard and the Great Depression, 1919-1939*, Oxford, Oxford University Press.

Eschweiler, B. and M.D.Bordo (1994), 'Rules, Discretion and Central Bank Independence: The German Experience 1880-1989', in Pierre Siklos (ed.), *Varieties of Monetary Reform: Lesson and Experiences on the Road to Monetary Union*, Boston, Kluwer Academic.

Fishlow, A. (1987) 'Market Forces or Group Interests: Inconvertible Currency in Pre-1914 Latin America', Mimeo, University of California at Berkeley.

—(1989), 'Conditionality and Willingness to Pay: Some Parallels from the 1980s', in B.Eichengreen and P.Lindert (eds), *The International Debt Crisis in Historical Perspective*, Cambridge, Mass., MIT Press.

Flood, R.P. and P.M.Garber (1983), 'A Model of Stochastic Process Switching', *Econometrica*, 51(3), 537-51.

Flood, R.P., D.J.Mathieson and A.K.Rose (1991), 'An Empirical Exploration of Exchange Rate Target Zones', *Carnegie Rochester Conference Series on Public Policy*, 35(Autumn), 7-66.

Ford, A.G. (1962), *The Gold Standard 1880-1914: Britain and Argentina*, Oxford, Clarendon Press.

Fratianni, M. and F.Spinelli (1984), 'Italy in the Gold Standard Period, 1861- 1914', in M.D.Bordo and A.J.Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821-1931*, Chicago, University of Chicago Press.

Frieden, J.A. (1994), 'The Dynamics of International Monetary Systems: International and Domestic Factors in the Rise, Reign, and Demise of the Classical Gold Standard', in J.Snyder and R.Jervis (eds), *Coping with Complexity in the International System*, Colorado, Westview Press.

Friedman, M. (1990), 'Bimetallism Revisited', *Journal of Economic Perspectives*, 4(4), 85-104.

Fritsch, W. and G.H.B.Franco (1992), 'Aspects of the Brazilian Experience Under the Gold Standard', Mimeo, PUC Rio de Janeiro.

Gallarotti, G.M. (1993), 'The Scramble for Gold: Monetary Regime Transformation in the 1870s', in M.D.Bordo and F.Capie (eds), *Monetary Regimes in Transition*, Cambridge, Cambridge University Press.

Garber, P. (1986), 'Nominal Contracts in a Bimetallic Standard', *American Economic Review*, 76, 1012-30.

—(1992), 'The Collapse of the Bretton Woods Fixed Exchange Rate System', in M.D. Bordo and B.Eichengreen (eds), *A Retrospective on the Bretton Woods System*, Chicago, University of Chicago Press.

Giovannini, A. (1986), "'Rules of the Game" during the International Gold Standard: England and Germany', *Journal of International Money and Finance*, 5, 467-83.

—(1993), 'Bretton Woods and Its Precursors: Rules Versus Discretion in the History of International Monetary Regimes', in M.D.Bordo and B.Eichengreen (eds), *A Retrospective on the Bretton Woods System*, Chicago, University of Chicago Press.

Goff, B.L. and Toma, M. (1993), 'Optimal Seigniorage, The Gold Standard, and Central Banking Financing', *Journal of Money, Credit and Banking*, 25(1), 79- 95.

Goodfriend, M. (1989), 'Money, Credit, Banking and Payments System Policy', in D.B.Humphrey (ed.), *The U.S. Payments System: Efficiency, Risk, and the Role of the Federal Reserve*, Boston, Kluwer Academic.

Grilli, V. (1990), 'Managing Exchange Rate Crises: Evidence from the 1890s', *Journal of International Money and Finance*, 9, 258-75.

Grossman, H.I. and J.B.Van Huyck (1988), 'Sovereign Debt as a Contingent Claim: Excusable Default, Repudiation, and Reputation', *American Economic Review*, 78, 1088-97.

Grossman, H.I. (1990), 'The Political Economy of War Debts and Inflation', in W. S.Haraf and P.Cagan (eds), *Monetary Policy for a Changing Financial Environment*, Washington, DC, American Enterprise Institute.

Hawtrey, R. (1926), *Monetary Reconstruction*, London,

Longman.

Hayashi, F. (1989), 'Japan's Saving Rate: New Data and Reflections', NBER Working Paper 3205.

