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MONETARY POLICY UNDER THE INTERNATIONAL GOLD STANDARD:

1880-1914

ARTHUR I. BLOOMFIELD

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FOREWORD

THIS monograph is one in the series published by the Federal Reserve Bank of New York relating to monetary policies, techniques, and institutions. In contrast to earlier publications, which have dealt predominantly with modern practices and operations, this booklet looks into the past to explore, in the light of current monetary and banking theory, the relatively neglected record of the performance and policies of central banks within the framework of the pre-1914 gold standard. The author, who is now Professor of Economics and Finance at the University of Pennsylvania, did a large part of his research under a grant from the Rockefeller Foundation while on leave of absence from this Bank, with which he was associated from 1941 to 1958.

In this study the author analyzes, against the background of the working of the pre-1914 gold standard, the setting in which central banks functioned in the period 1880-1914 — their objectives, their criteria, and the nature of their operations and policies. He finds, among other things, that central banks during that period played a much more active and varied role than is usually assumed. While the dominant monetary policy objective in gold standard countries was to maintain convertibility into gold at the established parity, this did not imply indifference to the effects of central bank action on domestic business activity and confidence. Moreover, Professor Bloomfield also shows that most of these central banks resorted to a variety of monetary techniques, apart from the traditional discount weapon, and were already engaging in a number of practices which were to serve as stepping stones to the more elaborate techniques of today. He also casts doubts upon the traditional belief that central banks before 1914 generally held to the so-called “rules of the gold standard game”. These and other related findings indicate that the pre-1914 gold standard was a far more complex mechanism than is generally assumed.

An earlier version of this study has already been published, in French, in the *Bulletin d'Information et de Documentation*, January 1959, of the National Bank of Belgium. The Federal Reserve Bank of New York is pleased to be able to make available this revised version, in English, for students of money and banking and of international finance.

ALFRED HAYES

President

New York City

October 1959

PREFACE

THIS monograph represents part of a larger study on the functioning of the pre-1914 gold standard on which the author has been working intermittently during the past two years. Thanks to a grant from the Rockefeller Foundation, and a leave of absence from the Federal Reserve Bank of New York with which until recently he was associated, he was able to spend a year in Europe in 1957-58 doing research on this larger problem.

During the course of that year he spent periods of time ranging from one week to five months at twelve central banks in Western Europe. He wishes to express his profound indebtedness to officials and staff members of these banks for their many courtesies and for their great help in the collection and interpretation of statistics and other data relating to their respective banks and countries. He also wishes to express his thanks to various European commercial bankers, government officials, and academic economists for their help and advice on various points.

It is impossible here to make explicit acknowledgments to all of these many people, some of whom would doubtless prefer in any case to remain anonymous. But a few acknowledgments have been made in the footnotes of this monograph when such seemed explicitly called for.

An earlier version of this study appeared in French in the January 1959 issue of the *Bulletin d'Information et de Documentation* of the National Bank of Belgium, under the title of "La Politique Monétaire dans le Régime de l'Etalon-Or International: 1880-1914". It is being republished here in English, in enlarged and somewhat revised form, with the kind permission of the editors of that journal.

The author's interest in the pre-1914 gold standard problem — to say nothing of many others — was first aroused some years ago by Professor Jacob Viner and has been sustained by him ever since. This study owes much to his influence, as indeed does almost everything else that the author has written over the past twenty years.

Thanks are also due to Miss Abigail M. Cantwell for her careful editing of the manuscript, to Mr. John H. Hendrickson for his excellent drafting of the charts, and to Miss Olga Pasqua for typing the manuscript.

Finally, the author wishes to express his thanks to his former colleagues for taking the initiative in suggesting that this paper be published by the Federal Reserve Bank of New York, and to the Bank for doing so.

It goes without saying, of course, that the author alone is responsible for any errors of fact or shortcomings of logic that might be contained herein.

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Monetary Policy Under the International Gold Standard: 1880-1914

I. Introduction

In the decades immediately preceding the outbreak of World War I, the currencies of the leading countries of the world, as well as many others, were tied directly or indirectly to gold within the framework of the international gold standard. During this period, extending from about 1880 to 1914, the exchange rates of the various gold standard countries moved within narrow limits approximating their respective gold points without the support of exchange restrictions, import quotas, or related controls, which were virtually unknown even for currencies on paper or silver standards. Only a trifling number of countries were forced off the gold standard, once adopted, and devaluations of gold currencies were highly exceptional. Yet all this was achieved in spite of a volume of international reserves that, for many of the countries at least, was amazingly small and in spite of only a minimum of international cooperation, or of international agreements or commitments, on monetary matters. This remarkable performance, essentially the product of an unusually favorable combination of historical circumstances, appears all the more striking when contrasted with the turbulence of post-1914 international financial experience and remains, even today, a source of some measure of fascination and indeed of puzzlement to students of monetary affairs.

Although much has been written and said about the working of the pre-1914 gold standard, it is astonishing how relatively little systematic research has ever been done in this field in terms of a careful examination of the available source materials and of an analysis of these materials in the light of modern international trade and financial theory. Instead, as the pre-1914 era recedes still further into the distance, stereotypes, oversimplified explanations, and excessively idealized pictures as to how the gold standard operated increasingly take hold. Thus, we are commonly told, among many other things, that the various gold standard countries faithfully played the "rules of the game"; that the adherence to such rules was a factor of major importance in the successful functioning of the system; that the system worked more or less "automatically", with a minimum of discretionary action by the authorities, except in the case of the Bank of England which is alleged to have skilfully "managed" the gold standard system as a whole; that there was a remarkable "smoothness" in the functioning of the mechanism; and so on. All too often, moreover, the pre-1914 gold standard has been described in terms of the operations of the Bank of England alone, or in terms of its working in England and one or two other countries, with only incidental if any consideration being given to the differing status and problems of the many other countries adhering to the gold standard.

In more recent years, to be sure, a number of important studies have thrown valuable empirical and theoretical light on various aspects of the pre-1914 mechanism or have carefully explored the experiences and policies of certain individual gold standard countries. But the fact remains that a great deal of systematic research and analysis has still to be done before a more dependable picture of how the system as a whole actually operated, and of the reasons for its successful functioning, can be expected to emerge.¹

This monograph, which is part of a study that the author is currently undertaking on this larger problem, will be concerned with only one of the many neglected areas of research in this broad field. Its purpose is to present a brief analysis, in the form of a comparative survey, of the monetary policies of the various central banks of the world during the period 1880-1914, to examine some of the stereotypes in this area, and to draw certain conclusions as to the nature

¹It is worth mentioning here, only because it is so often forgotten, that the massive work of the late W. A. Brown, Jr., *The International Gold Standard Reinterpreted, 1914-34*, New York, 1940, is concerned only incidentally with the pre-1914 gold standard. The study of J. Mertens, *La Naissance et le Développement de l'Étalon-Or, 1696-1922*, Paris, 1944, is a scholarly and detailed history of the gold standard, but has relatively little to say about its actual functioning. The recent volume of O. Morgenstern, *International Financial Transactions and Business Cycles*, Princeton, 1959, is an expert piece of statistical analysis concerned mainly with the pre-1914 period but focusing only on the experiences of four leading countries and on certain specialized topics, rather than on the working of the pre-1914 gold standard system as a whole.

and role of monetary policy in the functioning of the pre-1914 system. To the best of my knowledge, no such study, even in the modest form presented here, is as yet available.² Indeed it is surprising that so little work has been done on comparative central banking policies before World War I. Although it is hoped that the following analysis will throw some further light on the working of the pre-1914 gold standard, it must be strongly emphasized that this paper is concerned with only one aspect, although an important one, of a larger and intellectually more challenging problem.

The published materials available for a comparative study of monetary policies from 1880 to 1914, while relatively abundant, are widely scattered and, in general, far from adequate in terms of comprehensiveness or quality.³ Most of the central banks of the day published annual reports — the Bank of England being an outstanding exception — but these are of relatively little value. To the extent that they involved more than mere factual summaries of changes in the various balance-sheet items, they tended to place primary emphasis on matters of particular interest to the shareholders, such as the size of bank earnings and the volume of bank business. Little if any consideration was given to problems or techniques of credit policy, and only rarely were there discussions of the reasons why specific policies were adopted or of the criteria followed. Without exception, central bankers chose to reveal as little as possible concerning their operations and policies and, it may be presumed, to present such information as was made available in a manner designed to put their respective institutions in the most favorable light.

More helpful than annual reports are the official or semiofficial published histories that now exist for most of the leading central banks before 1914.⁴ Many

²There are available a substantial number of earlier studies that summarize the functions, operations, and history of individual central banks before 1914, but they do not involve the kind of comparative study of monetary policies that is attempted here. See, e.g., C. A. Conant, *A History of Modern Banks of Issue*, 5th ed., New York, 1915; R. Uilens, *Les Banques d'Emission*, Brussels, 1908; R. G. Lévy, *Banques d'Emission et Trésors Publiques*, Paris, 1911; Journal of Commerce, *A History of Banking in All the Leading Nations*, New York, 1896; and R. Tauber, *Die Banken der Welt*, Berlin, 1912.

³There is good reason to believe that even the unpublished records of many, if not most, of the central banks before 1914 are likewise unsatisfactory from the viewpoint of revealing the nature and rationale of their policies.

⁴For the most important of these studies, see J. H. Clapham, *The Bank of England*, London, 1944; G. Ramon, *Histoire de la Banque de France*, Paris, 1929; *Die Reichsbank, 1876-1900*, Berlin, 1900, and *Die Reichsbank, 1901-1925*, Berlin, 1925; *Sveriges Riksbank, 1688-1924*, 5 vols., Stockholm, 1918-20 and 1931; P. Kauch, *La Banque Nationale de Belgique, 1850-1918*, Brussels, 1950; E. Slansky, *La Banque Impériale de Russie*, St. Petersburg, 1910; E. Schybergson, *Finlands Bank, 1811-1911*, Helsingfors, 1914; H. Schneebeil, *La Banque Nationale Suisse, 1907-1932*, Zurich, 1932; N. Rygg, *Norges Bank Historie*, 2 vols., Oslo, 1918 and 1954; and A. Rubow, *Nationalbankens Historie, 1878-1908* [National Bank of Denmark], Copenhagen, 1920. The first volume of an official history of the Netherlands Bank by Dr. A. M. de Jong is available but covers the period only up to 1864. An official history of the Austro-Hungarian Bank by Dr. Siegfried Pressburger is in the course of preparation.

of these studies, however, to the extent that they discuss monetary policy in any detail, are written in terms of an older-fashioned conception of the monetary mechanism or do not measure up to modern standards of historical scholarship.⁵ In a few cases valuable insights into pre-1914 central banking policies and their rationale can be obtained from the published testimony of various central banking officials before government committees⁶ or from government reports and parliamentary debates. Unfortunately, such material is relatively scarce for the period under consideration. As for central banking statistics, annual and in many cases monthly or even weekly balance sheets were regularly published before 1914, but the classification of the various items was frequently of such a nature as to cloak statistical information essential to a detailed analysis of central banking operations and policies.

In addition to the various publications cited above, there is extensive non-official monographic literature relating to various aspects of central banking and of monetary policy before 1914, especially in England, France and Germany. While much of this literature is of indifferent quality, there are included here some studies of the very highest order, including among others the well-known works in more recent years of Hawtrey, Sayers, King, and Beach on the Bank of England, Bopp on the Reichsbank, and White on the Bank of France.⁷ Reference should also be made to the useful surveys of central banking in various countries prepared for the United States National Monetary Commission in 1910, and to the various financial periodicals of the day, notably the London *Economist*. These and the other sources cited above have been drawn upon, among others, in the analysis which follows.

⁵I hasten to say that these comments do not apply to the excellent studies of Clapham, Kauch, and Schneebeli, among others.

⁶Most notably, the testimony of various European bankers before the United States National Monetary Commission in 1910 and of German bankers before the German Bank Inquiry of 1908-9.

⁷See R. S. Sayers, *Bank of England Operations, 1890-1914*, London, 1936; R. G. Hawtrey, *A Century of Bank Rate*, London, 1938; W. E. Beach, *British International Gold Movements and Banking Policy, 1881-1913*, Cambridge, Mass., 1935; W. T. C. King, *History of the London Discount Market*, London, 1936; K. Bopp, "Die Tätigkeit der Reichsbank von 1876 bis 1914", *Weltwirtschaftliches Archiv*, 1954, I, pp. 34-56 and 179-221; and H. D. White, *The French International Accounts, 1880-1913*, Cambridge, Mass., 1933, especially pp. 172-223. Reference should also be made to the earlier studies of K. Eisfeld and P. Kalkmann on the Netherlands, E. Kaufmann on France, A. Jöhr on Switzerland, M. Ansiaux and E. van Elewycq on Belgium, C. Supino and E. Corbino on Italy, A. Nielsen on Denmark, and L. von Mises on Austria. There is a relative dearth of nonofficial studies on pre-1914 central banking in the Scandinavian countries and in Japan, even, I am reliably informed, in the languages of the countries concerned.

II. The Institutional Setting of Monetary Policy

Although the pursuit of an active monetary policy, in the sense of discretionary management of the monetary system with a view to achieving specific objectives, need not necessarily presuppose the formal existence of a central bank, this monograph will focus only on those countries that had central banks and were on the gold standard, or some variant of it, during the period 1880-1914 or some part of it. More specifically, it will be concerned with the policies of the following central banks (arranged in order of establishment): the Swedish Riksbank (1668), the Bank of England (1694), the Bank of France (1800), the Bank of Finland (1811), the Netherlands Bank (1814), the Bank of Norway (1817), the National Bank of Denmark (1818), the National Bank of Belgium (1850), the State Bank of Russia (1860), the German Reichsbank (1876), the Austro-Hungarian Bank (1877),⁸ the Bank of Japan (1882), the Bank of Italy (1893), and the Swiss National Bank (1907). All these banks were in existence in 1880, when our period starts, except for the last three; and all of them conformed broadly to the concept of a central bank,⁹ although in varying degrees. All of the countries in question were on the gold standard or some variant of it during the entire period except Russia and Japan, which went onto the gold standard in 1897, and Austria-Hungary and Italy,¹⁰ which *legally* did not go onto the gold standard at all but which from about the turn of the century until 1914 kept their exchange rates relatively stable in terms of gold standard currencies and close to their own theoretical gold parities.

Excluded from the scope of this study, because of their relative unimportance or because the currencies of the countries in question were not tied to gold, are the other central banks or quasi-central banks existing during this period, such as the Bank of Spain, the Bank of Portugal, the National Bank of Egypt, the Imperial Ottoman Bank, the State Bank of Morocco, the Bank of Java, the National Bank of Rumania, the National Bank of Bulgaria, and the Serbian National Bank. Excluded too, from the scope of this study are those countries that did not have a central bank at all — even if they were on the gold standard — including such important countries in the pre-1914 system as the

⁸If account were taken of the fact that the Austro-Hungarian Bank actually grew out of the Austrian National Bank, established in 1817, it would be placed earlier in the list.

⁹The concept of a central bank was not, of course, too clearly articulated or understood before the turn of the century, and some of these banks were not always fully aware of their special functions and responsibilities. Of the various central banks under discussion here, the Swedish Riksbank and the Bank of Italy probably did not become "real" central banks until about the turn of the century.

¹⁰From 1883 to about 1891, however, Italy might also be said to have been on the gold standard.

United States,¹¹ Canada, Australia, New Zealand, South Africa, India, Argentina, Brazil, and Mexico.

It might be noted here that the structure of the pre-1914 gold standard was far from the simple and uniform thing that it is often supposed to have been. Its actual form, both in law and in practice, differed considerably from country to country and also changed over time in the case of individual countries. It is impossible here to discuss the many forms of gold standard systems (legal and *de facto*) or to attempt a detailed classification of the exact status of each individual gold standard country. Broadly speaking, however, one might distinguish countries on a "full" gold standard, such as England, Germany, and perhaps the United States; countries on a so-called "limping" gold standard (legal convertibility of notes into gold or full-legal-tender silver coins at the option of the authorities), such as France, Belgium, and Switzerland; and countries on a wide variety of forms of "gold exchange standard", such as Russia, Japan, Austria-Hungary, the Netherlands, most of the Scandinavian countries, Canada, South Africa, Australia, New Zealand — all of which held a substantial part or the bulk of their external reserves in foreign exchange — and, in a peculiarly rigid form, India, the Philippines, and a number of other Asiatic and Latin American countries, whose currency systems operated analogously to modern currency boards. Even this classification is far too simple, since there was much overlapping in individual cases.