Jonung, L. (1984), 'Swedish Experience Under the Classical Gold Standard, 1873- 1914', in M.D.Bordo and A.J.Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821-1931*, Chicago, University of Chicago Press.

Kindleberger, C.P. (1973), *The World in Depression, 1929-1939*, Berkeley: University of California Press.

Klein, B. (1975), 'Our New Monetary Standard: Measurement and Effects of Price Uncertainty, 1880-1973', *Economic Inquiry* 13, 461-84.

Krugman, P. (1991), 'Target Zones and Exchange Rate Dynamics', *Quarterly Journal of Economics*, 56, 669-82.

Kydland, F.E. and E.C.Prescott (1977), 'Rules Rather than Discretion: The Inconsistency of Optimal Plans', *Journal of Political Economy*, 85, 473-91.

—(1980), 'A Competitive Theory of Fluctuations and the Feasibility and Desirability of Stabilization Policy', in S.Fischer (ed.), *Rational Expectations and Economic Policy*, Chicago, University of Chicago Press for the National Bureau of Economic Research.

Lazaretou, S. (1995), 'Government Spending, Monetary Policies and Exchange Rate Regime Switches: The Drachma in the Gold Standard Period', *Explorations in Economic History*, 32, 28-50.

Lindert, P. (1969), *Key Currencies and Gold, 1900-1913*, Princeton Studies in International Finance 24, Princeton, Princeton University Press.

Llona-Rodriguez, A. (1992), 'Chile During the Gold Standard: A Successful Paper Money Experience', Mimeo, Instituto Torcuato Di Tella.

Lucas, R. E, Jr. and N.L.Stokey (1983), 'Optimal Fiscal and Monetary Policy in an Economy Without Capital', *Journal of Monetary Economics*, 12, 55-93.

Mankiw, G.N. (1987), 'The Optimal Collection of Seigniorage: Theory and Evidence', *Journal of Monetary Economics*, 20, 327-42.

Martin, Acena, P. (1993), 'Spain During the Classical Gold Standard Years, 1880- 1914', in M.D.Bordo and F.Capie (eds), *Monetary Regimes in Transition*, Cambridge, Cambridge University Press.

Miller, M. and A.Sutherland (1992), 'Britain's Return to Gold and Entry into the ERM', in P.Krugman and M.Miller (eds), *Exchange Rate Targets and Currency Banks*, Cambridge, Cambridge University Press.

—(1994), 'Speculative Anticipations of Sterling's Return to Gold: Was Keynes Wrong?' *Economic Journal*, 104 (July), 804-12.

Mitchell, B.R. and P.Deane (1962), *Abstract of British Historical Statistics*, Cambridge, Cambridge University Press.

Morgenstern, O. (1959), *International Financial Transactions and Business Cycles*, Princeton, Princeton University Press.

Motomura, A. (1994), 'The Best and Worst of Currencies: Seigniorage and Currency Policy in Spain, 1597-1650', *Journal of Economic History*, 54(1), 104-27.

North, D. and B.Weingast (1989), 'Constitution and Commitment: Evolution of Institutions Governing Public Choice', *Journal of Economic History*, 49(4), 803-37.

Officer, L. (1986), 'The Efficiency of the Dollar-Sterling Gold Standard, 1890- 1908', *Journal of Political Economy*, 94 (Oct), 1038-73.

—(1993), 'Gold-Point Arbitrage and Uncovered Interest Arbitrage Under the 1925-1931 Dollar-Sterling Gold Standard', *Explorations in Economic History*, 30(1), 98-127.

Persson, T. and G.Tabellini (1990), *Macroeconomic Policy, Credibility and Politics*, Chur, Harwood Press.

Pippenger, J. (1984), 'Bank of England Operations, 1893-1913, in M.D.Bordo and A.J.Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821- 1931*, Chicago, University of Chicago Press.

Poterba, J.M. and J.Rotemberg (1990), 'Inflation and Taxation with Optimizing Government', *Journal of Money, Credit and Banking*, 22, 1-28.

Prescott, E. (1977), 'Should Control Theory Be Used for Economic Stabilization?' Carnegie-Rochester Conference Series on Public Policy, 7, 13-38.

Ramsey, F. (1927), 'A Contribution to the Theory of Taxation', Economic Journal, 37, 47-61.

Reis, J. (1991), 'The Gold Standard in Portugal, 1854-1891', Mimeo, Universidade Nova de Lisboa.

Rockoff, H. (1984), 'Some Evidence on the Real Price of Gold, Its Cost of Production, and Commodity Prices', in M.D.Bordo and A.J.Schwartz (eds), A Retrospective on the Classical Gold Standard, 1821-1931, Chicago, University of Chicago Press.

Roll, R. (1972), 'Interest Rates and Price Expectations During the Civil War', Journal of Economic History, 32, 478-98.

Schwartz, A.J. (1987) 'Banking School, Currency School, Free Banking School', in New Palgrave Dictionary of Economics, London, Macmillan.

Sharkey, R.D. (1959), Money, Class, and Party, Baltimore, Johns Hopkins University Press.

Smith, G. and T.Smith (1993), 'Wesley Mitchell and Irving Fisher and the Greenback Gold Reforms 1865-1879', Mimeo, Queens University.

Smith, W.S. and R.T.Smith (1990), 'Stochastic Process Switching and the Return to Gold', Economic Journal, 100 (March), 164-75.

Stiglitz, J. and A.Weiss (1981), 'Credit Rationing in Markets with Imperfect Information', American Economic Review, 71(6), 393-410.

Svensson, L.E.O. (1994), 'Why Exchange Rate Bands? Monetary Independence in Spite of Fixed Exchange Rates', Journal of Monetary Economics, 33(1), 157- 99.

Temin, P. (1989), Lessons from the Great Depression, Cambridge, Mass., MIT Press.

Toniolo, G. (1990), An Economic History of Liberal Italy: 1850-1918, New York, Routledge.



Trehan, B. and C.E.Walsh (1990), 'Seigniorage and Tax Smoothing in the United States: 1914-1986', *Journal of Monetary Economics*, 25, 97-112.

Unger, I. (1964), *The Greenback Era: A Social and Political History of American Finance, 1865-1879*, Princeton, Princeton University Press.

Viner, J. (1937), *Studies in the Theory of International Trade*, Chicago: University of Chicago Press.

Yeager, L.B. (1984), 'The Image of the Gold Standard', in M.D.Bordo and A.J. Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821-1931*, Chicago, University of Chicago Press.

## 8 The myth and realities of the so-called gold standard

Bloomfield, Arthur I. (1959), *Monetary Policy under the International Gold Standard: 1880-1914*, New York, Federal Reserve Bank of New York.

Cassel, G. (1930), 'The Supply of Gold', in *Interim Report of the Gold Delegation of the Financial Committee*, Geneva, League of Nations.

France (1939), (1952), *Annuaire Statistique for 1938, 1951*, Paris, Institut National de la Statistique et Etudes Economiques.

Imlah, A.H. (1958), *Economic Elements in the Pax Britannica*, Cambridge, Mass., Harvard University Press.

Kenen, Peter B. (1960), *British Monetary Policy and the Balance of Payments*, Cambridge, Mass., Harvard University Press.

Kitchin, J. (1930), 'The Supply of Gold Compared with the Prices of Commodities', in *Interim Report of the Gold Delegation of the Financial Committee*, Geneva, League of Nations.

Kondratieff, N.D. (1926), 'The Long Waves in Economic Life', *Review of Economic Statistics* (November 1935) (abridged in English by W.Stolper).

Maddison, A. (1962), 'Growth and Fluctuations in the World Economy', *Banca Nazionale del Lavoro Quarterly Review* (June).

Mitchell, B.R. (1962), *Abstract of British Historical Statistics*, Cambridge, Cambridge University Press.

Nurkse, Ragnar (1944), *International Currency Experience*, Geneva, League of Nations.

Schumpeter, Joseph A. (1934), *The Theory of Economic Development*, New York, McGraw-Hill.

—(1939), *Business Cycles*, Cambridge, Mass., Harvard University Press.

Triffin, R. (1947), 'National Central Banking and the International Economy', *International Monetary Policies*, Washington, DC, Federal Reserve System.

Triffin, R. and H.Grubel (1962), 'The Adjustment Mechanism to Differential Rates of Monetary Expansion among the Countries of the European Economic Community', Review of Economics and Statistics (November).