From an *internal* point of view there were also considerable differences from country to country in the relative composition of the currency supply as between gold coin, silver coin, bank notes, and in some cases Treasury notes. Gold coin formed a relatively large part of the currency circulation only in England, France, Germany, the United States, and (after 1897) Russia, and in several of the smaller countries such as Australia, South Africa, and Egypt. In other gold standard countries gold coin circulation was relatively small, either because the public preferred other forms of currency media, e.g., Austria-Hungary and the Scandinavian countries, or because the authorities did not freely redeem notes into gold for purposes of internal circulation, e.g., Belgium, Switzerland, and the Netherlands.

Finally, it should be noted that the composition of the gold standard "club" changed over the course of the period. By the end of the century nearly all the leading countries had linked their currencies to gold in one form or another; and

¹¹A few references will be made, however, to the United States, especially since the United States Treasury before 1914 performed some of the functions of a central bank.

many of the smaller Asiatic and Latin American countries did so in the late 1890's and early 1900's, mainly in the form of some variety of the gold exchange standard. A number of countries also dropped out of the "club" during the course of the period, such as Argentina (1885), Portugal (1890), Italy (1891), Chile (1898), Bulgaria (1899), and Mexico (1910); but Argentina, Italy, and Bulgaria returned to gold (legally or *de facto*) in 1900, 1902, and 1906, respectively. A substantial number of countries never entered into the "club" at all, but remained throughout the period on a fluctuating paper standard (especially Spain and various Latin American countries) or silver standard (for example, China, El Salvador, and Honduras). Reference might also be made to the existence of various regional monetary groupings, including the Latin Monetary Union (France, Belgium, Switzerland, Italy, and Greece), the Scandinavian Monetary Union (Sweden, Norway, and Denmark), and the much less clearly defined and far less formal "sterling area".

Before turning to an examination of the policies of the central banks here under discussion, some general comments will first be made regarding the nature of their operations and organization and of the milieu within which they operated.

An inspection of the balance sheets of the various central banks between 1880 and 1914 reveals that holdings of gold were, for the great majority of these banks, the largest single asset item throughout that period.¹² If, moreover, one includes holdings of foreign exchange and silver along with gold,¹³ the total of these external assets was, in the case of most central banks, in excess of the total of domestic income-earning assets (discounts, advances, and securities) from year to year. In most cases external assets also rose faster in absolute terms than domestic assets over the period as a whole, indicating that the growth of central bank money (notes in circulation and deposits at the central bank) and of commercial bank reserves was influenced more by the former than by the latter. In the case of the Bank of Finland, the Swedish Riksbank, and the National Bank of Belgium, holdings of foreign exchange (foreign bills, balances with foreign correspondents, and foreign bonds) were usually or invariably the

¹²Throughout this study we shall generally work with the annual averages of monthly balance-sheet figures. Several attempts have been made to bring such figures together for various central banks before 1914 in comparable form. The most useful of these for our purpose, although covering only seven of the fourteen banks here under discussion, is the official German publication, *Vergleichende Notenbank-Statistik, 1876-1913*, Berlin, 1925.

¹³Official gold reserves were in most cases concentrated in the central bank, holdings of gold by the Treasury being relatively small. In the case of Japan and Russia, however, the Treasury held substantial amounts of gold. Where no central bank existed, such as in the United States, gold reserves were held by the Treasury and/or by the various note-issuing banks.

largest component of the external assets total from year to year; and such holdings constituted a substantial proportion of the total in the case of the Russian State Bank, the Bank of Norway, the Bank of Japan, and apparently the Austro-Hungarian Bank.¹⁴ Silver holdings, while small or negligible for the majority of the central banks, were relatively substantial during all or part of the period in the case of the Reichsbank, the Bank of France, the Netherlands Bank, the National Bank of Belgium, and the Austro-Hungarian Bank.¹⁵

With regard to domestic income-earning assets, discounts of inland bills were a larger item than advances against collateral in nearly all the cases where such a statistical segregation is available. Bill holdings were predominantly of short maturity drawn for the financing of "genuine" commercial transactions; and their predominance reflected a widespread belief at the time that central banks should constantly be in a highly "liquid" condition and that such bills were the most "liquid" form of domestic income-earning asset.¹⁶ Advances against collateral were similarly made for only very short periods but, being deemed less "liquid", were usually granted at a somewhat higher interest rate than that at which bills were discounted. Advances by central banks to the government were in most cases relatively small and of temporary duration designed to meet seasonal or other short-term needs¹⁷ and were sometimes subject to various legal limitations.¹⁸ Holdings of government securities, whether acquired directly from the government or in the open market, were likewise relatively small in most cases and generally circumscribed by law or by tradition. Little statistical information is available regarding central bank holdings of nongovernmental securities, but in no case could these have been of significant size.

Almost without exception, central banks before 1914 engaged in a regular commercial banking business with the general public and in some cases on a very

¹⁴The world total of official holdings of foreign exchange in 1913 has been estimated at about \$500 million, compared with total official gold holdings of \$4 billion and gold in circulation (including the commercial banks) of \$3.6 billion (at the valuation of \$20.67 per fine ounce). See International Monetary Fund, *International Reserves and Liquidity*, Washington, 1958, pp. 15-6. Substantial amounts of foreign exchange were apparently held by the governments of Russia, Italy, Belgium, Japan, Sweden, and Finland (as well as by their central banks).

¹⁵In fact, silver holdings were actually larger than gold holdings in the case of the Reichsbank until the mid-1880's, the Bank of France until about 1890, the Netherlands Bank until 1904, and the Austro-Hungarian Bank until 1894.

¹⁶This was in accord with the so-called "real bills doctrine". On the evolution of this doctrine, see L. W. Mints, *A History of Banking Theory*, Chicago, 1945.

¹⁷In some cases, however, such as the Bank of England and the Bank of France, the central bank also held a permanent debt of the government which it had acquired in connection with the original grant of the note issue privilege or with the periodic renewals of the bank's charter.

¹⁸For example, the Netherlands Bank was authorized in 1888 to make advances to the state up to a limit of 5 million florins. In 1903 the limit was raised to 15 million florins.

substantial scale.¹⁹ This brought these banks, with their wide network of branches throughout the country, into some measure of direct competition with the commercial banks. Concern for earnings, moreover, all too often colored their operations and policies to the detriment of their central banking responsibilities — the Bank of England being a good case in point.²⁰ On the other hand, the fact that central banks engaged in direct dealings with the public gave them some added measure of control over the market. As the period progressed, however, the commercial banking side of the business of central banks tended to decline in relative and absolute importance with the rapid growth of the commercial banks and other money market institutions and with the movement toward banking concentration that proceeded in most of the countries. More and more, central banks tended to become predominantly “bankers’ banks”, although even by 1914 the commercial banking operations of most of these banks were by no means negligible. On this matter, however, reliable statistical information is almost nonexistent.

Little need be said about the liabilities side of the various central bank balance sheets. Note circulation from year to year was almost always larger, and usually much larger, than total deposit liabilities. Only in the case of the Bank of England were deposits invariably larger than notes. Deposits held by the government in the central bank — where such a statistical separation is available — tended to constitute the largest and most volatile part of the deposits total. Few statistics are available for the deposits in the central bank of other banks, as contrasted with the general public.²¹

Except for the Bank of France,²² all of the central banks under consideration were subject to various forms of legal reserve requirements against their note issues and, in the case of Belgium, Finland, and the Netherlands, other demand liabilities as well. These requirements were imposed for the purpose of minimizing the possibility of an “overexpansion” of the note issue and of providing for the convertibility of notes into gold or other legal reserves. Such requirements

¹⁹From 1882 to 1897, however, the Bank of Japan had confined its discount and loan business to other banks alone. See I. Hamaoka, *The Bank of Japan*, Tokyo, 1902, p. 61.

²⁰In this connection, attention should be called to the fact that virtually all of the central banks before 1914 were privately owned. The main exceptions were the State Bank of Russia, the Bank of Finland, and the Swedish Riksbank. In some cases, e.g., the Bank of Japan and the Bank of Italy, even though the banks in question were privately owned, the government exercised a large measure of direct control in their day-to-day operations.

²¹In J. H. Clapham's *Bank of England*, p. 436, there are made available for the first time statistics on the deposits of the London Clearing Banks in the Bank of England from 1878-1913, in the form of annual highs and lows. Annual statistics of the deposits of the Russian commercial banks in the Russian State Bank before 1914 are likewise available in an appendix to the study of E. Epstein, *Les Banques de Commerce Russes*, Paris, 1925.

²²The Bank of France note issue was subject simply to a ceiling which was periodically raised whenever approached.

had the effect, of course, of “locking up” a roughly corresponding amount of reserves and of necessitating the maintenance of an adequate amount of *excess* reserves to meet potential demands.

One might broadly distinguish the three main kinds of cover systems then in effect: so-called “fiduciary systems”, whereby all notes above a given uncovered (fiduciary) issue had to be backed 100 per cent in legal reserves (England, Finland,²³ Japan, Norway, and Russia²⁴); so-called “proportional systems”, whereby notes, and in some cases other demand liabilities, had to be covered by a minimum proportion of legal reserves (Belgium, the Netherlands, and Switzerland²⁵); and systems involving a combination of both (Germany, Italy, Sweden, and Austria-Hungary).²⁶ Various changes were made over the period in the reserve requirements of some of the central banks in the form, for example, of changes in the definition of legal reserves or of increases in the amount of the fiduciary issue; and the National Bank of Denmark shifted in 1907 from a fiduciary system to a proportional system. Gold was, of course, included in all cases in the definition of legal reserves, and in many cases foreign exchange and/or silver could also be included, although often only up to specified amounts or to specified proportions of the gold or total legal cover. Flexibility was built into the cover system of some of the central banks in the form of permitting note issues to exceed the legal limits upon payment of a specified tax (Austria-Hungary, Germany, Italy, Japan, and Norway) or of permitting reserves to fall below their legal minimum with the authorization of the Minister of Finance (Belgium).

Several of the central banks under consideration, namely those of England, Finland, Germany, Italy, Japan, and Sweden, did not have a complete monopoly of the issue of bank notes during the period in question. But in nearly all these cases the note circulation of the other banks of issue was only a relatively small part of the total and, as the period progressed, either declined further in importance or was completely retired under the provisions of special laws. For example, the issue of the Swedish Riksbank was actually smaller in amount than the combined issue of the private banks until about the end of 1900, but by 1903 all private bank issues had been retired. In the cases of Finland, Japan,

²³In the case of the Bank of Finland other demand liabilities were included with notes.

²⁴The Russian system went into effect in 1897.

²⁵Before the foundation of the Swiss National Bank in 1907, the various Swiss banks of issue had been subject both to the “proportional” system and to a maximum authorized issue for each bank.

²⁶Some of the banks, such as the Swedish Riksbank, were also obliged to keep a “supplementary” cover of specified assets against that part of the note issue not covered by metallic reserves.

and Switzerland, private bank issues had been retired by about 1892, 1899, and 1910, respectively.

A similar trend was evident with regard to government paper money in those of our group of countries where such money had been issued. Government note issues in Japan and in the Netherlands were retired by 1897 and 1909, respectively, and those in Austria-Hungary had virtually disappeared by 1903. Only in the case of Italy did the total of Treasury notes show no marked reduction in absolute terms over the period; but, in any case, such notes were considerably smaller in volume than bank notes during nearly all of the period.

All of the countries here under discussion had fairly developed commercial banking systems²⁷ at the beginning of the period and there was rapid growth thereafter. Only in the case of Great Britain, however, was the use of checks highly developed,²⁸ although on the Continent there was increasing resort to the use of equivalent means of payment through the development of systems of *Giro-Verkehr* or *virements* under the sponsorship of central banks (and, in some cases, postal authorities). The business of commercial banking was for the most part subject only to the requirements of the general company law, or in certain cases to the provisions of special banking laws of usually limited scope. Elaborate banking codes existed only in Japan and Sweden.²⁹

Statistical information regarding the commercial banks is quite meager. Balance-sheet statements were usually published only on an annual basis and the various items were grouped into relatively broad classifications that are not very helpful from an analytical viewpoint. Detailed consolidated (annual) balance-sheet statements for the commercial banks as a whole are available only for Sweden, Finland, Russia, Austria, and the United States; and even here the classification of items leaves much to be desired. Little or nothing is known for the various countries about such important matters as the division of bank reserves between vault cash and deposits at the central bank, the volume of borrowings from the central bank, the size of foreign short-term assets and liabilities, and the short-run fluctuations in the ratios of commercial bank reserves to deposits.³⁰ Given the limited statistical information available, no generalizations regarding

²⁷On the Continent, of course, commercial banking was usually intermingled with investment banking, with the possible exceptions of France and most of the Scandinavian countries, where there was a fairly clear-cut institutional division between the two.

²⁸The use of checks was also highly developed in the United States and Canada.

²⁹And also the United States and Canada. See A. M. Allen et al., *Commercial Banking Legislation and Control*, London, 1938, pp. 4-7.

³⁰Only in Russia and the United States, as far as I am aware, were commercial banks obliged by law to maintain minimum ratios of reserves to deposits.

these and related matters can safely be made.

It need hardly be said that the various central banks operated within the framework of money and capital markets of widely differing degrees of development. At one pole was the highly organized and truly international London market; at the other were the virtually nonexistent markets of the Scandinavian countries. In between, there existed the fairly active markets of Berlin, Paris, Vienna, Amsterdam, Brussels, and Zurich. These and the few other developed markets, notably New York, were linked together, given the widespread confidence in the stability of exchange rates and in the free convertibility of the currencies concerned, by a highly effective system of international short- and long-term credit, centered primarily in London—which was also the world's great clearing center — and by equilibrating flows of foreign balances that were highly sensitive to interest rate differentials and to exchange rate movements within the narrow limits of the gold points.

Central banks also operated within the framework of economies where the public sector was in general only a relatively small one,³¹ where fiscal policy and debt management policy in their modern sense were virtually unknown, and where government budgets were for the most part in balance. Treasury operations, of course, had their effect on the money market, especially at certain seasons of the year, sometimes coinciding with, and sometimes conflicting with, the aims of monetary policy. There appears, however, to have been relatively little coordination in general between the operations of the two agencies. Although the interests of central banks and governments by no means always coincided, broadly speaking central banks were allowed to operate for most of the time without government interference of a disturbing nature.³² Given the prevailing philosophy of the day, and for other reasons, there was in fact widespread acceptance of the principle that, regardless of their precise legal status vis-à-vis the state, central banks should have a high degree of autonomy in carrying out their operations and policies.

Although the aggregate money supply of the various individual gold standard countries was tied to, and its growth ultimately limited by, their reserves of gold (and foreign exchange), the ratio of the one to the other, while changing over time, differed considerably from country to country according to the ratio

³¹In Great Britain, for example, the ratio of total current public expenditure to national income ranged between only 10 and 15 per cent from 1880 to 1914. See U. K. Hicks, *British Public Finances, 1880-1952*, Oxford, 1954, pp. 12-3.

³²See, e.g., P. B. Whale, "Central Banks and the State", *The Manchester School*, X, 1939, pp. 41-2; and K. Bopp, "Central Banking at the Crossroads", *American Economic Review*, Proceedings, XXXIV, 1944, pp. 262-4.

of central bank reserves (required and excess) to central bank demand liabilities and the ratio of reserves to deposits of the commercial banks. For example, the ratio of gold reserves to the aggregate demand liabilities of the banking system in England was much lower (indeed, it appears to have been less than 5 per cent during the period in question) than that, say, in France, Russia, or Austria-Hungary. Indeed, the level of the gold reserves of the Bank of England was deemed so relatively low that there was continuing public concern in England up to 1914 regarding the “adequacy” of these reserves in the light of the potential drains, external and internal, to which the bank was subject. Similar concern over central bank reserves, although of lesser intensity, was also expressed from time to time in some other countries, such as Germany and Belgium. Yet at no time during the period, as far as I am aware, were the continuing stability and convertibility of sterling, or indeed the currencies of other leading gold standard countries, ever seriously questioned. Admittedly, as will be noted later, there were occasions when “extraordinary” measures to protect convertibility were required in various countries, but I know of virtually no instances of major or sustained “runs” on any of these currencies.³³

From the viewpoint of the gold standard world as a whole, it was necessary for the supply of gold (and other forms of international reserves) to increase at a rate sufficient to support the growing volume of money needed to finance the growth in world production, as well as to provide the volume of reserves needed for exchange stability and convertibility. The view has been expressed that during the earlier part of the period the rate of growth of world gold production (in relation to monetary and nonmonetary demand for gold) was in fact insufficient, and the downward pressure on world price levels during the Great Depression of 1873-96 has in various quarters been attributed to this fact.³⁴ After 1890, however, with the discovery of new gold mines in South Africa and America and of new processes for working old gold mines, the international liquidity situation was greatly eased.³⁵ The increasing use of checks and of related devices that economized on the use of gold, as well as the growth of official foreign exchange reserves, also operated in the same direction.