United Nations (1949), International Capital Movements during the Inter-war Period, New York, United Nations.

US Bureau of the Census (1960), Historical Statistics of the United States, Washington, DC, US Government Printing Office.

## 9 Notes on the working of the gold standard before 1914

Clare, George (1931), *A Money Market Primer*, 3rd edn, London, E.Wilson.

Extracto Estadístico de la Republica Argentina correspondiente al año, 1915 (1916), Buenos Aires.

Ford, A.G. (1955), 'Export Price Indices for the Argentine Republic, 1881-1914', *Inter-American Economic Affairs* (Autumn).

—(1956), 'Argentina and the Baring Crisis of 1890', *Oxford Economic Papers*.

—(1958), 'Flexible Exchange Rates and Argentina, 1885-1900', *Oxford Economic Papers*.

—(1958-9), 'The Transfer of British Foreign Lending, 1870-1914', *Economic History Review*.

Goschen, G.J.G. (1905), *Essays and Addresses on Economic Questions*, London, Edward Arnold.

Lenfant, J.H. (1951), 'Great Britain's Capital Formation, 1865-1914', *Economica*, New Ser. 18.

Sayers, R.S. (1936), *Bank of England Operations 1890-1914*, London, P.S.King.

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

US National Monetary Commission (1910), *Interviews on the Banking Systems of England, Scotland, France, Germany, Switzerland and Italy*, Senate Doc. No. 405, Washington, DC, US Government Printing Office.

Whale, P.Barrett (1937), 'The Working of the Pre-War Gold Standard', *Economica* (February).

White, H.D. (1933), *The French International Accounts 1880-1913*, Cambridge, Mass., Harvard University Press.

Withers, Hartley (1916), *Money Changing*, 2nd edn, London, John Murray.

## 10 The gold standard since Alec Ford

Angell, James W. (1926), *The Theory of International Prices*, Cambridge, Mass., Harvard University Press.

Eichengreen, Barry (1983), 'The Causes of British Business Cycles, 1833-1913', *Journal of European Economic History*, 12, 145-61.

Feinstein, Charles (1972), *National Income, Expenditure and Output of the United Kingdom, 1855-1965*, Cambridge: Cambridge University Press.

Ford, A.G. (1960), 'Notes on the Working of the Gold Standard Before 1914', *Oxford Economic Papers*, 12, 52-76.

Ford, A.G. (1962), *The Gold Standard 1880-1914: Britain and Argentina*, Oxford, Clarendon Press.

Hume, David (1752), 'On the Balance of Trade', in *Essays, Moral, Political and Literary*, vol. I, 1898 edition, London, Longmans, Green.

Meade, J.E. (1951), *The Theory of International Economic Policy*, Oxford, Oxford University Press.

Mitchell, B.R. and P.Deane (1962), *Abstract of British Historical Statistics*, Cambridge, Cambridge University Press.

Ohlin, Bertil (1929), 'The Reparation Problem: A Discussion', *Economic Journal*, 39, 172-3.

Palgrave, R.H. (1903), *Bank Rate and the Money Market*, London, J.Murray.

Sayers, Richard S. (1936), *Bank of England Operations, 1890-1914*, London, P.S. King and Son.

Simon, M. (1968), 'The Pattern of New British Portfolio Investment, 1865- 1914', in A.R.Hall (ed.), *The Export of Capital 1870-1914*, London, Methuen, pp. 15-44.

Taussig, Frank (1917), 'International Trade Under Depreciated Paper', *Quarterly Journal of Economics*, 31, 330-403.

Whale, P.B. (1937), 'The Working of the Prewar Gold Standard', *Economica*, 11, 18-32.

White, H.D. (1933), *The French International Accounts, 1880-1913*, Cambridge, Mass., Harvard University Press.

Wicksell, Knut (1918), 'International Freights and Prices', *Quarterly Journal of Economics*, 32, 401-10.

## 14 The gold exchange standard

Bank of France (1932), Annual Report for 1931.

—(1933), Annual Report for 1932.

Brown, Jr, William Adams (1940), *The International Gold Standard Reinterpreted, 1914-1934*, New York, National Bureau of Economic Research.

Hawtrey, R.G. (1939), *The Gold Standard in Theory and Practice*, 1st edn, 1927, London, Longmans Green.

Janssen, A.E. (1922), *A Note on the Plan for an International Clearing House*, Geneva, League of Nations, Provisional Economic and Financial Committee.

Keynes, J.M. (1930), *A Treatise on Money*, London, Macmillan.

League of Nations (1932), *Report of the Gold Delegation*, Geneva, League of Nations.

Mlynarski, F. (1929), *Gold and Central Banks*, New York, Macmillan.

Niemeyer, Sir Otto (1931), 'How to economize gold', in *Royal Institute for International Affairs, The International Gold Problem*, London, Oxford University Press, pp. 84-94.

Preparatory Commission of Experts (1933), *Draft Annotated Agenda for the Monetary and Economic Conference*, Geneva, League of Nations.

Royal Institute for International Affairs (1931), *The International Gold Problem*, London, Oxford University Press.

## 16 The Bretton Woods system: paradise lost?

Aliber, Robert Z. (1978), 'The Integration of National Financial Markets: A Review of Theory and Findings', *Weltwirtschaftsliches Archiv*, 114, 448-79.

Alogoskoufis, George and Ron Smith (1991), 'The Phillips Curve, the Persistence of Inflation, and the Lucas Critique: Evidence from Exchange Rate Regimes', *American Economic Review*, 81, 1254-75.

Bayoumi, Tamim and Barry Eichengreen (1994b), 'Macroeconomic Adjustment Under Bretton Woods and the PostBretton Woods Float: An Impulse-Response Analysis', *Economic Journal*, 104, 813-27.

—(1996), 'The Stability of the Gold Standard and the Evolution of the International Monetary System', in Tamim Bayoumi, Mark Taylor, and Barry Eichengreen (eds), *Modern Perspectives on the Classical Gold Standard* pp. 165-88.

Bergsten, C.Fred (1993), 'The Rationale for a Rosy View: What a Global Economy Will Look Like', *The Economist* (11 September), 57-9.

Bertola, G. and R.J.Caballero (1991), 'Target Zones and Realignments', *CEPR Discussion Paper No. 398*.

Bordo, Michael (1993), 'The Bretton Woods International Monetary System: An Historical Overview', in Michael D.Bordo and Barry Eichengreen (eds), *A Retrospective on the Bretton Woods System*, Chicago, University of Chicago Press, 3-108.

Brown, Brendan (1987), *The Flight of International Capital: A Contemporary History*, London, Croom Helm.

Collingnon, Stefan, with Peter Bofinger, Christopher Johnson, and Bertrand de Maigret (1993), *The EMS in Transition*, Paris, Association for the Monetary Union of Europe.

Cooper, Richard (1990), 'What Future for the International Monetary System?', in Yoshi Suzuki, Junichi Miyake, and Mitsuaki Okabe (eds), *The Evolution of the International Monetary System: How Can Efficiency and Stability be Attained?* Tokyo, University of Tokyo Press, 277-300.

Crafts, N.F.R. (1992), 'Institutions and Economic Growth:



Recent British Experience in an International Context',  
Western European Politics, 15, 16-38.

Dornbusch, Rudiger (1990), 'It's Time for a Financial  
Transactions Tax', International Economy  
(August/September), 95-6.

Dooley, Michael and Peter Isard (1980), 'Capital Controls,  
Political Risk, and Deviations from Interest-Rate Parity',  
Journal of Political Economy, 88, 370-84.

Dumke, Rolf (1990), 'Reassessing the Wirtschaftswunder:  
Reconstruction and Postwar Growth in West Germany in an  
International Context', Oxford Bulletin of Economics and  
Statistics, 52, 451-91.

Eichenbaum, Martin and Charles Evans (1993), 'Some  
Empirical Evidence on the Effects of Monetary Policy Shocks  
on Exchange Rates', NBER Working Paper No. 4271.

Eichengreen, Barry (1993), 'Epilogue: Three Perspectives on  
the Bretton Woods System', in Michael D.Bordo and Barry  
Eichengreen (eds), A Retrospective on the Bretton Woods  
System, Chicago, University of Chicago Press, pp. 621-57.

—(1994), International Monetary Arrangements for the 21st  
Century, Washington, DC, Brookings Institution.