³³While the phenomenon of “hot money” was by no means so rare before 1914 as is often believed, it was, as far as gold standard countries were concerned, predominantly of the politically inspired, or “capital flight”, variety as contrasted with the unstabilizing speculative variety induced by anticipations of exchange rate movements much beyond the limits of the gold points. In the case of currencies not tied to gold, however, there is ample evidence of the latter kind of “hot money” flows as well.

³⁴For a brief summary of these ancient doctrinal controversies, see W. W. Rostow, *British Economy of the Nineteenth Century*, Oxford, 1948, pp. 145 ff.

³⁵The annual average of world gold production rose from 5.1 million fine ounces in 1881-90 to 10.2 million in 1891-1900 and to 18.3 million in 1901-10. See C. O. Hardy, *Is There Enough Gold?*, Washington, 1936, p. 42.

Broadly speaking, over the period as a whole, the supply of new gold flowing into monetary use proved adequate, given other forces at work, both to maintain a reasonable measure of world price level stability and, of course, to maintain exchange rate stability and convertibility within the gold standard world. Nevertheless, attention should be called to the growing "international competition" for gold after 1900 on the part of many of the leading central banks and governments and also to the special measures, e.g., the fostering of currency-substituting mechanisms and the issue of small-denomination notes, which some of them undertook in an effort to economize further on the use of gold.

In addition to the above-mentioned institutional circumstances relevant for pre-1914 central banking policy, and contributing in part to the successful maintenance of the gold standard itself, one should refer, finally, to the strong secular expansion in world production and trade and to the large and unimpeded flow of international long-term investment that characterized the period 1880-1914 as a whole and facilitated adjustments to balance-of-payments disequilibria. Indeed, there is good reason to believe that the magnitude of the disequilibria themselves was relatively much more moderate than in the years since 1914. Of importance, too, is the fact that, despite growing international political tensions and a not inconsiderable number of localized wars, the period for the most part was one of relative peace.

III. Objectives and Criteria of Monetary Policy

Although official pronouncements in published or oral form before 1914 as to the objectives and criteria of central banking policy were relatively few and usually lacking in precision, it is of course undeniable that the dominant and overriding objective of monetary policy in the various gold standard countries was to maintain the convertibility of the national currency directly or indirectly into gold at the legal parity, i.e., to maintain approximately fixed exchange rates against other gold currencies. "Convertibility" as an objective of monetary policy before 1914 meant, not, as it does today, the avoidance of exchange and direct trade controls (which were then virtually unknown), but rather the avoidance of fluctuating exchange rates that would result from severing the fixed link between the national currency and gold. For the currencies of *all* countries were always freely "convertible" in the modern sense, but not always at a fixed price.

Since convertibility was the major objective of monetary policy, the major criterion or guide of policy was, by the same token, the behavior of the reserve ratio of the central bank as affected by movements of gold (external and in some cases internal as well), by changes in central bank holdings of other legal reserves, and by changes in the liabilities of the central bank. Decreases in the reserve ratio, at least when they carried or threatened to carry the excess reserves of the central bank to levels deemed unduly low from the viewpoint of maintaining convertibility, characteristically led to increases in the discount rate and/or to other measures designed to check or reverse the movement.

On the other hand, when reserve ratios rose, central banks were under no similar compulsion to take measures of the opposite kind. Continuing increases in their reserve ratios were, to be sure, usually followed by reductions in discount rates, but such reductions appear to have reflected, not the awareness by central banks that such action might help other countries, and thus indirectly their own, to maintain stable exchange rates, but rather such considerations as the desire to minimize holdings of a nonincome-earning asset like gold or to maintain contact with the money market for technical reasons.³⁶ Indeed,

³⁶Note the asymmetrical character of the following statement by a Bank of England official before the United States National Monetary Commission in 1910: "The Bank rate is raised with the object either of preventing gold from leaving the country, or of attracting gold to the country, and lowered when it is completely out of touch with the market rates and circumstances do not render it necessary to induce the import of gold."

I can find no clear-cut evidence that any central bank ever lowered its discount rate following gold inflows from abroad because of an explicit desire to play, or even because of an awareness of, the “rules of the game”. To the extent that central banks did take action *deliberately* to help other central banks, such action was usually of a more direct sort and was motivated primarily by a desire to protect their own domestic markets from adverse developments elsewhere.³⁷

The view, so widely recognized and accepted in recent decades, of central banking policy as a means of facilitating the achievement and maintenance of reasonable stability in the level of economic activity and of prices was scarcely thought about before 1914, and certainly not accepted, as a formal objective of policy.³⁸ In an age dominated in general by the spirit of *laissez faire*, relatively few central banks were willing to admit of any explicit obligations other than that of the maintenance of the monetary standard, or displayed any enthusiasm for using credit control for purposes other than that. But central banks were of course not unaware of, or entirely insensitive to, the effects of their actions upon the level of business activity and the state of business confidence. As will be discussed in more detail below, many central banks resorted, to an increasing extent as the period progressed, to measures other than discount rate increases in the face of gold drains with the specific purpose of avoiding the disturbances to domestic business that would otherwise follow; and several of the banks, especially the Bank of France, referred to the relative stability and lowness of their discount rates as a measure of their achievements.³⁹ When financial crises broke, moreover, central banks usually took measures to allay the panic and to facilitate orderly liquidation by lending freely, though at high rates,⁴⁰ and on occasions provided special aid to important commercial banks that had suspended payments or were in danger of doing so.⁴¹ Central bank credit was also sometimes

³⁷On this, see below, pp. 56-7.

³⁸The Macmillan Report of 1931 (p. 117) refers to the fact that “before the war scarcely anyone considered that the price level could or ought to be the care or preoccupation, far less a main objective of policy, on the part of the Bank of England or any other Central Bank”. See also J. Viner, “International Aspects of the Gold Standard”, *Gold and Monetary Stabilization*, ed. by Q. Wright, Chicago, 1932, p. 18 and *passim*.

³⁹A common statistical exercise before 1914 was to compare the frequency of change and the range of variability of the discount rates of various central banks. For a leading example, see R. H. I. Palgrave, *Bank Rate and the Money Market*, New York, 1903, pp. 191 ff. The Bank of England invariably came out the “worst”, and the Bank of France the “best”.

⁴⁰This function of “lender of the last resort” had been accepted, but in many cases slowly and reluctantly, by most of the central banks during the period in question. In this connection Walter Bagehot’s book on *Lombard Street* had exerted a great influence.

⁴¹Examples of this are provided by the aid of the Bank of England to Baring Brothers in 1890; of the Bank of France to the Union Générale in 1882, the Comptoir d’Escompte in 1889, and the Société de Dépôts in 1891; of the Reichsbank to the Leipziger Bank in 1901; and the Bank of Italy to the Società Bancaria Italiana in 1908.

tightened in the upper stages of a business boom, when not already prompted by strict convertibility considerations, with the deliberate purpose of curbing “overtrading” and speculative excesses that might lead to an eventual financial crisis.

Given the primary objective of convertibility, a monetary policy aimed at greater short-run stability of domestic activity in the face of gold movements would have necessitated at times a greater accumulation of excess reserves than many central banks wished to accept, and a willingness to permit greater periodic declines in their reserves than many central banks were able or wanted to countenance. This was certainly the case with the Bank of England. Had the Bank been prepared to acquiesce in larger periodic accumulations and depletions of its gold reserves, less frequent and violent changes in its discount rate would have occurred, and the greater internal stability that would have tended to result would not only have been of benefit to England but, given that country’s key position in the world economy, have redounded to the benefit of the entire gold standard world. But there was no evidence in this case of an imaginative monetary policy of this kind.⁴²

It is often argued that monetary policy before 1914, except perhaps in the case of the Bank of England, was essentially “automatic”, involving more or less mechanical responses to gold movements and a minimum of “discretionary” action and judgment.⁴³ This is a misconception. Not only did central banking authorities, so far as can be inferred from their actions, *not* consistently follow any simple or single rule or criterion of policy, or focus exclusively on considerations of convertibility, but they were constantly called upon to exercise, and did exercise, their judgment on such matters as whether or not to act in any given situation and, if so, at what point of time to act, the kind and extent of action to take, and the instrument or instruments of policy to use. This in turn depended upon their evaluation as to the probable size and duration of reserve movements and of the various factors, domestic and foreign, acting upon them; their weighting of various policy objectives when such tended to conflict with each other; and their judgment regarding the probable effects of alternative

⁴²From this point of view at least, the Bank of England cannot be said to have “managed” the pre-1914 gold standard system as a whole. On this, see J. Viner, “Clapham on the Bank of England”, *Economica*, XII, 1945, p. 63, and his *Studies in the Theory of International Trade*, New York, 1937, pp. 269-70. On the other hand, the Bank clearly “managed” Britain’s gold standard.

⁴³See, e.g., A. H. Hansen, *Full Recovery or Stagnation?*, New York, 1939, p. 208: “There was, outside of England, virtually no monetary management. . . . There was no central, deliberate, or conscious monetary policy.” See also G. Myrdal, *An International Economy*, London, 1956, p. 73.

policy measures. This is not to imply, of course, that the judgments and actions (or lack of action) were always wise or correct; indeed, the quality of management seems often to have been very poor. But it does indicate that discretionary judgment and action were an integral part of central banking policy before 1914, even if monetary management was not oriented toward stabilization of economic activity and prices in the broader modern sense.

IV. Discount Policy

Before 1914, as is well known, monetary policy consisted primarily, though by no means exclusively, of discount policy. Broadly speaking, discount policy involves any measures by the central bank affecting the cost and availability of central bank credit to the market through discounts of paper and advances against collateral. It involves both changes in rates on discounts and advances and changes in the condition of access to central bank credit (kinds of eligible paper and collateral, duration of credits, and so forth). Under the pre-1914 system the former was a far more important arm of discount policy than the latter.

Every central bank quoted at all times at least one official discount rate at which it was prepared to discount eligible paper; and in some cases (Belgium and Japan) several official discount rates applicable to different kinds of eligible paper were quoted. A number of central banks (e.g., England, Germany, and Italy) at one time or another discounted at so-called preferential or private rates for certain classes of customers or bills;⁴⁴ and at various times the Bank of England discounted at rates in excess of its official rate.⁴⁵ Nearly all the banks quoted a separate rate for advances against collateral, which was usually but not always higher than the official discount rate,⁴⁶ and in some cases there were different rates for advances depending upon the kind of collateral tendered. The various discount rates and advances rates of each bank usually tended to move together in the same direction, though not always by the same amount. Official discount rates were almost always higher than open market rates for prime bills (where open market rates may be said to have existed); in ordinary times, therefore, prime bills tended to be discounted in the market, whereas much of the paper discounted at the central bank tended in many cases to be second-name (though eligible) bills.

Detailed regulations were usually laid down regarding the various conditions of access to central bank credit. Eligible discountable paper was usually defined carefully in such terms as the number and kinds of signatures, the conditions under which it was drawn, and the period that it had to run to maturity. Eligible col-

⁴⁴Indeed, the value of the bills discounted at these preferential rates was a substantial proportion of total discounts in the case of the Reichsbank and the Bank of Italy. Between 1880 and 1896, when the German preferential rate was in existence, the annual proportion for the Reichsbank ranged between 10.9 and 52.3 per cent. See *Die Reichsbank, 1876-1910*, Berlin, 1912, p. 132. In the case of the Bank of Italy, the proportion ranged between 53.4 per cent in 1908 and 24.4 per cent in 1912. See G. Rouleau, *Les Règlements par Effets de Commerce en France et à l'Étranger*, Paris, 1914, p. 121.

⁴⁵See R. S. Sayers, *op. cit.*, pp. 50-5.

⁴⁶In the case of the Bank of Italy it was in fact sometimes lower. See J. Scheffler, "Die Bank von Italien", *Schmoller's Jahrbuch*, 1912, p. 218.

lateral against advances was likewise defined carefully, and limits were placed on the duration of advances.

THE AVAILABILITY OF CENTRAL BANK CREDIT

Although our primary interest is in discount *rate* policy, a few comments may first be in order regarding the extent to which central banks may have altered the *availability* of their credit—through changes in the formal conditions of access to such credit *and* in the degree of severity with which these conditions were applied at any time—with the deliberate objective of exerting credit restraint or ease in specific situations. Certainly it is known that many of the central banks changed their formal requirements from time to time,⁴⁷ e.g., restricting or relaxing the eligibility of bills, but it seems probable that such changes were more frequently made to alter the quality or character of the central bank's portfolio as such, or to meet special situations,⁴⁸ than from the viewpoint of deliberately influencing the aggregate *size* of that portfolio and thus the condition of the money market as a whole.⁴⁹

It is much more difficult to ascertain the extent to which central banks may have periodically tightened or relaxed their vigilance in applying the regulations existing at any time with a view to exerting desired pressure or ease on the money market. Most of the banks appear to have relaxed the severity of application of their regulations at times of financial panic so as to make credit more freely available, though at high rates of interest. It is reasonable to assume, moreover, that central banks tended to apply their regulations more scrupulously at times of growing pressure than at times of ease. But no inferences can safely be drawn as to the quantitative importance or effects of such a pattern of behavior.

It is possible, too, that some of the banks may at times have rationed credit in more direct forms when it was desired to exert monetary restraint, such as by tightening lines of credit to individual borrowers. But here again the scanty evidence available is too conflicting to admit of any definite conclusions. One writer, for example, has asserted that rationing was part of the ordinary routine of central banks before 1914, that no commercial bank was allowed to borrow all that it might have wished to, that his own experience with "three great central banks" had shown that every commercial bank was assigned a ration, and that

⁴⁷Over the period as a whole there was a general tendency for the conditions governing recourse to central bank credit to be liberalized.

⁴⁸For example, various central banks at times refused to discount finance bills drawn by foreign countries so as to discourage short-term borrowing by foreigners.

⁴⁹This, for example, is Bopp's conclusion regarding the Reichsbank.

such ration was cyclically varied as well as currently revised.⁵⁰ On the other hand, the testimony of various German and French commercial bankers before the United States National Monetary Commission in 1910 seems to point, at least so far as their central banks were concerned, in the opposite direction. They argued that they were able to operate on relatively small ratios of reserves to liabilities because of their confidence (presumably based on their past experience) that their respective central banks would always freely rediscount their eligible paper in case of need.⁵¹

DISCOUNT RATES, CENTRAL BANK RESERVE RATIOS, AND CYCLICAL FLUCTUATIONS

Of more interest here are the changes in discount rates, which constituted the main instrument of central banking policy under the pre-1914 gold standard. In an attempt to throw some light on the pattern of discount rate policy during the period 1880-1914, charts have been prepared, which are reproduced here, covering nearly all of the central banks included in the study,⁵² for the relevant years,⁵³ and comparing the annual averages (of monthly figures) of official discount rates and of central bank reserve ratios. A more sophisticated statistical approach would, of course, involve formal correlation analysis and perhaps also the use of monthly figures instead of annual averages, but I do not believe that the basic conclusions would be significantly altered. Arrows are inserted on each chart indicating the successive annual dates of business-cycle peaks and troughs in each of the countries concerned.⁵⁴

The choice and computation of the various reserve ratios used in the charts posed a number of problems, inasmuch as one cannot be sure exactly what "reserve ratio" each central bank most closely followed in deciding upon discount

⁵⁰See J. Schumpeter, *Business Cycles*, New York, 1939, p. 651.

⁵¹Precisely the same point with regard to the Belgian commercial banks has been made by B. S. Chlepner, *Belgian Banking and Banking Theory*, Washington, 1943, pp. 28-30.

⁵²Excluded are the Bank of Japan, the Bank of Italy, and the Swedish Riksbank because of the inadequacy of the statistical information available to me. In the case of the Bank of Italy, there was the additional reason that its official discount rate altered but little and remained in fact unchanged at 5 per cent from November 1894 to October 1907.

⁵³The charts for Austria-Hungary and Russia date from 1895 and 1898, respectively, corresponding roughly to the years when these two countries went, legally or *de facto*, onto the gold standard. The chart for Switzerland dates only from 1907, when the National Bank of Switzerland was established.