—(1995), 'History and Reform of the International Monetary  
System', Economia e Societade 4, 53-78.

Eichengreen, Barry and Peter B.Kenen (1994), 'Managing the  
World Economy Fifty Years After Bretton Woods: An  
Overview', in C.Fred Bergsten and Peter B. Kenen (eds),  
Managing the World Economy, Washington, DC, Institute for  
International Economics pp. 3-57.

Eichengreen Barry, James Tobin, and Charles Wyplosz (1994),  
'Two Cases for Sand in the Wheels of International  
Finance', Economic Journal 105, 162-72.

Eichengreen, Barry and Pablo Vazquez (1994), 'Institutions  
and Postwar European Economic Growth: An Econometric  
Investigation', unpublished manuscript, University of  
California at Berkeley.

Flood, Robert and Peter Garber (1984), 'Gold Monetization  
and Gold Discipline', Journal of Political Economy, 92,  
90-107.

Giavazzi, Francesco and Albert Giovannini (1989), *Limiting Exchange Rate Flexibility: The European Monetary System*, Cambridge, Mass., MIT Press.

Hanke, S. H.L.Jonung and K.Schuler (1993), *Monetary Reform for a Free Estonia*, Stockholm, SNS Norlag.

Kaldor, Nicholas (1966), *Causes of the Slow Rate of Economic Growth of the United Kingdom*, Cambridge, Cambridge University Press.

Kindleberger, Charles P. (1967), *Europe's Postwar Growth*, New York: Oxford University Press.

Lainela, Seija and Pekka Sutela (1993), 'Escaping from the Ruble Zone: Estonia and Latvia Compared', unpublished manuscript, Bank of Finland.

Marston, Richard (1993), 'Interest Differentials under Bretton Woods and the Post-Bretton Woods Float: The Effects of Capital Controls and Exchange Risk', in Michael Bordo and Barry Eichengreen (eds), *A Retrospective on the Bretton Woods System*, Chicago, University of Chicago Press, pp. 515-46.

Obstfeld, Maurice (1986), 'Rational and Self-Fulfilling Balance-of-Payments Crises', *American Economic Review*, 76, 72-81.

—(1993), 'The Adjustment Mechanism', in Michael D. Bordo and Barry Eichengreen (eds), *A Retrospective on the Bretton Woods System*, Chicago, University of Chicago Press, 201-68.

—(1994), *The Logic of Currency Crises*, NBER Working Paper No. 4640.

Tobin, James (1978), 'A Proposal for International Monetary Reform', *Eastern Economic Journal*, 4, 153-9.

Truman, Edward (1994), 'Review of "A Retrospective of the Bretton Woods System" ', *Journal of Economic Literature*, 32, 721-3.

Williamson, John (1985), *The Exchange Rate System*, Policy Analyses in International Economics No. 5, Washington, DC, Institute for International Economics, revised edn (first edn 1983).

Williamson, John and Marcus Miller (1987), *Targets and Indicators: A Blueprint for the International Coordination*

of Economic Policy, Policy Analyses in International  
Economics No. 22, Washington, DC, Institute for  
International Economics.

Wyplosz, Charles (1986), 'Capital Controls and Balance of  
Payments Crises', Journal of International Money and  
Finance, 5, 167-80.

## Further reading

Barro, Robert (1979), 'Money and the Price Level Under the Gold Standard,' *Economic Journal* 89, 13-33.

Bernanke, Ben and Harold James (1991), 'The Gold Standard, Deflation, and Financial Crisis in the Great Depression: An International Comparison', in R. Glenn Hubbard (ed.), *Financial Markets and Financial Crises*, Chicago, University of Chicago Press, pp. 11-32.

Bloomfield, Arthur (1959), *Monetary Policy under the International Gold Standard, 1880-1914*, New York, Federal Reserve Bank of New York.

—(1963), 'Short-Term Capital Movements under the Pre-1914 Gold Standard', *Princeton Studies in International Finance*, No. 11, International Finance Section, Department of Economics, Princeton University.

Bordo, Michael D. (1984), 'The Gold Standard: The Traditional Approach', in Michael D. Bordo and Anna J. Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821-1931*, Chicago, University of Chicago Press, pp. 23-120.