⁵⁴The turning-point dates used for England, France, and Germany are the well-known calendar-year reference dates of the National Bureau of Economic Research. The turning-point dates for Finland, Denmark, Norway, and Switzerland were kindly provided by Dr. Veikko Halme, Dr. Anders Olgaard, Dr. Gabriel Kielland, and Dr. G. Jaquetmet, respectively. For Belgium, I have estimated the approximate turning-point dates on the basis of statistical information appearing in articles in the *Bulletin de l'Institut des Sciences Economiques* (Louvain) for December 1929, August 1931, and August 1933. For the Netherlands, Russia, and Austria, I have used the data presented in W. Thorp, *Business Annals*, New York, 1926, pp. 94-5. In the case of the Netherlands, I was unable to get turning-point dates before 1890.

rate changes, if indeed it followed any one consistently. Where legal reserve requirements specified a minimum ratio of *all* external assets (gold, foreign exchange, and silver) to *all* sight liabilities (notes and deposits), no special problem arose in selecting the reserve ratio to be used for our purpose. But should one include foreign exchange and/or silver in the numerator of the ratio where exchange and/or silver holdings were large but not counted, or counted only in part, in the definition of legal reserves? Should one include deposits in the denominator of the ratio in those cases where the legal reserve requirements did not specify cover against deposits? What should be done when the legal requirements were of the fiduciary, as contrasted with the proportional, type or when the definition of legal reserves changed over the period?

In those cases where the choice of the reserve ratio was not limited by statistical availabilities, I experimented graphically with several possible ratios and in some cases with the absolute amounts of excess reserves alone. Nearly all of these possibilities yielded, in the case of each central bank, substantially identical results in terms of the direction of change in their annual movements, so that any one of them can safely be used for purposes of comparison with discount rate changes. Wherever possible, I used the broadest concept of the reserve ratio, namely, the ratio of gold, foreign exchange, and silver to total sight liabilities.⁵⁵

An inspection of Charts 1-4 reveals, in the case of England, Germany, Austria-Hungary, Belgium, the Netherlands, and Russia, a good (and in a few instances marked) inverse correlation as to direction between the annual average movements in central bank discount rates and reserve ratios—rising discount rates being characteristically associated with falling reserve ratios and conversely. This result is in keeping with what one would generally expect. In the case of the Bank of France, however, the inverse correlation was much less marked, since discount rates tended to remain unchanged for rather lengthy periods of time. On the other hand, there was no evidence of any inverse correlation in the case of the Bank of Finland from 1880 to 1894, in the case of the National Bank of Denmark from 1897 to 1913, or in the case of the Bank of Norway from 1891 to 1913. Nor was there any evidence of an inverse correlation in the case of the Swiss National

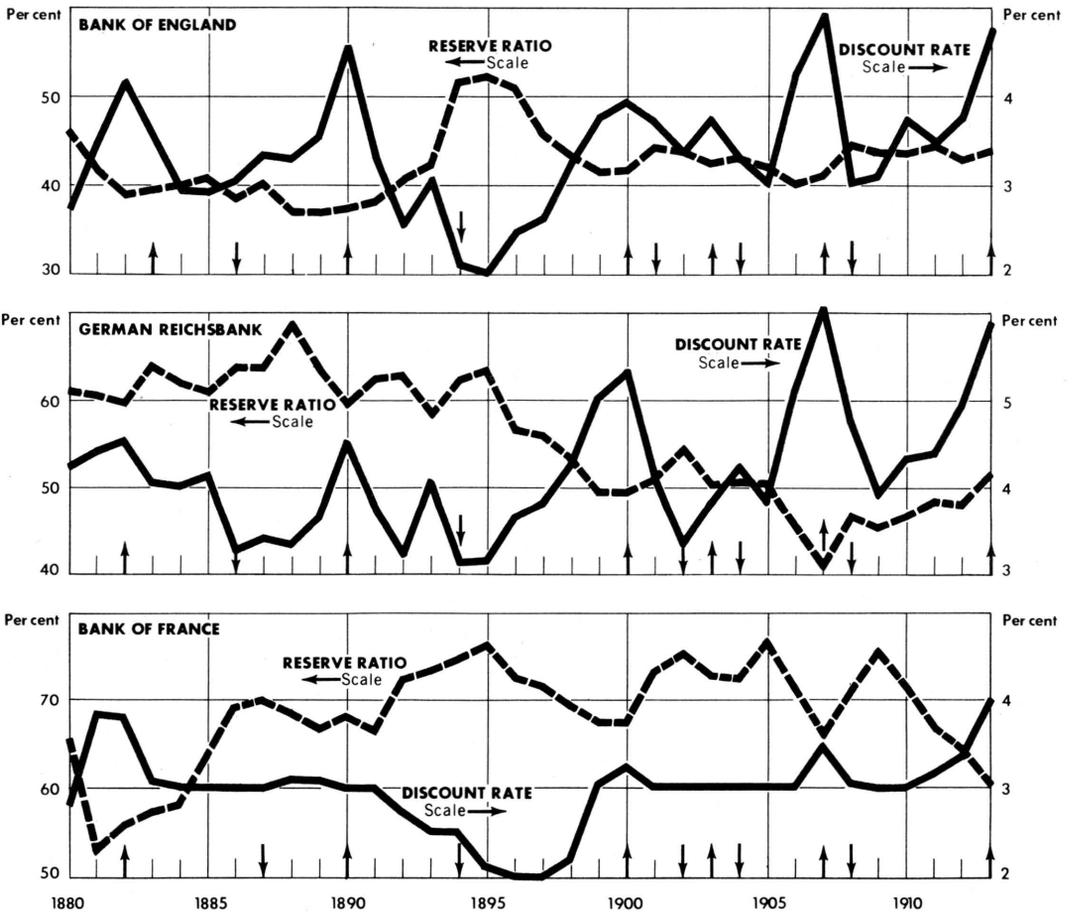
⁵⁵In the case of the French, German, Swiss, and Austro-Hungarian banks, foreign exchange holdings were excluded from the numerator because complete statistics were not available, but such holdings, with the possible exception of the Austro-Hungarian Bank, are known to have been of relatively small size. In the case of the Norwegian and Danish banks, deposits were excluded from the denominator for the same reason, but here again the item excluded was relatively small.

Incidentally, no special significance should necessarily be attributed to the differing average *levels* of reserve ratios for individual countries over the period as a whole. High average levels of ratios could still be consistent with relatively low absolute amounts of *excess* reserves, depending upon the severity of the system of legal requirements. Thus, the Bank of Finland usually had a very high reserve ratio but only relatively small excess reserves because of relatively stringent reserve requirements.

Bank, although admittedly the period covered here was extremely short.

The fact that, for five of the eleven banks examined, discount rates and reserve ratios did *not* characteristically move in opposite directions—even on an annual average basis—indicates that the link between discount rate changes and movements of gold (and other external assets) was not so close or general under the

CHART 1
CENTRAL BANK DISCOUNT RATES AND RESERVE RATIOS
 Annual averages of monthly figures



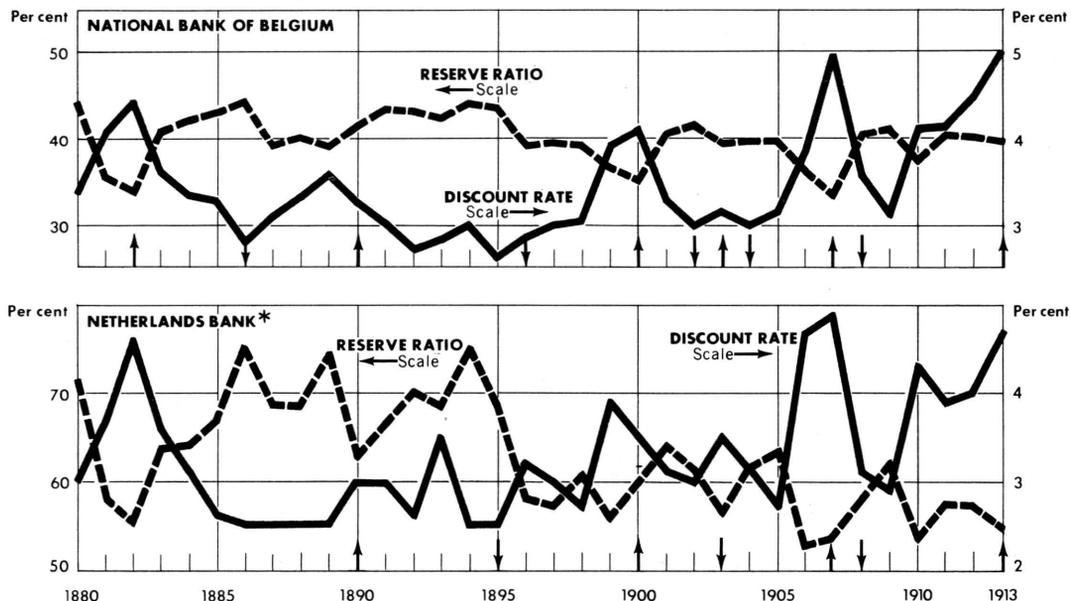
Note: Arrows on the bottom of each panel indicate the successive annual turning-point dates of business cycles in each country.

pre-1914 gold standard as is often supposed. This is not to imply, of course, that the central banks in question did not keep a close eye on the movement of their reserves and reserve ratios, for they clearly did and invariably acted decisively, by discount rate increases or other measures, when convertibility was threatened. But it does suggest the importance of other considerations acting upon discount rate policy in these cases. For example, some of the central banks in question may have chosen to accumulate and to hold a volume of excess reserves that implied the avoidance of frequent rate decreases when reserves flowed in, and that obviated the need for frequent rate increases when reserves flowed out (this seems to have been clearly so in the case of the Bank of France); some may have made unusually large use of devices other than discount rate changes as a means of influencing international reserve movements in order to avoid unsettling domestic

CHART 2

CENTRAL BANK DISCOUNT RATES AND RESERVE RATIOS

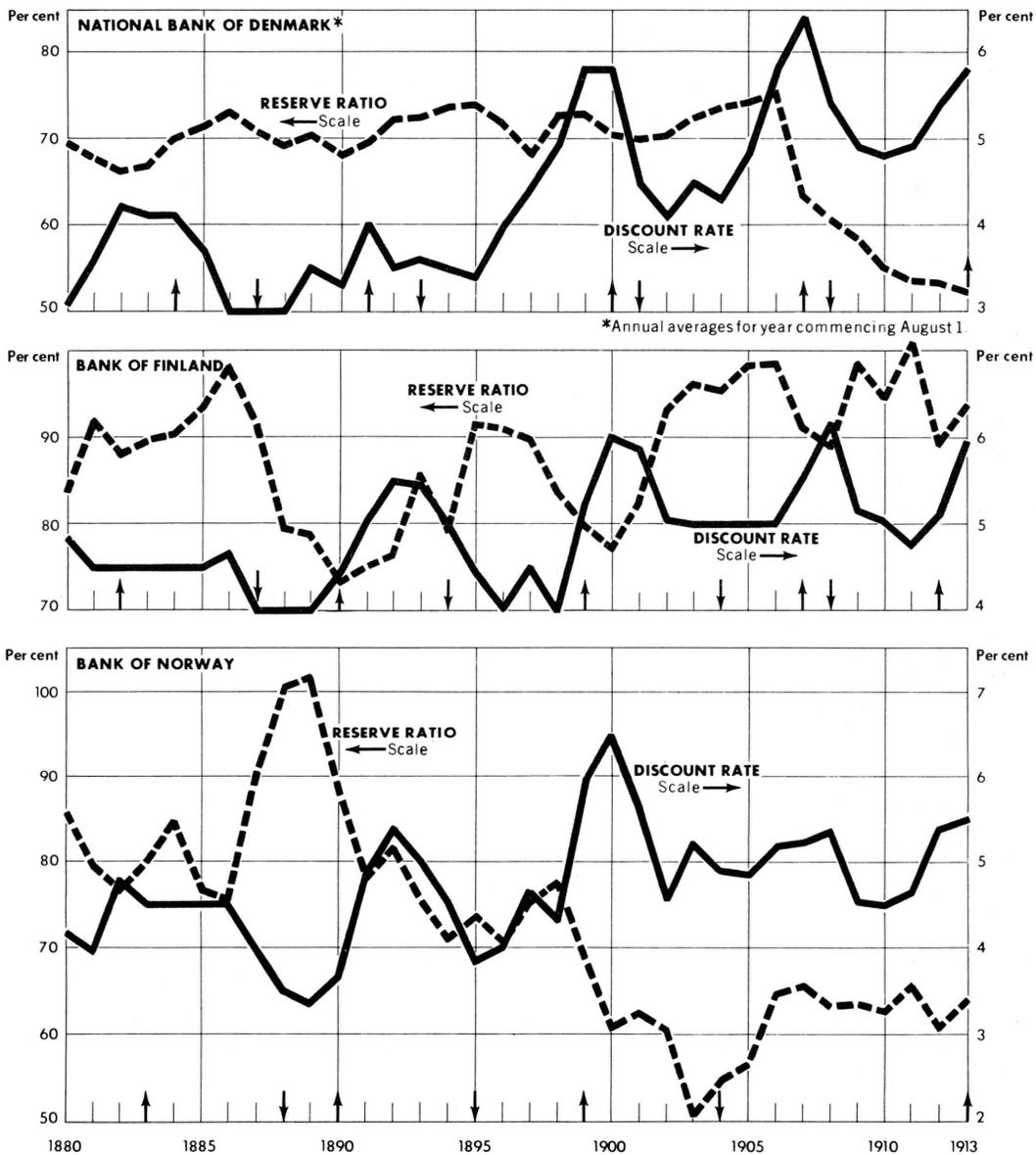
Annual averages of monthly figures



Note: Arrows on the bottom of each panel indicate the successive annual turning-point dates of business cycles in each country.

* Annual averages for year commencing April 1.

CHART 3
CENTRAL BANK DISCOUNT RATES AND RESERVE RATIOS
 Annual averages of monthly figures

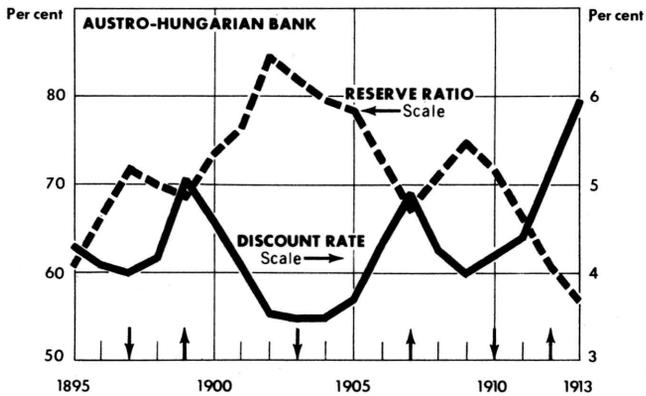
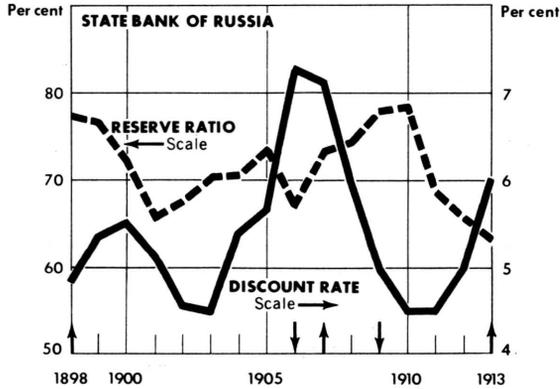
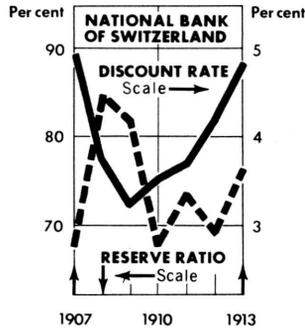


Note: Arrows on the bottom of each panel indicate the successive annual turning-point dates of business cycles in each country.

CHART 4

CENTRAL BANK DISCOUNT RATES AND RESERVE RATIOS

Annual averages of monthly figures



Note: Arrows on the bottom of each panel indicate the successive annual turning-point dates of business cycles in each country.

business (of the central banks under discussion here, this could have been true only of France and perhaps Switzerland); and, finally, some of the banks may have frequently geared their discount rate changes to discount rate movements elsewhere, even when such changes were not indicated by movements in their own reserve ratios (this seems to have been true of the Scandinavian banks).⁵⁶ It should be noted, however, that some or all of these considerations also influenced the discount rate policies of at least some of those central banks for which there was a good inverse correlation between discount rate changes and reserve ratios.

Although no attempt has been made to compare *monthly* movements of discount rates and reserve ratios for those central banks that *did* exhibit a good inverse correlation on an annual average basis,⁵⁷ it is obvious that in all these cases a monthly correlation, to the extent that it existed at all, would have been much less pronounced than the annual one. Clearly, discount rates did not change from month to month as reserve ratios did. Even when monthly changes in reserve ratios were relatively substantial, moreover, there is reason to believe that central banks did not always react mechanically in the expected fashion by discount rate changes; instead, they may have remained relatively passive or resorted to other measures as a means of influencing reserve movements in the short run. We can only be sure, given the inverse correlation on an annual average basis, that the major (cumulated) short-run movements of the reserve ratio in one direction during the course of the year must have been generally associated with discount rate changes in the opposite direction. Some of these movements, it might be noted, especially in the cases of England and Germany, were of a regular seasonal character.⁵⁸

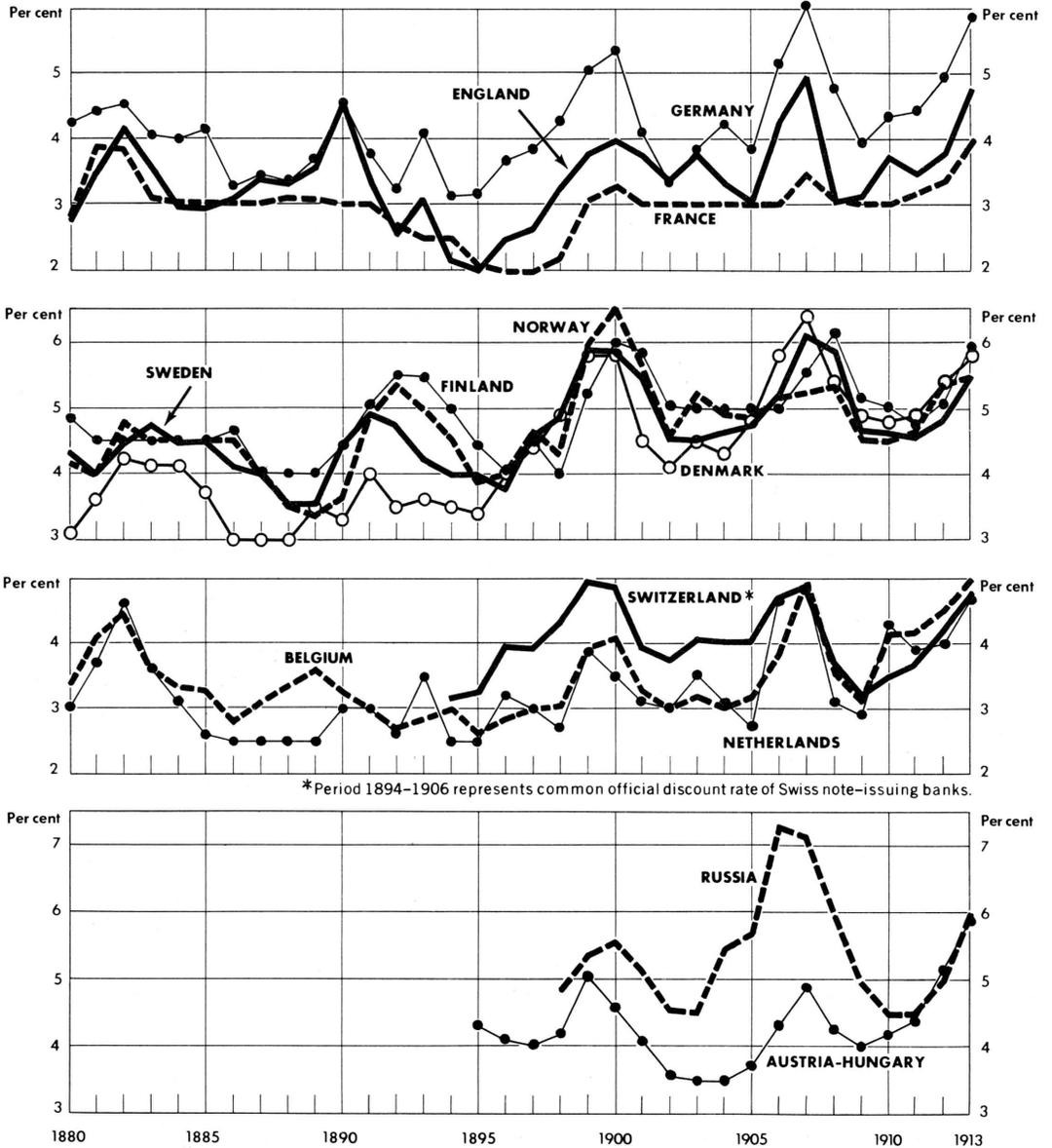
Chart 5, on which are plotted the annual averages of the discount rates of twelve central banks for the relevant periods, reveals the further interesting fact that, in their larger movements at least, the discount rates of virtually all the banks tended to rise and fall together. This parallelism of movement was espe-

⁵⁶It is possible, and indeed even logical to expect, that the absence of a good inverse correlation between discount rate changes and reserve ratios may have also been due to the fact that some of the central banks in question, while closely gearing discount rate increases to declines in reserve ratios, may not have as consistently geared discount rate decreases to increases in reserve ratios. But a careful examination of the statistics underlying the charts, both for these banks and for those that *did* show a good inverse correlation, indicated that in no case, except perhaps for the Reichsbank, were discount rate increases associated with falling reserve ratios relatively much more often than discount rate decreases were associated with rising reserve ratios, over the period as a whole. Monthly comparisons might, however, reveal a somewhat different picture.

⁵⁷Obviously, there would be no point in making monthly comparisons in the case of those central banks for which there was no good inverse correlation on an annual average basis.

⁵⁸The seasonal pattern of gold inflow and outflow in pre-1914 England was carefully analyzed by Jevons and Palgrave, among others. Keynes found it remarkable that the Bank of England did nothing to mitigate the money market effects of these movements. See J. M. Keynes, *A Treatise on Money*, New York, 1930, II, p. 230.

CHART 5
DISCOUNT RATES OF CENTRAL BANKS
 Annual averages of monthly figures



cially marked during the last twenty years of the period. To some degree, and certainly for many of the banks, this broad similarity reflected competitive or “defensive” discount rate changes. Thus, for example, some of the banks tended to increase their discount rates when other banks did so—even if the immediate state of their reserve ratios did not strictly call for such action—in order to protect their markets against prospective outflows of short-term funds and gold that might, in the absence of such action, have tended to occur. But a more important explanation may lie in the fact that discount rates in most, though by no means all, of the individual countries tended—as the dating and direction of the arrows in the earlier charts indicate—to show a positive correlation, though generally not a very marked one, with domestic business-cycle fluctuations. Since, as is well known, major cyclical fluctuations tended to be broadly synchronous in all countries, discount rate movements thus generally tended to exhibit a broad parallelism over the course of the world cycle—although there were, of course, many dissimilarities with respect to short-term rate movements in the various countries.

Does it necessarily follow from the foregoing, and in contradiction to what has been said earlier, that most central banks tended deliberately to adjust their discount rates to the alternating phases of the business cycle, i.e., to pursue a conscious countercyclical monetary policy designed to level out the swings in domestic economic activity and prices? Not at all. For it has already been shown that, for more than half of the banks examined, discount rates also tended to move *inversely* with reserve ratios, which consequently tended likewise to move inversely with the business cycle.⁵⁹ Thus, for these banks, discount rate changes could instead have been geared—and indeed seem clearly to have been geared—primarily to the reserve ratio rather than to business fluctuations. Even for some of the other banks, moreover, discount rate changes could have been geared primarily to discount rate changes elsewhere rather than to domestic cyclical movements.

Broadly speaking, the pattern of discount rate policy for those central banks whose discount rates moved inversely with reserve ratios and positively with the movements of the business cycle appears to be explainable mainly as follows.

⁵⁹Although there was an inverse correlation between the discount rate and the reserve ratio of the State Bank of Russia, neither of these series showed any consistent correlation with domestic business cycles. Conversely, although there was no close inverse correlation between the discount rate and the reserve ratio of the Bank of France, there was in this case an inverse correlation between the reserve ratio and the business cycle. Russian business cycles, it might be noted, were heavily influenced by fluctuations in Russian agriculture and thus did not always follow world cycles closely. See S. A. Perushvin, “Cyclical Fluctuations in Agriculture and Industry in Russia, 1869-1926”, *Quarterly Journal of Economics*, August 1928, especially pp. 587-9.

In the upswing of the cycle, as reserve ratios tended to decline, the central banks in question tended to raise their discount rates primarily out of concern for the convertibility of their currencies and only incidentally, if at all, as a means of moderating the business expansion as such.⁶⁰ Likewise, in the downswing of the cycle, as reserve ratios tended to rise, the central banks in question tended to lower their discount rates because of such considerations as a desire to increase earnings or to keep in touch with the market, and only incidentally, if at all, for the purpose of moderating the decline in business activity. But it is evident that such a discount rate policy, while primarily motivated by changes in reserve ratios, also happened fortuitously to coincide with that policy called for from the viewpoint of moderating cyclical swings. In other words, there generally tended, over the cycle as a whole, to be no major conflict between external stability and internal stability.⁶¹ There were, of course, innumerable occasions when discount rate changes, under the influence of reserve ratio movements, were of a sort tending in the shorter run to have a disturbing effect upon domestic business, but, from the viewpoint of the business cycle as a whole, it would appear that the discount rate policy of the central banks in question tended to have a stabilizing rather than an unstabilizing effect.

Now why *did* central bank reserve ratios tend to be inversely correlated with domestic business-cycle fluctuations in these cases? The statistics for the two components of the ratios reveal a tendency in each case for central bank reserves, and to a lesser degree for central bank liabilities, to move inversely with the business cycle. This indicates that the tendency for reserve ratios to be inversely correlated with the cycle must have been due primarily to the cyclical pattern of central bank reserves alone.⁶² Changes in reserves reflected both external and internal influences. With regard to the latter, there would be a natural tendency, in the upswing of the cycle, for gold and/or silver coin to move from central

⁶⁰With regard to the Bank of England, one writer has recently argued that the primary function of a rise in the discount rate was to call in short-term funds and gold from the rest of the world whenever the Bank's gold reserve showed a dangerous fall; and that if the rise happened also to check domestic investment this effect was incidental. On some occasions, he points out, such a secondary effect happened to fit in with the economic needs of the country; on others, such as in 1907, the discount rate increase merely transmitted an "irrelevant disturbance" to the system. See F. W. Paish, "The New Gold Standard", *Transactions of the Manchester Statistical Society*, 1957, p. 5.

⁶¹In discussing the pre-1914 gold standard mechanism, one writer has argued that it would be a "lucky coincidence" if the policy that was right for maintaining convertibility was also right for preserving price stability or any other aim in view. See G. Crowther, *An Outline of Money*, rev. ed., London, 1950, p. 306. The evidence presented above suggests, however, that for the countries in question, and at least over cyclical periods as a whole, the "lucky coincidence" occurred more regularly than Crowther's statement would seem to suggest.

⁶²The statistics for *all* of the central banks in our group, including those that showed an inverse correlation between reserve ratios and business cycles and those that did not, reveal that reserves and liabilities moved much more frequently in the same direction than in the opposite direction and also that movements of reserves influenced the movements of reserve ratios much more frequently than did movements of liabilities.

bank reserves into internal circulation to meet the needs of the growing volume of monetary transactions and, in the downswing, for coin to move in the opposite direction. Thus, on this ground alone, there would be a tendency for central bank reserves (and the reserve ratio) to fall in the upswing and to rise in the downswing. This cyclical tendency could of course have been reinforced, and in some cases was probably reinforced, by external net drains of gold and other reserves in the upswing and by net inflows of reserves from abroad in the downswing. On the other hand, this cyclical tendency could theoretically have been *upset* by sufficiently large net imports of reserves in the upswing and by sufficiently large net exports in the downswing. But this latter possibility evidently could not have occurred on any consistent basis in the case of those countries for which central bank reserve ratios were, in fact, inversely correlated with the business cycle.

Direct statistical information of a reliable sort regarding the pattern of external (and internal) gold movements before 1914 is relatively meager. Nevertheless, some brief comments regarding external gold flows, based on official statistics, may be made for England, France, and Germany. In the case of England, for example, W. E. Beach (*op. cit.*) found a tendency for net gold imports to grow in the prosperity phase of British business cycles and for net gold exports to grow in depression. He attributed this cyclical pattern to changes in interest rates in Britain induced by cyclical internal gold movements. These external gold flows, as suggested above, however, were not of sufficient size to counteract the inverse cyclical pattern of the Bank of England reserve ratio resulting from internal currency flows. In the case of France, the net external flow of gold, which was usually inward, tended to be small in prosperity years (or replaced by net exports) and to be large in depression years.⁶³ Net gold imports in prosperity, however, were obviously insufficiently large to offset the decline in the reserve ratio of the Bank of France which was associated with increased coin circulation at home; and in depression years they tended to *reinforce* the rise in the reserve ratio. As for Germany, there appears to have been no consistent cyclical pattern at all in the net external movement of gold.⁶⁴

It is difficult to account satisfactorily for the pattern of discount rate changes in those countries, especially Norway, Finland, and Denmark, where the respec-

⁶³See A. Aftalion, "Les Variations Cycliques Irrégulières dans les Relations Economiques Internationales", *Revue d'Economie Politique*, XLVII, 1933, pp. 281-2.

⁶⁴See J. Pesmazoglu, "Some International Aspects of German Cyclical Fluctuations, 1880-1913", *Weltwirtschaftliches Archiv*, 1950, I, pp. 103-5. That internal currency movements were more important than external gold movements in influencing the reserve ratio and thus the discount rate policy of the Reichsbank is further suggested by the fact that, according to that bank, of the forty-nine increases in its discount rate from 1880 to 1910, twenty-five were attributed to increased money needs at home, nine to actual or potential losses of gold abroad, and fifteen to a combination of both. See *Die Reichsbank, 1876-1910*, p. 222.

tive charts reveal no noticeable inverse correlation over the period as a whole between those changes and central bank reserve ratios. Since these three countries were "export economies", and since therefore their levels of domestic activity were primarily determined by fluctuations in their exports of goods and services and their imports of long-term capital, one would even expect that the reserve ratios of their central banks would tend to move *positively* with business cycles.⁶⁵ But our statistics do not show any such consistent pattern.

The lack of any consistent or significant correlation (inverse or positive) between discount rates and reserve ratios for these three banks over the period as a whole might perhaps be explained, in part at least, on the following grounds. Normally these banks might have tended to gear the changes in their discount rates primarily to those of the larger European central banks⁶⁶ rather than to their own reserve ratios, and to depart from the pattern only when convertibility was seriously threatened. Thus, if falling business activity were accompanied by substantial reserve drains, these banks might have tended to raise their discount rates, although the rates of banks elsewhere would be tending to fall at such a time. On the other hand, if reserve ratios rose in years of business expansion, they may have normally tended to follow the rise in discount rates elsewhere, rather than *lower* their rates.

THE WORKING OF DISCOUNT RATE POLICY

Nothing can be added here, except for a few general comments, to what others have already written on the as yet unsettled issues of the precise *modus operandi* of discount rate policy under the pre-1914 gold standard or of the degree to which it was effective in achieving its objective of influencing the level of central bank reserves. These are matters on which the available statistics can in any case throw little light.⁶⁷

⁶⁵In "export economies", as is well known, there tends to be a cyclical conflict between the requirements of external and of internal stability. In periods of business expansion, central bank reserves rise; internal stability would tend to call for discount rate increases, but external stability would tend to call for discount rate decreases. Conversely, falling reserves in a depression would tend to call for credit ease from the viewpoint of internal stability, but credit restraint from the viewpoint of external stability. This conflict has been well discussed by H. C. Wallich, *Monetary Problems of an Export Economy*, Cambridge, Mass., 1950, pp. 301-6.

⁶⁶The Bank of Finland, however, according to one writer, primarily geared its discount rate changes before 1914 to its own reserve position, although in making such changes the bank referred to the influence of other criteria as well, such as the domestic business and credit situation, the example of foreign central banks, the position of the private banks, the trend of foreign trade, and the possibility of foreign loans. See A. E. Tudeer, *The Bank of Finland, 1912-1936*, Helsinki, 1940, p. 8.