Bordo, Michael D. and Richard Elson (1985), 'A Model of the Classical Gold Standard with Depletion', *Journal of Monetary Economics*, 16, 109-20.

Bordo, Michael D. and Anna J. Schwartz (1984), *A Retrospective on the Classical Gold Standard, 1821-1931*, Chicago, University of Chicago Press.

Brown, William Adams (1940), *The International Gold Standard Reinterpreted, 1914-1934*, New York, National Bureau of Economic Research.

Cassel, Gustav (1936), *The Downfall of the Gold Standard*, Oxford, Clarendon Press.

Clapham, John (1944), *The Bank of England: A History*, Cambridge, Cambridge University Press.

Clarke, S.V.O. (1967), *Central Bank Cooperation, 1924-1931*, New York, Federal Reserve Bank of New York.

—(1973), 'The Reconstruction of the International Monetary System: The Attempts of 1922 and 1933', *Princeton Studies in International Finance*, No. 41, International Finance

Section, Department of Economics, Princeton University.

Cooper, Richard (1982), 'The Gold Standard: Historical Facts and Future Prospects', *Brookings Papers on Economic Activity*, 1, 1-56.

Dam, Kenneth W. (1982), *The Rules of the Game: Reform and Evolution in the International Monetary System*, Chicago, University of Chicago Press.

De Cecco, Marcello (1974), *Money and Empire: The International Gold Standard*, Oxford, Blackwell.

Dornbusch, Rudiger and Jacob Frenkel (1984), 'The Gold Standard and the Bank of England in the Crisis of 1847', in Michael D.Bordo and Anna J.Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821-1931*, Chicago, University of Chicago Press, pp. 233-75.

Dutton, John (1984), 'The Bank of England and the Rules of the Game under the International Gold Standard: New Evidence', in Michael D.Bordo and Anna J. Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821- 1931*, Chicago, University of Chicago Press, pp. 173-202.

Eichengreen, Barry (1990), *Elusive Stability: Essays in the History of International Finance, 1919-1939*, Cambridge, Cambridge University Press.

—(1992), *Golden Fetters: The Gold Standard and the Great Depression, 1919- 1939*, New York, Oxford University Press.

—(1996), *Globalizing Capital: A History of the International Monetary System*, Princeton, Princeton University Press.

Fetter, Frank (1965), *The Development of British Monetary Orthodoxy, 1717-1875*, Cambridge, Mass., Harvard University Press.

Ford, A.G. (1962), *The Gold Standard, 1880-1913: Britain and Argentina*, London, Oxford University Press.

Fraser, Herbert (1933), *Great Britain and the Gold Standard*, London, Macmillan.

Garber, Peter (1993), 'The Collapse of the Bretton Woods Fixed Exchange Rate System', in Michael D.Bordo and Barry Eichengreen (eds), *A Retrospective on the Bretton Woods System*, Chicago, University of Chicago Press, pp. 461-94.

Gardner, Richard (1969), *Sterling-Dollar Diplomacy*, New York, McGraw-Hill, 2nd edition.

Goodhart, Charles A.E. (1972), *The Business of Banking*, London, Weidenfeld and Nicolson.

Gregory, T.E. (1935), *The Gold Standard and its Future*, New York, E.P.Dutton, 3rd edition.

Hawtrey, Ralph (1935), *The Gold Standard in Theory and Practice*, London, Longmans Green, 5th edition.

Horsefield, J.Keith (1944), 'The Origins of the Bank Charter Act, 1844', *Economica* 11, 180-9.

—(1969), *The International Monetary Fund, 1945-1965: Twenty Years of International Monetary Cooperation*, Washington, DC, International Monetary Fund.

Ikenberry, G.John (1993), 'The Political Origins of Bretton Woods', in Michael D. Bordo and Barry Eichengreen (eds), *A Retrospective on the Bretton Woods System*, Chicago, University of Chicago Press, pp. 155-200.

James, Harold (1996), *International Monetary Cooperation Since Bretton Woods*, New York, Oxford University Press.

Kenen, Peter (1969), 'The International Position of the Dollar in a Changing World', *International Organization*, 3, 705-18.

Keynes, John Maynard (1913), *Indian Currency and Finance*, London, Macmillan, volume I of *The Collected Writings of John Maynard Keynes*, Cambridge, Cambridge University Press for the Royal Economic Society.