⁶⁷The only attempt, of which I am aware, to measure statistically the effects of discount rate changes in the short run on the level of central bank reserves under the pre-1914 system is made in an ingenious article dealing specifically with the Netherlands Bank by J. Van Ettinger, "Discontorente en beschikbaar metaal-saldo van de Nederlandsche Bank", *De Economist*, 1940, pp. 501-19, a digest of which in English has been kindly prepared for me by Mr. Cornelis de Jong. The author concludes, on the basis of his statistical method, that the bank's discount rate changes characteristically had the expected short-run effect on the volume of its reserves.

Central bankers, to the extent that they expressed their views on the subject during the period under consideration, almost invariably paid homage to the efficacy of discount rate policy as an instrument of monetary control, although they rarely if ever discussed what they believed to be the precise chain of causation through which it exerted its effects. Discount rate increases—at least when they had corresponding effects on market rates of interest, were carried far enough, and were not offset by parallel increases by other central banks—were generally said to have the desired effect of checking reserve drains or even of inducing reserve gains. In actual practice, however, these necessary conditions were often not realized. Indeed, as the period progressed, there was an increasing tendency for various writers to express skepticism regarding the effectiveness of discount rate policy⁶⁸—in substantial part because of the growing difficulties in some countries of effectively transmitting discount rate increases to the market—and for alternative measures of monetary control to be recommended.

There was no lack of discussion before 1914, even if relatively little of it came from central bankers, as to how changes in discount rates were supposed to influence the movements of central bank reserves. The literature on the *modus operandi* of discount rate policy, however, was primarily the product of English writers and reflected the experience of the London money market. Such discussion as took place on the Continent was, with some outstanding exceptions like that of Wicksell, usually a pale reflection of the English thinking and all too rarely adjusted to fit the differing money market structures of the countries in question.

As far back as the early nineteenth century, there had been recognition of two main “channels” through which discount rate changes were supposed to exert their influence.⁶⁹ Given the usual assumption that central banks would be able to make their rates “effective” in the market, discount rate changes were believed to influence the international movement of gold (and other reserves) in an equilibrating direction, first, by a short-run effect upon the volume and direction of international capital movements and, secondly, by a slower-working effect upon the trade balance through changes in prices induced by changes in the volume of borrowing from the banking system and thus in the money supply.⁷⁰

⁶⁸See, e.g., M. Ansiaux, “Le Taux Privé de l’Escompte et le Cours du Change”, *Revue Economique Internationale*, November 1913, pp. 227 ff.; and K. von Lumm, “Influence de l’Evolution Moderne sur la Politique de l’Escompte”, *ibid.*, August 1912, pp. 293 ff.

⁶⁹See, e.g., the studies of J. Viner, R. G. Hawtrey, and L. W. Mints and of E. Wood, *English Theories of Central Banking Control, 1819-1858*, Cambridge, Mass., 1939.

⁷⁰Recognition was also given in some cases to the effect of discount rate changes upon the volume of internal gold circulation.

This account of the working of discount rate policy, with some variations, reached its classic expression in the explanation offered in the famous Cunliffe Report of 1918 as to how the pre-1914 gold standard (at least in Great Britain) was supposed to have operated.⁷¹

Changes in interest rates had undeniably an important influence on the international flow of capital (especially short-term funds) in the pre-1914 world, at least so far as the more developed money markets were concerned. Given the fact that exchange rate stability was taken for granted among the gold standard countries, international movements of capital proved highly sensitive in the short run to changes in interest rates in different markets,⁷² although the degree of response tended to differ from country to country. In Great Britain, for example, an increase in discount rates, when "effective" in the market and not offset by corresponding increases elsewhere, tended to induce net inflows of capital by contracting the outstanding volume of London's acceptance and other short-term claims on the rest of the world, by attracting liquid foreign balances seeking temporary investment in London, by stimulating arbitrage operations in securities quoted in London and abroad, by delaying the flotation of foreign securities in London and the transfer abroad of the proceeds of previous flotations, and in other ways. This widespread reaction to changes in the Bank of England's discount rate on the international flow of capital helps, in part at least, to explain why Great Britain was able to operate effectively on so small a margin of gold reserves before 1914, even though frequent and substantial rate changes were necessitated.

In no other country, however, did discount rate changes have such an immediate or powerful impact on the flow of capital, or such widespread direct repercussions on other countries, as they did in England. For no other country had such a developed international money market, so large a volume of short-term foreign claims,⁷³ or a currency of such unquestioned convertibility, nor did any

⁷¹An essentially similar explanation was also offered in the Macmillan Report of 1931. Both reports, in their discussion of the second "channel", stressed the effect of rate changes on the level of prices *via* changes in the volume of investment and business activity (rather than in the quantity of money).

⁷²As well as to fluctuations in exchange rates within the narrow limits of the gold points. For statistical evidence regarding the interrelations of interest rate differentials and exchange rate fluctuations under the pre-1914 system, see N. E. Weill, *Die Solidarität der Geldmärkte*, Frankfurt, 1903; H. Neisser, "Der Internationale Geldmarkt vor und nach dem Kriege", *Weltwirtschaftliches Archiv*, 1929, II, pp. 171-226; and, more recently, O. Morgenstern, *op. cit.*, pp. 166-361.

⁷³It has been common to attribute the greater (short-run) efficacy of changes in the Bank of England's discount rate to the alleged fact that London was a *net* short-term international creditor whereas most of the other European countries were *net* short-term foreign debtors. See J. M. Keynes, *Indian Currency and Finance*, London, 1913, pp. 17 ff.; and O. M. W. Sprague, "Central Banks", in C. F. Dunbar, *The Theory and History of Banking*, 4th ed., New York, 1922, pp. 129-31. I would prefer rather to stress the *gross* size of England's short-term foreign claims. For, despite a widespread stereotype to the contrary, I am not at all sure that from 1880 to 1914 Britain's short-term foreign assets *did* consistently exceed its short-term foreign liabilities. Nor am I convinced that discount rate changes by the Bank of England necessarily affected Britain's foreign short-term claims more than its foreign short-term liabilities.

other country play so dominant a role in international trade and finance. In countries with less developed or virtually nonexistent money markets, such as (in our group) the Scandinavian countries, the responsiveness of short-term capital movements to changes in their central bank discount rates was obviously far less marked. Indeed, the movement of short-term funds into and out of these countries was undoubtedly much more responsive to changes in the discount rates of the Bank of England and of other large central banks than to changes in their own.

As for the second and theoretically much more controversial "channel" through which pre-1914 discount rate policy was supposed to exert its effects on prices, domestic activity, and through them the trade balance, one can speak with far less confidence⁷⁴—even if one restates the more traditional doctrine in terms of modern income and employment theory. The controversies between Keynes and Hawtrey, Hawtrey and Hicks, and many others as to the chain of causation from discount rate changes to the level of domestic activity, e.g., whether short-term or long-term investment was more affected, are well known and need not be repeated here. The relative roles of price and income changes in affecting the trade balance have also been widely discussed in recent years.⁷⁵ The effect of discount rate policy on domestic activity before 1914 would in any case have tended to differ from country to country. For example, in those countries where the level of national income and of prices was primarily determined by external factors, such influence as discount rate changes may have had on the domestic situation was undoubtedly relatively far less than elsewhere.

Only two broad observations need to be made here. First, whatever the domestic effects of discount rate changes might have been, such changes would have tended to exert their influence on spending decisions not only *via* their impact on the cost of borrowing but also, and perhaps of more importance, *via* their effect on the psychology of the business and banking community and on the availability of credit at the commercial bank level.⁷⁶ Second, although adherence

⁷⁴With regard to England, for example, Mrs. Robinson has baldly stated that "the orthodox theory, as presented in the Cunliffe Report, cannot claim any support from history". See J. Robinson, "Monetary Policy: A Comment", *Bulletin of the Oxford Institute of Statistics*, August 1952, p. 284. See also R. S. Sayers, *Modern Banking*, 1st ed., London, 1939, pp. 191-2.

⁷⁵It must be remembered that we are not concerned in this monograph with the larger problem of balance-of-payments adjustment under the pre-1914 gold standard.

⁷⁶With regard to England, for example, Sayers has written: "There is some reason to believe that both lenders and borrowers looked to Bank Rate as an important 'Index' of economic prospects, and both sides would probably become more wary when Bank Rate rose, more adventurous when Bank Rate fell . . . a movement of Bank Rate would probably be accompanied by some change in the availability of bank credit." See R. S. Sayers, *Central Banking after Bagehot*, London, 1956, p. 64. See also J. Schumpeter, *op. cit.*, p. 652; and R. G. Hawtrey, *op. cit.*, pp. 249-50.

to the gold standard at times undeniably involved severe hardships for individual countries, especially the less developed ones, there is in general relatively little evidence of the harsh deflationary and unfavorable employment effects that discount rate increases before 1914 are often supposed to have characteristically exerted. In a period generally characterized by strong secular expansionist forces, restrictive credit policies, to the degree that they were effective, served perhaps mainly to slow down or temporarily to halt the rate of expansion in the countries concerned, rather than to involve an absolute deflation of incomes and prices. To the extent that periods of sharp deflationary pressures did occur in individual countries, they appear to have taken place more frequently under the impact of world-wide depressions rather than under the influence of restrictive credit policies associated with the need for maintaining convertibility.

DISCOUNT RATES AND OPEN MARKET RATES

Although the assumption was made in the preceding section that open market rates of interest characteristically moved in harmony with changes in central bank discount rates, in actual practice the main problem often facing central banks was that of making their rates "effective" in the market at times of pressure on their reserves. Market rates did admittedly tend in general to move in the same direction as discount rates, sometimes leading and sometimes lagging,⁷⁷ but the degree of change by no means always corresponded; and in many of the countries discount rates were sometimes for rather lengthy periods completely out of touch with the market, as indicated by the wide spreads between the two. This was obviously a problem of some importance to the central banks concerned, since after all it was the level of *market* rates that was of relevance in influencing the international flow of short-term funds and of gold.

Central banks had, of course, relatively little difficulty in making their rates effective in the market when their discounts and advances constituted a substantial proportion of the total credit operations of the banking system as a whole. This, in fact, was broadly the position of nearly all of the central banks at the beginning of our period. But with the general decline thereafter in the position of central banks in this respect, in view of the rapid increase in the resources of the commercial banks and other money market institutions, this factor became of diminishing importance. In those cases, however, where the money market de-

⁷⁷In some of the countries, notably the Scandinavian ones, open market rates of interest could hardly be said to have existed at all. However, it is of interest to note that in some of these cases the loan rates of the commercial banks tended to move with the rates of the central banks. This at least was so in the case of Sweden after 1897, according to K. Kock, *A Study of Interest Rates*, London, 1929, pp. 187-8.

pended regularly on the central bank for accommodation, or where it worked on such a relatively narrow margin of reserves that it was frequently “forced into” the central bank,⁷⁸ there was likewise no major problem in making discount rates effective in the market. This was by no means always the case; and ample reserves frequently precluded the need for recourse to the central bank. Finally, in some cases, of which England was an example, a link between discount rates and market rates was also provided to some extent by the fact that certain rates, notably the deposit rates of commercial banks, tended by tradition to bear a more or less fixed relation to the discount rate and thus to move with it.

What did central banks do when their rates were not effective in the market and when it was necessary, in the interest of protecting their reserves, to make them so? Information here is relatively abundant regarding the Bank of England and the Reichsbank; but in other cases there is little available material. Presumably in some of these cases nothing could be done at all; in others, moral suasion may have played a part;⁷⁹ and, in still others, central banks may have let some of their short-term assets run off.

The main device used by the Bank of England during this period to make its rate effective in the market, when such was necessary, was that of “borrowing in the market” from the commercial banks, discount houses, various public bodies, and other large lenders, thereby draining the market of cash and tightening market rates.⁸⁰ Closely related to this, although apparently of much less importance, were occasional open market sales of Consols. On a number of occasions (e.g., 1901, 1903, 1905, and 1906), the Reichsbank similarly sold (“rediscounted”) Treasury bills in the market in order to withdraw funds and to force market rates up.⁸¹ These are the only clear-cut cases, of which I know, of open market opera-

⁷⁸At certain times of the year, for example, the money market in some countries was “forced into” the central bank by large seasonal increases in Treasury deposits at the central bank.

⁷⁹For example, according to A. Nielsen, *Bankpolitik*, Copenhagen, 1923, p. 361, the National Bank of Denmark used to consult the big Copenhagen commercial banks before changing its discount rate and accordingly any changes tended to penetrate the banking system within a rather short time. I am indebted to Dr. Erik Hoffmeyer for providing me with an English digest of certain sections of this Danish book. Dr. Arne Brøndum has kindly helped me with statistics pertaining to the Danish National Bank.

Moral suasion as an instrument of monetary policy had, of course, much wider applicability during the period in question, but little can be said about it because of its very intangibility. There are frequent references in the literature to official expressions of concern, implied threats, “instructions” to the commercial banks, “hints from headquarters”, unofficial pressures, and other manifestations of the use of this instrument by many of the central banks, and especially the Reichsbank, as a means of attempting to enforce desired policies on the part of the commercial banks.

⁸⁰The most detailed and reliable source of information here is, of course, J. H. Clapham’s book on the Bank of England.

⁸¹See *Die Reichsbank, 1901-1925*, pp. 10, 12, 13, and 17.

tions by a central bank⁸² between 1880 and 1914 as a deliberate instrument of monetary policy.⁸³ Some central banks, of course, bought securities in the open market purely for investment purposes, but there is no evidence that such purchases (or related sales) were ever deliberately undertaken to influence money market conditions. There is no definite evidence, moreover, that either the Bank of England or the Reichsbank themselves ever engaged in open market operations for the deliberate purpose of *easing* the market or, least of all, of “offsetting” outward or inward movements of gold.⁸⁴

⁸²On the other hand, the Treasury of the United States often bought securities in the open market (and resorted to other devices) at times of monetary pressure before 1914 so as to restore to the market funds that had been withdrawn under the so-called Independent Treasury System. For a detailed account of United States Treasury monetary management before 1914, see E. R. Taus, *Central Banking Functions of the United States Treasury, 1789-1941*, New York, 1943.

⁸³There are, however, a few less clear-cut cases. For example, in a brief official report, *The Bank of Japan*, Tokyo, 1952, there is reference to purchases of government bonds by the Bank of Japan in the open market during the panic of 1898; and the report describes such purchases as “the beginning of open market operations”. There is also a suggestion of such operations on the part of the Austro-Hungarian Bank during the crisis at the end of 1895 in the Vienna market. On this, see F. Hertz, “Die Diskont- und Devisenpolitik der Oesterreichischen-Ungarischen Bank”, *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung*, 1903, pp. 490 ff. Before 1914 the National Bank of Belgium planned to undertake open market operations along the lines of the Bank of England, but nothing came of it. See *Bulletin d'Information et de Documentation*, National Bank of Belgium, XXXII, 1957, p. 381.

⁸⁴In his *Credit Policies of the Federal Reserve System*, Washington, 1932, pp. 12-3, C. O. Hardy argues that it was “orthodox central banking policy” under the pre-1914 gold standard to offset inflows and outflows of gold if they were deemed temporary. This is surely a misconception.

V. The “Rules of the Game”

It is commonly argued and accepted that before 1914 the various central banks played the “rules of the gold standard game”.⁸⁵ Although this stereotype has been questioned to some degree in recent years, it has not as yet been subjected to statistical examination.

The concept of the rules of the game, which, incidentally, was first developed in the *post*-1914 literature—indeed, as far as I know, the term itself was first used by Keynes in the early twenties—admits of several possible interpretations and has been used in several senses.

In a negative sense, adherence to the rules of the game has sometimes been taken to mean that central banks should not take deliberate action to counteract the effect of gold inflows in increasing commercial bank reserves or of outflows in reducing them. This interpretation implies simply the absence of deliberate “offsetting” policies. In *this* sense, central banks under the pre-1914 gold standard may be said to have played the rules of the game, since, as already noted, there is no evidence that any of them ever engaged in deliberate offsetting operations.

The rules of the game are usually interpreted, however, in a more active or positive sense. In this larger sense, indeed, mere inaction by central banks in the face of large and persisting gold flows would constitute a *violation* of the rules, not adherence to them. More specifically, central banks were supposed to *reinforce* the effect of these flows on commercial bank reserves, not merely not to neutralize them. This implied, among other things, that central banks were supposed to lower their discount rates in the face of persisting gains of gold (and other external reserves) and to raise them when there were persisting losses. As we have already seen, this was in fact true for the majority, but by no means all, of the central banks before 1914, at least on the basis of annual average statistics.

A discount rate and credit policy geared primarily to movements in central bank reserves was supposed, more concretely, to have the effect of increasing central bank holdings of domestic income-earning assets when holdings of external reserves rose, and of reducing domestic assets when reserves fell. In this way, the effect of changes in central bank reserve holdings on the domestic credit base

⁸⁵Indeed, it is also generally claimed that adherence to the rules of the game was an element of great importance in the successful functioning of the pre-1914 gold standard. This claim, however, has tended to be downgraded in the theoretical literature since the Keynesian revolution and the development of the “income approach” to the international mechanism. See, e.g., L. A. Metzler, “The Theory of International Trade”, *A Survey of Contemporary Economics*, ed. by H. S. Ellis, Philadelphia, 1948, p. 216.

would be *magnified* by central bank action. The League of Nations in a well-known study by the late Professor Ragnar Nurkse⁸⁶ has in fact defined the rules of the game in precisely these terms: namely, that adherence to the rules would involve concurrent changes in the same direction in the international and domestic assets of a central bank.⁸⁷ On the basis of this formula, the League study made a statistical comparison of the annual changes in the international and domestic assets of twenty-six central banks in the period 1929-38 and found that these changes were, in the case of every bank but one, more frequently in the opposite than in the same direction.⁸⁸ While extremely cautious in its interpretation of these results, the League study used them in indirect support of its conclusion that during that period central banks in general tended to offset international reserve flows rather than to play the rules of the game.

It may be of interest to apply this same formula to the pre-1914 period in an attempt to determine whether and to what degree central banks under the pre-World War I gold standard may be said to have played the rules of the game in this sense. For each of those central banks in our group for which reasonably complete statistics were available to me, and for those periods that seemed most relevant,⁸⁹ I have compared the year-to-year changes⁹⁰ in international assets (gold, foreign exchange, and silver)⁹¹ and in domestic income-earning assets (discounts, advances, and securities). The results are summarized in the table. Plus signs indicate that the two categories of assets changed in the same direction, up or down, in the year indicated; minus signs indicate that they changed in opposite direction; and zero signs (0) mean that one or the other remained unchanged, or virtually so, during the year in question.

The results are striking indeed, as an inspection of the table immediately reveals. In the case of *every* central bank the year-to-year changes in international

⁸⁶*International Currency Experience*, Princeton, 1944, pp. 66 ff.

⁸⁷*Ibid.*, p. 66: "Whenever gold flowed in, the central bank was expected to increase the national currency supply not only through the purchase of that gold but also through the acquisition of additional domestic assets; and, similarly, when gold flowed out, the central bank was supposed to contract its domestic assets."

⁸⁸*Ibid.*, p. 69.

⁸⁹In most cases the full period 1880-1913 was used, but the comparisons for the Austro-Hungarian Bank and the Russian State Bank begin in 1892 and 1897, respectively, for reasons indicated earlier. The comparison for the Swedish Riksbank begins in 1900, for only about then did it become a "real" central bank. In the case of the Bank of Finland the necessary statistics for 1880-85 were not available to me.

⁹⁰In the majority of cases the comparison was made on the basis of year-to-year changes in the annual averages (of monthly figures) of the two categories of assets, but changes in the year-end figures were used in the case of Belgium, Denmark, Finland, Norway, and Sweden. The Danish figures are for the year ended July 31, and the Dutch figures for the year beginning April 1.

⁹¹Silver has been included in international assets for the same reason that it was included in the reserve ratios computed earlier in this study. In any case, it was found that the results were substantially unchanged when silver was excluded from international assets.

CHANGES IN THE INTERNATIONAL AND DOMESTIC ASSETS OF CENTRAL BANKS

	<i>France</i>	<i>England</i>	<i>Austria-Hungary</i>	<i>Russia</i>	<i>Germany</i>	<i>Belgium</i>	<i>Denmark</i>	<i>Norway</i>	<i>Finland</i>	<i>Netherlands</i>	<i>Sweden</i>
1880	—	+			+	—	0	—		—	
1881	—	—			—	—	+	+		—	
1882	+	—			—	—	—	—		+	
1883	+	—			—	0	—	+		—	
1884	+	+			—	—	+	+		+	
1885	—	+			—	0	0	—		—	
1886	—	+			+	—	—	0	0	—	
1887	+	—			+	—	—	—	—	—	
1888	—	—			—	—	—	—	0	+	
1889	+	+			—	+	+	+	+	—	
1890	—	+			—	+	—	—	—	—	
1891	+	+			0	—	0	—	0	+	
1892	—	—	—		+	—	—	—	—	—	
1893	+	—	+		—	0	—	—	+	—	
1894	—	—	—		—	+	+	—	—	—	
1895	—	+	+		+	—	0	+	—	—	
1896	—	+	—		—	—	—	—	+	—	
1897	—	+	—	—	0	+	0	—	+	+	
1898	—	—	+	—	—	—	+	—	+	—	
1899	—	—	+	—	—	+	+	—	—	—	
1900	+	+	—	—	+	+	—	0	+	—	+
1901	—	—	—	—	+	—	—	—	—	—	+
1902	—	—	—	—	—	+	—	—	—	—	—
1903	—	+	+	0	—	—	0	+	+	—	—
1904	+	0	+	0	—	+	—	—	—	—	+
1905	—	+	—	—	+	—	+	+	+	+	+
1906	—	—	—	—	—	+	+	—	+	—	—
1907	—	—	—	—	—	+	+	+	—	+	0
1908	—	—	—	+	—	—	—	0	+	—	—
1909	—	+	—	—	+	—	—	+	—	—	—
1910	—	—	+	+	—	—	—	+	+	—	—
1911	—	—	—	+	—	+	—	+	+	+	—
1912	—	+	—	+	+	+	—	+	—	+	+
1913	—	+	—	+	—	—	—	+	—	—	—

— = Change in same direction.

— = Change in opposite direction.

0 = No or negligible change in either or both.

and domestic assets were more often in the *opposite* than in the same direction,⁹² and in most cases *much* more often in the opposite direction. Far from central bank action before 1914 tending characteristically to accentuate the effects of gold (and other reserve) flows on commercial bank reserves and on the money supply—as the rules of the game would seem to imply—there was a tendency for those effects to be counteracted. Admittedly, however, the absolute annual changes in international assets tended in most cases to be larger than those in domestic assets, so that the counteracting effects were usually only partial.

Of the 319 observations in the table, there were 191 minus signs (or 60 per cent of the total) and 107 plus signs (or 34 per cent of the total), the rest being zero signs. By an amazing coincidence, these over-all percentages are virtually identical to those reached in the League study for the interwar period (60 and 32 per cent, respectively). One might even conclude, on the basis of this formula, that central banks in general played the rules of the game just as badly before 1914 as they did thereafter!

The results of our comparisons must be treated, however, with extreme care. Certainly they do not mean that central banks, in contrast to our earlier conclusion, practiced deliberate policies of offsetting before 1914, as many central banks are known to have done since then. Nor do they even necessarily mean that central banks did *not* follow the rules of the game in the sense considered; after all, the period of a year that is the basis of our comparison is essentially an arbitrary one that may conceivably conceal the fact that domestic assets *did* move more frequently in the same direction with international assets than in the opposite direction, but with a lag of more than one year. Nevertheless, the results are so striking as to cast some measure of legitimate doubt upon the common view that central bank action under the pre-1914 gold standard had the effect of tending to reinforce the effects of gold flows on the domestic credit base.

How *is* this inverse tendency in the direction of movement between domestic and international assets to be explained if it was not attributable to deliberate offsetting policies? I have no ready answers. Part of the explanation may lie in the fact that outflows of gold, by reducing the liquidity of the money market, may have tended automatically to increase borrowings at the central bank, and that inflows of gold, by having the opposite offset, may have resulted in a net repayment of outstanding indebtedness to the central bank. In some cases a more im-

⁹²Significantly or not, the Bank of England was the only central bank in the group that came close to being an exception to the rule. The number of minus signs in this case exceeds the number of plus signs by only one.

portant explanation may lie in the fact that the international and domestic assets of central banks tended to move in opposite directions under the common influence of cyclical forces. In periods of business expansion the domestic assets of all central banks tended naturally to rise, and in periods of contraction to fall. But as we have seen earlier, the international assets of various central banks tended to fall in periods of expansion and to rise in periods of contraction. In the case of these banks, then, we have another explanation for the tendency toward opposite annual movements in the two sets of assets.⁹³

⁹³For a detailed statistical analysis of the inverse cyclical behavior of the international and domestic assets of the Bank of France before 1914, although not in connection with the problem under examination here, see C. Emanoil, *Les Variations du Taux de l'Escompte en France*, Paris, 1932.

VI. Other Instruments and Techniques of Monetary Policy

In addition to discount policy—and the occasional use of open market operations, borrowing from the market, and moral suasion—central banks resorted, in the period 1880-1914 and especially in the later part of that period, to a wide variety of other instruments and techniques in an effort to achieve their objectives. These instruments and techniques, which will be briefly examined in this section, give further evidence of the fact that pre-1914 monetary policy was not so simple and “automatic” a mechanism as it is often supposed to be.

The instruments and techniques to be described below were used for a variety of purposes and under varying circumstances, although nearly all of them were related, directly or indirectly, to the overriding objective of maintaining convertibility. Some were used as short-run alternatives to discount rate increases when it was desired to avoid disturbing business activity; some were adopted to supplement and reinforce the effects of discount rate policy; some were resorted to in an effort to meet special situations that could not appropriately be handled by discount rate changes; and, finally, some were specifically designed to meet “emergency” situations when central bank reserves had fallen so low, relative to legal requirements, that action of a “drastic” nature was required if convertibility was to be safeguarded.

It is not easy to classify these various instruments and techniques in any simple way,⁹⁴ but they may, I believe, be appropriately grouped for purposes of this discussion under the major headings that follow.

MANIPULATION OF THE GOLD POINTS

A number of the devices employed by various central banks had the specific object and/or the effect of slightly moving either of the gold points and thereby of influencing the international movement of short-term funds and/or of gold in desired directions. These devices were usually undertaken as short-run alternatives to discount rate changes or as a supplement to them, and in some cases simply to offset the effect of similar measures being undertaken by other central banks. The limits within which the gold points could be manipulated, however, were usually narrowly circumscribed by the legal limitations imposed upon the

⁹⁴For earlier discussions of some of these techniques, see M. Ansiaux, *Principes de la Politique Régulatrice des Changes*, Brussels, 1910, chapters 5 and 6; and K. von Lumm, “Mesures Complémentaires de la Politique d’Escompte”, *Revue Economique Internationale*, July 1912, pp. 69-102. These discussions focus mainly on the larger European central banks.

central banks regarding their buying and selling prices of gold and/or by other considerations.

An important technique in this class was for certain central banks at times of gold exports to raise slightly their selling price for gold bars or *foreign* gold coins. This technique was most actively pursued by the Bank of France, especially before 1900, under its so-called gold premium policy.⁹⁵ It was also pursued irregularly by the Bank of England after 1890.⁹⁶ Such a measure was, of course, equivalent to raising the gold export point and was designed, by increasing the possible range of exchange rate fluctuations, to act upon the international movement of short-term capital in a manner conducive to the short-run adjustment of the balance of payments.

In similar fashion several central banks, notably the Bank of England and the Reichsbank, occasionally raised their buying prices for gold bars and gold coin in order to induce or hasten gold imports. This was, of course, equivalent to a lowering of their normal gold import points. A related device, which had the same effect, was the practice of granting from time to time interest-free advances to gold importers during the period of gold transit; this was resorted to by the Bank of England, the Reichsbank, the Bank of France, the Swiss National Bank, and the Austro-Hungarian Bank.⁹⁷ On one occasion, in 1908, the Swiss National Bank actually *lowered* its gold buying price in order to discourage excessive gold imports.

The gold points were also manipulated in other ways. The Bank of England and the Reichsbank occasionally met demands for gold for export by payment in lightweight coin, thereby raising the gold export point momentarily. At times the Reichsbank achieved the same result by taking advantage of its legal right to redeem its notes at its head office in Berlin, instead of redeeming notes at its branches near the border. Conversely, the Bank of France would sometimes buy gold at its border branches, thereby lowering the gold import point.⁹⁸

⁹⁵For details, see H. D. White, *op. cit.*, pp. 182-8; and R. Rosendorff, "Die Goldprämienpolitik der Banque de France und ihre deutschen Lobredner", *Jahrbücher für Nationalökonomie und Statistik*, 1901, pp. 632-63.

⁹⁶See R. S. Sayers, *Bank of England Operations*, pp. 71-101.

⁹⁷The United States Treasury also resorted to this device in 1906-7. There is a reference in the *Economist*, London, February 14, 1914, p. 330, to the use by the Netherlands Bank at that time of this device, but I have been unable to confirm this.

⁹⁸The various devices to move the gold points were sometimes used by individual countries in a defensive or competitive fashion to meet similar moves by others. As a result, they may at times have tended to cancel each other out, so that the gold points were not in fact displaced to the degree desired. For example, if France raised its selling price for gold, Germany might have retaliated by raising its buying price correspondingly. On this, see L. von Mises, *The Theory of Money and Credit*, New Haven, 1953, p. 387.

In some cases central banks at times of balance-of-payments pressures took steps which, while not formally moving the gold export point, had the same effect by causing exchange rates to move slightly outside the range of that point. Thus, for example, the Swedish Riksbank is reported to have put various obstacles in the way of commercial banks attempting to obtain gold for export when the gold export point was reached.⁹⁹ The German Reichsbank is often believed to have acted similarly on various occasions, but Reichsbank officials denied this before the United States National Monetary Commission. They did admit, however, that at certain times German banks, “for wrongly understood patriotic reasons”, had refrained from shipping gold when it was profitable for them to do so. The Austro-Hungarian Bank and the Bank of Italy occasionally allowed exchange rates to go beyond the theoretical gold export point—which they could easily do, since they were not obliged to redeem their notes in gold—with the deliberate purpose of discouraging outflows of short-term capital and gold. The Bank of France and the Swiss National Bank attempted at times to discourage gold exports by requiring those banks seeking gold for export to cede to them a certain amount of commercial paper; this, too, tended to cause a displacement of exchange rates beyond their usual range.

In this connection attention might be called to certain analogous measures taken by the National Bank of Belgium and the National Bank of Switzerland to protect their reserves. These two banks, like the Bank of France, had the legal option of redeeming their notes in gold or silver. Instead of charging a premium on the selling price of gold, however, they usually redeemed their notes in silver coin exclusively which, under the terms of the Latin Monetary Union, was accepted at par in France, through which the bulk of their exchange transactions was conducted. In this way, the exchange rates of the Belgian and Swiss currencies vis-à-vis the French franc tended to be kept within the limits of the respective “silver points” rather than the somewhat narrower gold points and, vis-à-vis other gold currencies, to fluctuate not much more than did the French franc itself. During the later years of the period, however, in view of the continual weakness of the Belgian and Swiss exchange against the French franc, there were persisting arbitrage drains of silver coin from Belgium and Switzerland to France. In order to check these drains, the Belgian and Swiss National Banks resorted to all sorts of tactics to make it as difficult and burdensome as possible for arbitragers

⁹⁹See E. F. Heckscher, et al., *Sweden, Norway, Denmark, and Iceland in the World War*, New Haven, 1930, pp. 127-8; and G. Cassel, *The Downfall of the Gold Standard*, Oxford, 1936, p. 16. The Russian State Bank is also believed at times to have resorted to such tactics.

to convert their notes into silver coin for export to France. As a result, the exchange rates of the Swiss and Belgian francs during this period went frequently somewhat beyond the limits of their respective silver export points vis-à-vis the French franc.¹⁰⁰

FOREIGN EXCHANGE POLICY

An important arm of monetary policy on the part of many central banks before 1914 consisted of official operations in the foreign exchange market with a view to influencing exchange rates and gold movements. Although *Devisenpolitik* was extensively discussed in rather general terms before 1914, and its pros and cons actively debated, relatively little concrete information is available regarding the actual operations of central banks in this field.¹⁰¹

Most of the central banks included in this study, as noted earlier, held a significant part of their reserves in the form of foreign bills and other foreign balances.¹⁰² Such holdings of foreign exchange not only yielded an income (unlike gold), but enabled the central banks in question to intervene directly in the exchange market when it was desired to smooth out excessive and erratic fluctuations in exchange rates within the gold points and, in particular, to prevent rates from moving to the gold export point at which private arbitrage outflows of gold would have become profitable. Since foreign exchange was usually sold near the gold export point and bought near the gold import point, these operations yielded a profit to the central banks over and above the earnings on the holdings of the exchange itself. Foreign exchange policy was most actively and apparently most skilfully carried out by the Austro-Hungarian Bank, but it also appears to have been resorted to on a substantial scale by the Russian, Belgian, Dutch, Swedish, Finnish, Italian, and Japanese central banks.