—(1930), *A Treatise on Money*, London, Macmillan, volume VI of *The Collected Writings of John Maynard Keynes*, Cambridge, Cambridge University Press for the Royal Economic Society.

Kindleberger, Charles P. (1973), *The World in Depression, 1929-1939*, Berkeley, University of California Press.

—(1993), *A Financial History of Western Europe*, New York, Oxford University Press, 2nd edition.

Lewis, W.Arthur (1948), *Economic Survey 1919-1939*, London, Allen & Unwin.

Lindert, Peter (1969), 'Key Currencies and Gold, 1900-1913', Princeton Studies in International Finance, No. 24, International Finance Section, Department of Economics, Princeton University.

McKinnon, Ronald (1996), *The Rules of the Game: International Money and Exchange Rates*, Cambridge, Mass., MIT Press.

Meade, James (1951), *The Theory of International Economic Policy*, London, Oxford University Press.

Moggridge, Donald E. (1969), *The Return to Gold, 1925*, Cambridge, Cambridge University Press.

—(1972), *British Monetary Policy, 1924-1931: The Norman Conquest of \$4.86*, New York, Cambridge University Press.

Morgenstern, Oskar (1959), *International Financial Transactions and Business Cycles*, Princeton, Princeton University Press.

Moure, Kenneth (1989), *As Good As Gold: French Monetary Management, 1925- 1936*, Cambridge, Cambridge University Press.

Mundell, Robert (1971), *Monetary Theory*, Pacific Palisades, California, Goodyear Publishers.

Neal, Larry (1990), *The Rise of Financial Capitalism*, Cambridge, Cambridge University Press.

Obstfeld, Maurice (1993), 'The Adjustment Mechanism', in Michael D.Bordo and Barry Eichengreen (eds), *A Retrospective on the Bretton Woods System*, Chicago, University of Chicago Press, pp. 201-68.

Paul, R. and L.Lehrman (1982), *The Case for Gold*, Washington, DC., The Cato Institute.

Pippinger, John (1984), 'Bank of England Operations, 1893-1913', in Michael D. Bordo and Anna J.Schwartz (eds), *A Retrospective on the Classical Gold Standard, 1821-1931*, Chicago, University of Chicago Press, pp. 203-32.

Ramon, G. (1929), *Histoire de la Banque de France*, Paris, B.Grasset.

Redish, Angela (1990), 'The Evolution of the Gold Standard

in England', *Journal of Economic History*, 50, 789-805.

Sayers, Richard S. (1936), *Bank of England Operations, 1890-1914*, London, P.S. King.

—(1957), *Central Banking After Bagehot*, Oxford, Clarendon Press.

—(1976), *The Bank of England, 1891-1944*, Cambridge, Cambridge University Press.

Schubert, Aurel (1991), *The Credit-Anstalt Crisis of 1931*, Cambridge, Cambridge University Press.

Schwartz, Anna J. (1982), 'Reflections on the Gold Commission Report', *Journal of Money, Credit and Banking*, 14, 538-51.

Solomon, Robert (1977), *The International Monetary System, 1945-1976: An Insider's View*, New York, Harper and Row.

Temin, Peter (1989), *Lessons from the Great Depression*, Cambridge, Mass., MIT Press.

Triffin, Robert (1960), *Gold and the Dollar Crisis: The Future of Convertibility*, New Haven, Yale University Press.

United States Gold Commission (1982), *Report to the Congress of the Commission on the Role of Gold in the Domestic and International Monetary Systems*, 2 vols., Washington, DC, GPO.

United States National Monetary Commission (1910), 'Interviews on the Banking and Currency Systems of England, Scotland, France, Germany, Switzerland and Italy', Senate Document no. 405, Washington, DC, GPO.

Viner, Jacob (1937), *Studies in the Theory of International Trade*, New York, Harper Brothers.

Whale, P.B. (1944), 'A Retrospective View of the Bank Charter Act, 1844', *Economica* xi, 109-11.

Williamson, John (1977), *The Failure of World Monetary Reform, 1971-74*, London, Athlone Press.

Wheelock, David (1991), *The Strategy and Consistency of Federal Reserve Monetary Policy, 1924-1933*, Cambridge, Cambridge University Press.