¹⁰⁰For Belgium, see especially M. Ansiaux, "Les Problèmes Actuels de la Circulation Métallique et Fiduciaire en Belgique", *Revue Économique Internationale*, November 1907, pp. 235-84, and "La Question Monétaire et le Change sur Paris", *Comptes Rendus de la Société d'Économie Politique de Belgique*, November 1910, pp. 113-33. In the case of Switzerland, the problem was more acute before the establishment of the National Bank in 1907 and thus mainly affected the various Swiss note-issuing banks that preceded it. For the tactics used in Switzerland, see R. Meyer, *Les Banques d'Émission Suisses et le Drainage des Ecus*, Lille, 1903, especially pp. 216-82. Meyer's account of how the Swiss banks made things as difficult as possible for the "drainers" to convert their notes into coin makes amusing reading indeed. The banks, among many other things, kept only one wicket open and only for certain hours of the day; the tellers, besides being rude, counted the notes as slowly as possible and recounted them again and again; the identification and place of birth of the drainer was demanded; and so on.

¹⁰¹Some information is available in the various central bank histories listed in footnote 4. There are also a few illuminating unofficial studies on the experiences of various countries including, among others: L. von Mises, "The Foreign Exchange Policy of the Austro-Hungarian Bank", *Economic Journal*, XIX, 1909, pp. 201-11; P. Witten, "Die Devisenpolitik der Nationalbank von Belgien", *Schmoller's Jahrbuch*, XLII, 1918, pp. 135-70 and 193-228; and F. H. Repelius, "De Deviezenpolitiek van de Nederlandsche Bank, 1889-1936", *Economische Opstellen Aangeboden aan F. de Vries*, Haarlem, 1944, pp. 96-108.

¹⁰²The most notable exceptions were the Bank of England and the Bank of France. The Reichsbank's holdings of foreign bills and deposits did not become of substantial size until about 1900; and even thereafter they were a relatively unimportant part of its total external assets.

It was commonly argued before 1914 that resort to foreign exchange policy contributed to greater stability in the discount rates of the central banks in question. This argument is difficult to accept. After all, a sustained loss of foreign exchange in supporting an exchange rate was in all respects equivalent to a corresponding loss of gold and should, logically, have provoked the same kind of defensive action by the central bank in the form of discount rate increases or other measures. Admittedly, however, foreign exchange losses, being less commonly observed and commented upon than gold losses, may have had fewer adverse psychological reactions on the market.

A special variation of foreign exchange policy was the occasional activity of the Austro-Hungarian Bank in the *forward* exchange market. In a number of instances that Bank took deliberate steps to widen the premium on the forward crown so as to discourage the outflow of funds through "covered interest arbitrage"; and on at least one occasion it caused the forward crown to depreciate in an effort to discourage an unwanted inflow of funds of this sort.¹⁰³

COOPERATION BETWEEN CENTRAL BANKS

Although inter-central bank cooperation before 1914 was definitely the exception rather than the rule, a number of measures taken by various central banks may appropriately be discussed under this heading.¹⁰⁴ For example, a number of central banks, when faced with heavy gold losses, borrowed directly from other central banks. During the period in question the most outstanding example of this was the borrowing by the Bank of England of 75 million francs in gold from the Bank of France at the time of the Baring crisis in 1890. A more routine example was the borrowing of several million kroner by the Swedish Riksbank from the Danish National Bank in 1882.¹⁰⁵

In various cases central banks came to the aid of other central banks in a less direct fashion. For example, the Bank of France on a number of occasions in 1906, 1907, 1909, and 1910 discounted English bills, and thereby made gold available to the London market, in order to relieve pressures in that market.¹⁰⁶

¹⁰³For a detailed discussion, see P. Einzig, *The Theory of Forward Exchange*, London, 1937, pp. 329-40.

¹⁰⁴For discussions of international monetary cooperation before 1914 in its broader context, including the operations of the various monetary unions, see A. E. Janssen, *Les Conventions Monétaires*, Paris, 1911; and F. Garelli, *La Coopération Monétaire Internationale Depuis Un Siècle*, Geneva, 1946, pp. 17-94.

¹⁰⁵See *Sveriges Riksbank, 1668-1924*, IV, p. 183. After 1885 the central banks of the three countries then adhering to the Scandinavian Monetary Union introduced an automatic mechanism for inter-central bank borrowing whereby each bank was permitted to draw drafts on the others at par in settlement of international balances. This in effect eliminated the gold points among the three countries.

¹⁰⁶See the *Annual Report* of the Bank of France for those years.

In the absence of such aid, the Bank of England would probably have had to raise its discount rate further, which might in turn have made it necessary for the Bank of France to raise its own rate—a step which for domestic reasons it wanted to avoid. The Austro-Hungarian Bank is similarly reported at times to have shipped gold to foreign markets (notably Berlin) to prevent further rises in discount rates in those markets which would have reacted adversely on its own.¹⁰⁷ In 1898 the Bank of England and the Bank of France are reported to have given aid to certain German banks that were in temporary difficulties, thus easing pressures in the Berlin market.¹⁰⁸

OTHER MEASURES IN SUPPORT OF CONVERTIBILITY

A number of central banks, when faced with pressure on their reserve position, borrowed directly from foreign *commercial* banks or foreign governments. Thus, the Bank of Finland negotiated foreign short-term credits, equivalent to 10 million Finnish marks, from German, British, and Swedish bankers in 1892, and the same amounts from a Swedish bank in 1908 and again in 1913.¹⁰⁹ These credits appear to have been mainly precautionary in purpose, for they were actually drawn upon to only a limited degree or not at all. Likewise, in 1890 the Bank of England obtained 1.5 million pounds sterling in gold by the sale of Treasury bonds in its portfolio to the Russian Government.

Several central banks at times of exchange difficulties borrowed gold or foreign exchange from their *own* governments, which in some of these cases floated loans abroad specifically to provide the needed reserves. The Swedish Riksbank, for example, borrowed on at least two occasions (1899 and 1907) from the National Debt Office.¹¹⁰ The Bank of Finland borrowed 5 million Finnish marks in foreign exchange from the Finnish Government in November 1890 and 7

¹⁰⁷See, e.g., P. Einzig, *op. cit.*, p. 336; *Economist*, London, March 30, 1907, p. 554; and M. Dub, "L'Acte Finale de la Réforme Monétaire en Autriche", *Revue Economique Internationale*, October 1910, pp. 85-6. The Russian State Bank is reported to have helped Berlin in the same way (*Economist*, November 16, 1907, p. 1962). At other times the State Bank shipped gold to foreign centers, not as a gesture of international cooperation, but to ease interest rates in those markets preparatory to the flotation therein of Russian Government bonds. See O. Crisp, "Russian Financial Policy and the Gold Standard at the End of the Nineteenth Century", *Economic History Review*, December 1953, p. 171.

¹⁰⁸See M. Patron, *The Bank of France and Its Relation to National and International Credit*, Washington, 1910, p. 142.

¹⁰⁹See E. Schybergson, *op. cit.*, pp. 289 and 303; and A. E. Tudeer, *op. cit.*, p. 18. Despite the extremely high reserve ratio of the Bank of Finland, its *excess* reserves, it should be remembered, were often quite low because of the high minimum legal reserve requirements.

¹¹⁰I am indebted to Mr. Carl-Göran Lemne of the Sveriges Riksbank for this information, which also shows up clearly on the Riksbank's balance sheet.

million at the beginning of 1900.¹¹¹ The Bank of Norway borrowed gold from the Norwegian Treasury in 1901.¹¹² The National Bank of Belgium made frequent use of the foreign exchange holdings of the Belgian Treasury and of the *Caisse Générale d'Épargne et de Retraite* in order to supplement its own.¹¹³

Quite apart from *lending* foreign exchange to their central banks, the governments of various countries appear frequently to have floated loans abroad, or timed the flotation of such loans, for the specific purpose of obtaining foreign exchange that could be *sold* to their central banks, thus easing their reserve positions at times of pressure. I have no doubt that such “planned” loan transactions were often a factor of considerable importance in the maintenance of convertibility at critical periods for those countries, such as the Scandinavian countries and Japan,¹¹⁴ that could not rely to the same degree as others on the corrective influence of discount rate increases or related techniques.

For those central banks that did not have “flexible” systems of legal reserve requirements (see above, p. 18), convertibility was sometimes protected simply by government action permitting a relaxation or formal change in the system of requirements so as to “free” reserves for the defense of the currency.¹¹⁵ An outstanding example of such action is provided by the shift, noted earlier, in the reserve requirements of the Danish National Bank in 1907 from a fiduciary system to a proportional system; this shift “freed” some 20 million Danish kroner of external reserves at a time of exchange stringency. In some cases, e.g., Finland and Japan, the fiduciary issue was simply raised with the same object in view.

Another interesting technique was the temporary application by the State Bank of Russia in 1905-6 of a limited form of “exchange control” in order to discourage speculative purchases of foreign exchange. The State Bank refused to sell foreign exchange except on the presentation of evidence that the exchange

¹¹¹See E. Schybergson, *op. cit.*, pp. 287 and 298. Miss Ragni Bärlund of the Bank of Finland has kindly clarified this and many other matters pertaining to that bank for me.

¹¹²See N. Rygg, *op. cit.*, II, p. 295.

¹¹³See P. Kauch, *op. cit.*, pp. 247-8 and *passim*.

¹¹⁴See, e.g., for Sweden, B. Hansen, “Problem Kring Dollarproblemet”, *Ekonomisk Revy*, November 1954, pp. 422 ff.; and E. Lindahl, E. Dahlgren, and K. Kock, *National Income of Sweden*, London, 1937, I, p. 273. For Japan, see H. G. Moulton, *Japan: An Economic and Financial Appraisal*, Washington, 1931, p. 226; and S. Y. Furuya, *Japan's Foreign Exchange and Her Balance of International Payments*, New York, 1928, p. 48. According to A. Z. Arnold, *Banks, Credit, and Money in Soviet Russia*, New York, 1937, p. 15, a large loan raised by the Russian Government in 1906-7 enabled Russia to avoid suspension of convertibility at that time.

¹¹⁵Reference should be made here to the famous “suspensions of the Bank Act” in England on several occasions not falling within our period.

was needed for the financing of imports. To the extent that such evidence was not forthcoming, the sale of exchange was limited to 50,000 German marks per person.¹¹⁶ An informal system of rationing sales of foreign exchange was also introduced in the United States in 1895 under the aegis of a syndicate of private bankers organized to help protect the Treasury against the heavy gold withdrawals it was facing at that time.¹¹⁷

On various occasions a number of central banks refused to discount, or discriminated against, finance bills drawn by foreigners in an effort to check drains of gold caused by excessive foreign short-term borrowing through this channel. In 1899, 1906, and 1907, for example, there appears to have been widespread discrimination by European central banks against American finance bills. An earlier example is provided by the action of the National Bank of Belgium in 1882 in sharply raising its special discount rate on bills drawn by foreigners to the level of 9 per cent for a period of six days in order to check a heavy movement of funds to Paris.¹¹⁸

Finally, reference should be made to the fact that convertibility was once so seriously threatened in one European country that special emergency powers were granted to meet such a situation in the future. Early in 1883 the gold reserves of the Netherlands Bank dropped so low that, despite a subsequent recovery, an act was passed in April 1884 authorizing the Dutch Government, if necessary, to withdraw 25 million florins of silver coins from circulation, to melt them down, and to have the Netherlands Bank sell the silver bullion on world markets for whatever it would bring so as to bolster the gold reserves.¹¹⁹ It never proved necessary, however, to implement this act.

¹¹⁶See E. Slansky, *op. cit.*, pp. 94-5.

¹¹⁷I am indebted to Dr. Matthew Simon for calling this episode to my attention. On various occasions during the 1890's, moreover, the United States Treasury had to sell bonds, at home and abroad, to secure the gold needed to safeguard the convertibility of the dollar.

¹¹⁸See P. Kauch, *op. cit.*, p. 209.

¹¹⁹See, e.g., G. Vissering, "La Bourse d'Amsterdam", *Revue Economique Internationale*, 1906, p. 42.

VII. Concluding Remarks

Although no attempt will be made here to summarize the various arguments and conclusions of this monograph, which has been concerned primarily with a comparative analysis of the monetary policies of the leading central banks under the pre-1914 gold standard, some brief and general concluding remarks may be in order.

Central banks during the period 1880-1914 appear to have played a much more active role than has generally been assigned to them. Their objectives and criteria were not so narrowly focused, nor their instruments and techniques so limited in number and kind, nor their policies so narrowly circumscribed in scope, as is often supposed. Unquestionably, convertibility was the dominant objective; and central banks invariably acted decisively in one way or another when the standard was threatened. But this did not imply unawareness of, or indifference to, the effects of central bank action upon the level of domestic business activity and confidence, or neglect of considerations of central bank earnings and other subsidiary aims, or sole reliance upon movements of the reserve ratio in deciding upon policy. Primary concern for convertibility, moreover, did not involve exclusive reliance upon discount policy as the instrument of control. Most of the central banks resorted, especially as the period progressed, to a variety of other monetary techniques as short-run alternatives to or complements of the discount tool; and in a few cases reserves were so relatively substantial as to enable discount rates to remain unchanged for rather lengthy periods of time. Far from responding invariably in a mechanical way, and in accord with some simple or unique rule, to movements of gold and other external reserves, central banks were constantly called upon to exercise, and did exercise, discretion and judgment in a wide variety of ways. Clearly, the pre-1914 gold standard system was a managed and not a quasi-automatic one from the viewpoint of the leading individual countries. Nor did that system always work as "smoothly" as is often believed. Critical situations arose from time to time in various countries necessitating "emergency" measures by central banks and governments to safeguard the continuing convertibility of the currency. In all these respects, then, the differences between central bank policies under the pre-1914 gold standard and after World War I were essentially differences of degree rather than of kind.

With regard to discount rate policy, it was shown that for only six of the eleven central banks that were statistically examined was there a close inverse correlation between discount rates and reserve ratios on the basis of annual aver-

ages of monthly statistics, indicating that the relationship between these two variables was not so close and general under the pre-1914 system as is often supposed. It was also shown that, for five of these six banks, reserve ratios tended to move inversely with domestic business-cycle fluctuations and that, consequently, discount rate changes, while motivated primarily by, and thus moving inversely with, changes in reserve ratios, also moved positively with the business cycle. As a result, the discount rate policy called for in these countries from the viewpoint of maintaining convertibility happened to coincide with that called for from the viewpoint of imparting a greater measure of domestic economic stability over the course of the cycle as a whole.

As for the relative importance of the role played by central banks in general in the successful maintenance of the pre-1914 gold standard for so lengthy a period of years, it is difficult to reach any clear-cut conclusions. Certainly central banking policy in its various forms was a factor of very considerable importance — at least in many of those gold standard countries that *had* central banks¹²⁰ — in inducing movements of short-term funds and gold that served to cushion the impact of balance-of-payments disequilibria in the short run, as well as in meeting “emergency” situations in the foreign exchanges. But there is no definite evidence that “monetary discipline” exerted significant “longer run” effects of an equilibrating sort upon the balance of payments, via its impact on the level of domestic incomes and prices, of the kind so often attributed to it. Indeed, the evidence presented here, somewhat inconclusive though it is, suggests rather that the “rules of the game” were of much less importance and influence than the usual stereotype would have it. Why then did the pre-1914 gold standard work so well? This larger question, as noted earlier, has been excluded from the scope of this study, except for the fragmentary comments which have been scattered throughout.

A final conclusion to which the foregoing study leads us is that the pre-1914 gold standard, so simplified and idealized in the textbook literature and elsewhere, was a far more complex mechanism than is generally believed. As was pointed out by another writer twenty-five years ago,¹²¹ the pre-1914 gold standard

¹²⁰It is probable, in some of the many gold standard countries that did not have central banks, that one or a few of the larger (note-issuing) commercial banks undertook in effect some central banking functions and policies. In the United States, as noted earlier, this role was assumed in part by the Treasury.

¹²¹See C. H. Walker, “The Working of the Pre-War Gold Standard”, *Review of Economic Studies*, I, 1933-4, p. 208.

cannot be taken for granted; it needs far more analysis than has yet been done; and without further analysis we cannot truly see how the system worked and why it did not work so well after World War I. It is hoped that this monograph has, among other things, made a modest contribution toward clearing the ground for an attack on this larger problem.

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